

FLORIDA PANTHER ANNUAL REPORT 2004-05

Florida Fish and Wildlife Conservation Commission

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EXECUTIVE SUMMARY

This report, prepared by the Florida Fish and Wildlife Conservation Commission (FWC), highlights information collected over the last fiscal year, 1 July 2004-30 June 2005, but also contains inclusive information related to Florida panther research. Occasionally data (eg. toxicology) will be presented from samples collected in prior fiscal years due to lag times involved with processing samples. Panther research and management is a cooperative effort and we acknowledge the involvement of other agencies, particularly Big Cypress National Preserve (BCNP) and Everglades National Park (ENP) of the National Park Service (NPS). BCNP and ENP have conducted aerial relocations of radiocollared panthers within their respective park boundaries for several years and this data has been incorporated into the telemetry database and is used with permission in this report. Beginning in 2003, BCNP was permitted by the U. S. Fish and Wildlife Service (USFWS) and FWC to conduct panther capture activities. These activities have been conducted within BCNP boundaries south of I-75. BCNP assembled their own capture team and has captured previously uncollared panthers, replaced radiocollars due to expected battery failure, marked neonatal kittens at den sites, and recovered carcasses. While some data (eg. biomedical, demographic) of panthers handled by BCNP is contained herein for completeness of datasets, more specific information may be found in Jansen et. al. (2005).

Telemetry data were collected on 40 radiocollared Florida panthers (*Puma concolor coryi*) in southern Florida during the reporting period by the three respective agencies (FWC, BCNP, ENP). Five new panthers, and three that had failed or dropped collars, were added to the radiocollared population monitored by FWC this past capture season. Eleven panther dens were documented by the three agencies during the study period producing a minimum of 25 (10♂, 10♀, 5 unknown) neonate kittens. All kittens, excluding two litters, were handled at their dens, permanently marked with subcutaneous transponder chips, and genetic material acquired. Two female neonatal kittens were removed to permanent captivity after being abandoned by their mother. A total of 139 panthers have been radiocollared since 1981 and 189 neonate kittens have been handled at dens since 1992. Seven (4♂, 3♀) radiocollared panthers and 12

(8♂, 4♀) uncollared panthers died during the reporting period. Three of the uncollared mortalities were males handled as neonates and identified by their transponder chips. Eleven (8♂, 3♀) panthers died from vehicular trauma and three panthers, including 1 female, died from intraspecific aggression. One radiocollared panther died of septicemia and other infections that were likely secondary to concurrent feline leukemia virus infection. Three (1♂, 2♀) panthers died of unknown causes and one (♀) died as a result of a spinal fracture of unknown origin.

INTRODUCTION

Florida panthers are endangered by a combination of population and habitat factors (USFWS 1987). Loss and fragmentation of habitat and unregulated killing over the past two centuries have reduced and isolated populations in the southeastern United States to the point where only one population, estimated in the late 1980's at 30-50 adults, exists on approximately 8,810 km² (2.2 million acres) of habitat in south Florida (Maehr 1990). Small population size and geographic isolation increase the chance for extinction of Florida panthers due to demographic instability inherent in small numbers and erosion of genetic diversity from restricted gene flow and inbreeding. Genetic diversity is the basis for production of fit individuals as well as providing population elasticity in order to respond to changing environmental and habitat conditions. Demographic variation has been considered important in regulating populations for many years, but the role of social and genetic factors has only recently begun to be examined as modern techniques from field biology and molecular genetics have become available. Recovery of the Florida panther is complex, but not an uncommon situation as many species face similar circumstances. A unique opportunity exists to implement conservation and management strategies for Florida panthers and evaluate results that will benefit Florida panthers as well as other imperiled species.

Natural exchange of genetic material occurred historically among the Florida panther population in the southeastern United States and contiguous populations of *P. c. cougar* to the north, *P. c. hippolestes* the northwest and *P. c. stanleyana* to the west (Young and Goldman 1946). Genetic exchange between populations ceased as the coastal plain was gradually cleared and settled. Florida panthers steadily declined in abundance and distribution as a result. Gene flow occurs as individuals disperse and breed, but habitat fragmentation disrupts dispersal and natural population processes. Dispersal is not only the natural mechanism for mixing the gene pool but also minimizes inbreeding within populations. Inbreeding increases when dispersing potential breeders can no longer move among fragmented populations, and declining population size compounds demographic and genetic factors. Implications include inbreeding depression, loss of genetic variation, declining health, reduced survivability, lower numbers, and eventual extinction. The compounding effects of these interrelated factors, perceived as an

inward spiral or vortex (Gilpin and Soule 1986), have become a cornerstone of conservation biology. A computer program (VORTEX) has been developed and widely used to predict extinction for numerous species under similar situations (see Grier 1980, Lacy and Clark 1990, and Seal and Lacy 1989).

Genetic diversity and health of the Florida panther population needs to be restored to ensure survival, even with adequate habitat conservation and other enhancement measures. The complex interplay of social, demographic, genetic, and health factors dictates that a timely and aggressive program be implemented to address the many problems faced by Florida panthers. A plan for genetic restoration and management of the Florida panther was developed in September 1994 (Seal 1994) and implemented in 1995 with the release of 8 female Texas puma, none of which remain in the wild today. Five of the 8 Texas puma produced litters and a minimum of 20 kittens were born in Florida (Land et al 2004). No displacement of Florida panthers occurred and no disruptions to the existing social organization were observed. No Texas puma exhibited aberrant behaviors or unacceptable human interactions. Five Texas puma died from various causes and the remaining three (TX 105, TX106, and TX 108) were removed from the wild during the 2002-2003 capture season because they had produced a sufficient number of offspring into the panther population and because they were thought to be reproductively senescent. These cats have been placed into permanent captivity at various approved institutions. Genetic restoration is a direct and immediate action that will restore genetic variability and vitality for a healthier, more resilient population. Results from genetic restoration will enable implementation and refinement of management strategies to maintain levels of genetic diversity historically present in the North American population.

FWC's objectives are to continue monitoring resident panthers to evaluate translocations (e.g. FP126), to compare reproductive performance and kitten health among Texas and Florida females, and to assess phenotypical and genotypical responses of genetic restoration. The final product will be the development of a long-term genetics management plan based on study results to maintain genetic diversity, health, and long-term survival of the south Florida panther population.

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STUDY AREA

The overall study area encompassed most of interior southern Florida south of Orlando and extending to southern ENP. The area includes large blocks of low-lying public lands such as ENP, BCNP, FSSP, and the FPNWR. Significant private lands, primarily used for cattle and crop production, lie on higher and more productive ground to the north of the public lands and constitute some of the most important habitat for Florida panthers. The overall study area was divided into 3 agency monitoring areas (AMA) for purposes of conducting aerial relocations and capture/recovery efforts. The FWC AMA was statewide excluding BCNP south of I-75 and ENP. The BCNP AMA encompassed the area within the BCNP boundary south of I-75. The ENP AMA encompassed the area within the ENP boundary.

METHODS

Monitoring

FWC staff was responsible for capturing and fitting panthers with radiocollars, handling neonates at dens, and recovering carcasses from the field and roadside within the FWC and ENP AMA and

obtaining aerial relocations 3 times per week within the FWC AMA. BCNP staff was responsible for capturing and fitting panthers with radiocollars, handling neonates at dens, recovering carcasses from the field and roadside and obtaining aerial relocations 3 times per week within the BCNP AMA. ENP staff was responsible for obtaining aerial relocations 3 times per week within the ENP AMA. Responsibility of conducting aerial relocations is coordinated on those panthers whose home ranges overlap AMA's.

Capture

Free-ranging Florida panthers were captured using trained hounds. Panthers either bayed on the ground or were treed, and then darted with a 3 ml compressed-air dart fired from a CO₂-powered rifle. Panthers were immobilized with a combination of ketamine HCl (10 mg/kg) (Congaree Veterinary Pharmacy, Cayce, South Carolina), xylazine HCl (1 mg/kg) (Congaree Veterinary Pharmacy, USA) and midazolam HCl (0.03 mg/kg) (Abbott Laboratories, North Chicago, Illinois, USA). Following immobilization, treed panthers were caught with a net and, in some cases, a crash bag (McCown, 1990). Propofol (PropoFlo™, Abbott Laboratories) was administered intravenously (IV) either as a bolus or continuous drip to maintain anesthesia. Butorphanol tartrate (0.1-0.4 mg/kg, Fort Dodge Animal Health [FDAH]) or midazolam HCl (0.03 mg/kg) was administered intramuscularly (IM) to smooth recovery in some panthers. Panthers were left to recover in a shaded area away from water. In some cases xylazine HCl was reversed with yohimbine HCl (Yobine®, Lloyd, Inc., Shenandoah, Iowa) at ½ to ¼ its recommended dose.

Physical Examination

Vital signs (temperature, heart rate, respiration rate, and capillary refill time) and depth of anesthesia were monitored and recorded. A sterile petrolatum ophthalmic ointment (Puralube®, Pharmaderm, Melville, New York, USA) was applied to the eyes for lubrication. All animals underwent a physical examination to assess general health and physical condition. For each panther handled, the skin over the medial saphenous vein was clipped, prepped, and an IV catheter (Abbocath®-T, Abbott Ireland,

Sligo, Republic of Ireland) aseptically placed. Sterile isotonic fluids were administered either subcutaneously (SQ) or IV.

Live-capture Sample Collection

Approximately 70-140 ml of blood (depending on body weight) was collected from the medial saphenous or cephalic veins using a butterfly catheter (19 or 21 ga), luer adapter/hub, and Vacutainer® tubes (Becton Dickinson, Franklin Lakes, New Jersey) (approximately 50 ml in serum separator, 40 ml in EDTA, 9 ml in Na Heparin, and 9 ml in ACD tubes). From uncollared panthers, eight skin biopsies (4 mm) were aseptically collected from the medial aspect of the hindlimbs and saved in biopsy transport media. Defects were closed with surgical glue (Vetbond™, 3M Animal Care Products, St. Paul, Minnesota). Hair clipped from blood collection and biopsy sites, and pulled hair was saved in sample collection bags; clipped hair was also saved from the ventral abdomen. Other samples, such as bacterial cultures, skin scrapings, and diagnostic biopsies were taken if indicated. Blood smears were made in the field from fresh whole blood. Panthers were implanted with a SQ transponder identification chip (Trovan®, Douglas, United Kingdom), ear-tattooed, measured, and weighed.

Vaccination and Treatment

Panthers >4 months old were vaccinated SQ against feline viral rhinotracheitis (FVR), feline calicivirus (FCV), feline panleukopenia (FPV) (Fel-O-Vax® PCT [FDAH], 1 ml, lower left leg), and rabies (Rabvac™ 3 [FDAH], 1 ml, lower right leg). Beginning June 2003, captive and free-ranging panthers were also vaccinated against feline leukemia virus (FeLV, Fel-O-Vax® Lv-K [FDAH] or Fevaxyn® FeLV, Schering-Plough Animal Health Corporation, Omaha, Nebraska, USA, 2 ml, lower left leg). Some panthers were given a FeLV booster (2 ml) IM remotely by darting 3-16 wks post initial inoculation. Captured panthers were dewormed with ivermectin (0.1 mg/kg, Ivomec®, Merial Limited, Iselin, New Jersey) and praziquantel (3.75 mg/kg, CestaJect™, Phoenix Pharmaceutical, Inc., St. Joseph,

Missouri) administered SQ in the lateral aspect of thigh. Penicillin G procaine/benzathine (USVet®, Hanford Pharmaceuticals, Syracuse, New York) was administered IM at 22,000 to 44,000 U/kg.

Neonatal Kittens

Neonatal kittens <6 weeks-of-age were handled according to Land et al. (1998) and marked with a SQ transponder identification chip. Pyrantel pamoate (0.1 mg/lb, Anthelban V, Phoenix Pharmaceutical, Inc., St. Joseph, Missouri, USA) was administered orally, and blood was collected from the jugular vein for CBC and serum chemistry. Three skin biopsies (2 mm) were aseptically collected from the inner medial aspect of the hind limbs and saved in biopsy transport media.

Radio-instrumentation

Captured adult and juvenile panthers were fitted with a VHF (Advanced Telemetry Solutions, Inc., Isanti, MN) or VHF/GPS (TVP Positioning AB, Lindesberg, Sweden) radiocollar and monitored three times weekly (M, W, F) from a Cessna 172 fixed-wing aircraft. Locations collected by FWC were plotted on 7.5-minute USGS topographic maps and recorded as Universal Transverse Mercator points in North American Datum 27. Location accuracy was 117.71 ± 29.1 m based on differences between aerial locations and GPS location of 40 panther dens or carcasses (Appendix VII). Mating and denning behavior, aggressive encounters among panthers, movements and home range shifts, dispersal, survival, recruitment, displacements and replacements of individuals, and other social and ecological interactions were interpreted from radiotelemetry data and field investigations

Necropsy

All FeLV positive Florida panthers or those found dead due to infectious disease or unknown causes were completely necropsied by board-certified pathologists at the Veterinary Medical Teaching Hospital ([VMTH] University of Florida, College of Veterinary Medicine, Gainesville, Florida) or

Disney's Animal Kingdom (Celebration, Florida). Panthers dying of known trauma were necropsied by the FWC veterinarian at the Wildlife Research Laboratory (FWC, Gainesville, Florida).

When carcass condition allowed, tissues samples were collected at necropsy from all major organs. Fluids collected included heart blood, venous blood, thoracic blood, aqueous humor, and urine. Blood samples were centrifuged at 2000 rpm for 10 minutes and the supernatant decanted. Representative tissues from fresh (unfrozen) and some previously frozen panthers were placed in 10% neutral buffered formalin. Fixed tissues were embedded in paraffin, sectioned at 5 to 6 μm and stained with hematoxylin and eosin.

All tissues from live-captured and necropsied panthers not immediately analyzed were archived at -20° to -70°C .

Diagnostics

Whole blood in EDTA, serum, and diagnostic samples were shipped overnight to Antech Diagnostics (Farmingdale, New York) for a complete blood count (CBC), serum chemistry profile, and appropriate diagnostic procedures (culture, histopathology). Blood smears were examined at the VMTH for hemoparasites, white blood cell differential, and red blood cell morphology. Skin biopsies were shipped overnight to the Laboratory of Viral Carcinogenesis (National Cancer Institute [NCI], Frederick, Maryland) for tissue culture and genetic analyses (O'Brien et al. 1990).

Reciprocal antibody titers and/or presence of antigen in serum were determined for feline leukemia virus (FeLV, ELISA antigen), feline immunodeficiency virus/puma lentivirus (FIV/PLV; Western Blot, Kinetics ELISA, and peptide ELISA), feline rhinotracheitis virus (FVR, serum neutralization [SN]), feline calicivirus (FCV, SN), canine distemper virus (CDV, SN), and feline panleukopenia virus (FPL, SN) at the New York State Diagnostic Laboratory (Cornell University, Ithaca, New York). EDTA whole blood from panthers was tested for FeLV and FIV in the field using a rapid immunoassay (SNAP Combo, IDEXX Laboratories, Westbrook, Maine). Panthers were also tested for FeLV at necropsy using thoracic, venous, or heart blood. Reciprocal serum antibody titers to FeLV were

performed at Hansen Veterinary Immunology (Dixon, California). EDTA blood smears from FeLV antigen positive panthers were sent to the National Veterinary Diagnostic Laboratory (Franklin Lakes, New Jersey) for immunofluorescent antibody (IFA) testing. Immunohistochemistry to identify p27 antigen was performed on formalin-fixed paraffin-embedded tissues at the Diagnostic Center for Population and Animal Health (Michigan State University, Lansing, Michigan, USA) using a labeled streptavidin-biotin peroxidase detection system on an automated stainer (Ramos-Vara, et al., 2002). Necropsied panthers were tested for rabies by IFA at the Jacksonville Central Laboratory, Jacksonville, Florida). Viral isolation and real-time and conventional PCR for canine distemper virus, pseudorabies virus, Flaviviruses, and Alphaviruses was performed at the Southeastern Cooperative Wildlife Disease Study (Athens, Georgia) on brain, heart, and other tissues collected from panthers dying of unknown causes.

Polymerase chain reaction (PCR) for *Mycoplasma haemofelis* and *M. haemominutum* was performed on EDTA whole blood from FeLV positive panthers at the University of Illinois (College of Veterinary Medicine, Urbana, Illinois). Hair and heparinized whole blood was analyzed for methyl mercury (Hg) concentration at the Florida Department of Environmental Protection (Tallahassee, Florida) by cold vapor atomic absorption spectrophotometry (Hatch and Ott, 1968).

Data Analysis

Statistical analysis was conducting using standard t-test output from Microsoft Excel.

RESULTS AND DISCUSSION

Status of Radiocollared Florida Panthers

FWC and NPS monitored 40 radiocollared panthers this reporting period. A complete listing of radiocollared panthers can be found in Appendix II. Locations of radio-instrumented Florida panthers showed spatial use patterns similar to previous years (Appendix I, Fig. 1). Home range sizes (minimum

convex polygon method) for established, non-dispersing adult panthers monitored by FWC averaged 253.1 km² for males ($n = 11$) and 117.6 km² for females ($n = 11$) (Appendix I, Figs. 2-3).

2004-2005 Panther Capture Season

FWC capture efforts began on 15 November 2004 and continued through 31 March 2005. Sixty-nine hunt days were divided between the Florida Panther National Wildlife Refuge (FPNWR) (18 days), Big Cypress National Preserve's (BCNP) Addition Lands Unit (11 days) and Bear Island Unit (7 days), and Okaloacoochee Slough State Forest (OSSF) (33 days). The primary objectives of the FWC capture work this season were to 1) continue the assessment and management of the outbreak of the feline leukemia virus (FeLV), 2) replace radiocollars equipped with break-away devices, 3) replace radiocollars reaching their warranted battery life, and 4) continue evaluation of GPS collars. We did not make a concerted effort to expand the radiocollared sample beyond that necessary to achieve the first objective above.

Ten Florida panthers (FP) were captured for attachment of radiocollars by the FWC capture team (Table 1). Five new panthers (FP133, FP134, FP135, FP137, and FP139) were added to the study population. Three panthers were reacquired that had failed (FP48 and FP69) or dropped (FP119) collars. Radiocollars were replaced on 2 panthers for routine anticipated battery failure (FP107) and to replace a break-away (FP130). All panthers captured this season tested negative for FeLV.

Biomedical Summaries of Florida Panthers Handled in 2004-2005

Capture related injuries. Capture-related injuries were categorized as moderate or severe. Moderate injuries were defined as those that were not life-threatening and were treated in the field (e.g., mild to moderate hyperthermia [106°F to $\leq 108^{\circ}\text{F}$], lacerations, dog-bite wounds, hypoxia [lack of oxygen] without respiratory arrest). Moderate injuries sustained by panthers captured for research-related purposes this fiscal year were limited to hyperthermia in FP69 (106.1°F), FP48 (107°F), and FP107

(108°F). All panthers were cooled by application of cool water, cold packs over major blood vessels, and IV fluid administration.

Severe injuries were defined as those that were life-threatening but treated in the field (e.g., severe hyperthermia [$>108^{\circ}\text{F}$], respiratory arrest, penetration of abdomen or thorax with dart, fractures of non-weight-bearing bones) or injuries that required removal from the wild for treatment (e.g., fractures of weight-bearing bones). One panther (FP130) was temporarily removed from the wild for cervical radiographs and evaluation of urethral hemorrhage. Cervical radiographs and contrast urethrography at the University of Florida, College of Veterinary Medicine (UF-CVM) revealed no abnormalities. By one day post-capture the hematuria could only be detected microscopically. The cause of the urethral hemorrhage was not determined.

During recovery from anesthesia at UF, FP130 developed acute pulmonary edema. The pulmonary edema was treated with albuterol, furosemide, and positive-pressure ventilation with 100% oxygen. The edema and associated dyspnea resolved within 2 hrs. The panther was held for observation for another 48 hrs before release near his capture location. Movements since his release have been normal and similar to those before capture.

Biomedical Summaries for Individual Panthers. All panthers captured by FWC were in fair to excellent condition with the exception of FP107 who was in fair/poor condition. An apparently prolonged estrus (≥ 3 wks) just prior to capture may have contributed to her condition. Four panthers (FP133, FP134, FP135, and FP48) had evidence of previous injuries and fractures on physical examination. FP133 had healed fractures of the coccygeal vertebrae and left ulna, FP135 had healed rib fractures (right ribs 7 and 8, dorsal aspect), and FP48 had what appeared to be a healed right radius/ulna fracture. FP134 had healed abrasions on the lateral aspect of the right tibia and a large callus on the right second metatarsal bone. Hairless areas on legs tested negative for dermatophytes (culture). The cause of these injuries is unknown. A grade II systolic murmur was ausculted in FP69.

FP120 was struck by a vehicle on US41 the late afternoon of 11 July 2004, and was observed to move off the road. The following morning FWC biologists immobilized the panther and transported her to Golden Gate Animal Hospital in Naples for stabilization. Radiographs indicated an open (compound) comminuted (fragmented) fracture of the right femur. The panther was subsequently transported to the UF-CVM for surgery. An interlocking nail and external fixater were used to repair the right femur. Complications following surgery included anorexia, severe anemia, pulmonary edema, pneumonia, and infection of the surgical repair. These conditions resolved in FP120 following antibiotic administration and supportive care at White Oak Plantation. While in captivity, FP120 suffered a partial fracture of a lower canine which was repaired by root canal at the UF-CVM. A fractured lower canine that was suspected following the accident was confirmed necessitating removal of the entire tooth.

The removal of FP120 from the wild, although necessary to save her life, resulted in the suspected orphaning of her two 7 mo old kittens. US41 was temporarily closed in an effort to capture the kittens, however, no sign of the kittens were found. Food left near the accident site remained untouched. On 2 August 2004 one of her kittens (K156) was struck and killed by a car on US41 near Turner River Road.

Following complete recovery from the leg fracture, FP120 was released in the northern portion of her home range on 4 May 2005. She was hit and killed on US41 three days later. This is the third panther that has been injured by a vehicle, rescued, rehabilitated, and ultimately released back into its home range but FP120 is the first of those that died following another collision with a vehicle. The other 2 panthers died of an atrial septal defect (FP20) and intraspecific aggression (FP28) 1 and 3.5 years after their release. Three other panthers (UCFP43, UCFP60, and FP200) were treated following vehicular collision; one died (UCFP60) and one was euthanized (UCFP43). The other (FP200) remained in captivity due to the severity of injuries.

Clinical Pathology. Hematology (Table 3) and serum chemistry (Table 4) results for adult and juvenile Florida panthers were similar to Florida panther reference intervals reported by Dunbar et al.

(1997). Deviations from normal were usually related to capture-related dehydration/exertion and/or recent feeding (elevated BUN).

Serology. Serum samples from panthers live-captured were tested for canine distemper virus (CDV). Four of 17 (24%) tested positive for antibodies to the virus (Table 5). Exposure may have come from predation on raccoons. Raccoons are a common prey item for panthers and carry canine distemper virus. The significance of these findings is unknown. Morbidity and mortality due to CDV has been reported in free-ranging lions and leopards (Roelke-Parker et al., 1996) and some captive felids. All panthers dying from unknown causes are tested by culture and PCR; CDV has not been detected.

Results were processed from 17 live-captured Florida panthers this study period (10 captured by FWC for telemetry studies, 2 captured by FWC for other reasons [1 road injury, 1 declining health reason], and 5 captured by BCNP for telemetry studies). Thirteen (76%) were positive for FIV by Western blot (Table 5). Historically the percentage testing positive for FIV antibodies was 28% (Olmstead et al., 1992). This unusually high prevalence warrants continued monitoring.

Virology. Fluorescent antibody tests for rabies were negative for 8 and unsatisfactory for 3 panthers tested at necropsy this period. Viral isolation, IHC, and/or PCR for flaviviruses, alphaviruses, canine distemper virus, encephalomyocarditis virus, and pseudorabies virus were negative for FP117.

One panther (FP132) tested positive for feline leukemia virus (FeLV) by ELISA antigen and is believed to have died from the disease (22 July 2004, see Appendix VI for further details). However, since this mortality in July 2004, no additional live-captured ($n = 17$) or necropsied ($n = 17$) panthers, including 4 panthers from Okaloacoochee Slough (OKS), tested FeLV positive. Two of 17 panthers captured this study period tested positive for FeLV antibodies. Antibodies in one of these (FP130) may have been influenced by previous vaccination.

Feline Leukemia Virus Management. Management for FeLV in the Florida panther population initially began with a vaccination program. During the 2004-2005 study period, 14 free-ranging panthers received their initial FeLV vaccination by FWC and NPS; 4 were boosted. This number is a combination of panthers that were captured for the first time and some of the panthers that were

recollared. Some of the panthers that were recollared had previously received vaccinations. As of 30 June 2005, a total of 34 free-ranging FeLV-negative panthers have received at least one inoculation; 15 were boosted. Panthers with positive PCR and/or ELISA antibody findings at the time of initial vaccination may also be considered “boosted”. Assuming a population size of 90, the largest percentage alive that had received at least one inoculation was 31% (for the period 4-7 May 2005).

Test-removal of infected domestic cats has been a successful management strategy although secondary to vaccination in importance. In free-ranging panthers, test-removal was not initially employed because removal of infected panthers with established home ranges could increase intraspecific aggression, cause immigration of susceptible panthers into areas with FeLV, and would result in the loss of the genetic contribution of the infected individual. However, because of the apparent increased susceptibility of panthers to FeLV, test-removal to captivity of FeLV-infected panthers is currently part of the FeLV management protocol. Captured panthers testing positive by SNAP test in the field will be removed to quarantine at the WRL and subsequently held at Busch Gardens (Tampa).

Serum Progesterone and Plasma Relaxin. Serum progesterone concentrations ranged from 2.3 to 8.3 ng/ml (mean 5 ng/ml) in 4 female panthers sampled (Table 4). Only FP107 (progesterone 6.3 ng/ml), who was believed to have been in her first week of pregnancy, went on to have a litter within the expected gestation period (92 d). Progesterone concentrations were not predictive of pregnancy. Serum relaxin was negative in 3 females sampled including FP107.

Parasitology. Polymerase chain reaction (PCR) for *Mycoplasma hemofelis* and *M. hemominutum* were performed on EDTA blood samples from 102 Florida panthers/Texas cougars sampled on 192 occasions between 1991 and 2004. Nine captive cougars from the BCSIR were also sampled in 1999. A total of 26 (25.5%) Florida panthers/Texas cougars were positive for *M. hemofelis* and 82 (80.4%) were positive for *M. hemominutum*. Interestingly, only one (11%) captive cougar at SIR was positive for either mycoplasma (*M. hemominutum*). *Mycoplasma* infections in panthers and cougars were likely subclinical and no *Mycoplasma* organisms were seen on blood smears. Further evaluation of these infections is pending.

Blood smears from 15 panthers captured this study period by FWC and NPS for telemetry studies were examined for microfilaria and piroplasms. Four (27%) were positive for microfilaria and 3 (20%) were positive for piroplasms. One panther (FP104) was positive for both. Microfilaria are likely *Dirofilaria striata*.

Polymerase chain reaction testing was also performed to detect the protozoa *Neospora caninum*, *Toxoplasma gondii*, and *Sarcocystis neurona* in brain tissue of FP117. All tests were negative.

Ticks were collected by FWC and NPS from panthers at capture and necropsy to assist with surveillance for exotic ticks. Results are pending. One male *Rhipicephalus sanguineus* was collected from FP122 on 30 January 2004. This is the first record of the brown dog tick from this host. Interestingly, FP122 was infected with FeLV, a viral disease of domestic cats. The presence of a domestic dog tick may provide additional evidence that panthers in this area are exposed to domestic animal pathogens, although it cannot be ruled out that this tick originated from one of the hounds used for capture.

Toxicology. Whole blood and/or hair mercury (Hg) concentrations for Florida panthers live-captured and/or necropsied this period are listed in Table 6. The highest hair Hg concentrations this fiscal year (FY) were seen in FP55 who had concentrations of 7.8 ppm. This was up from 0.56 ppm in FY02-03. FP126, sampled last FY in the Loop Road Unit of BCNP, had hair Hg concentrations of 7.9 ppm. Hair Hg concentrations for FP126 following his relocation to OSSF are pending. No panthers from ENP, an area of historically high tissue Hg concentrations, were sampled this FY.

Archived tissues from FP117 were tested for organic toxins by gas chromatography (liver), heavy metal concentrations (kidney), anticoagulants (liver), and chlorinated pesticides (fat) at Michigan State University; all tests were negative or showed insignificant toxin levels. Archived fat from four panthers (FP59, FP105, FP108, K128) and one Texas cougar (TX107) were screened for chlorinated pesticides. P'P'-DDE was detected in (FP59, FP108, K128, TX107) with a mean concentration of 1.245 ppm and range 0.295-2.55 ppm. No other chlorinated pesticides were detected.

No atrial septal defects were found in 17 panthers suitable for examination this study period. No cryptorchidism was observed in 11 male Florida panthers for which examination was possible. Large splenic clefts were observed in 10 of 17 (59%) panthers suitable for examination this period; 6 (35%) panthers had small splenic clefts, 1 (6%) had no cleft.

Captive Florida Panthers

As of 30 June 2005, seven Florida panthers were in captivity. Two female Florida panther kittens (K180, K181) were taken into captivity this study period following abandonment of the den by their mother (FP107). The kittens were handled in the den by FWC biologists on 15 March, 2005. Based on telemetry data, the mother had not returned to the den. Biologists visited the kittens again on 19 March and saw no evidence that FP107 had returned. The kittens were fed a milk replacement and left in the den one more night. The next morning, 20 March, the kittens were removed from the den. They were dehydrated and had lost 300 g (21%) since they were first handled 5 days previous, but otherwise the kittens appeared healthy. The kittens were fed milk replacement and SQ fluids were administered. K180 and K181 were delivered to the Jacksonville Zoo on 21 March 2005 where they will permanently remain.

FP60 remains in captivity at White Oak Conservation Center. He was captured 29 June 2004 and was removed to captivity due to poor health. While in captivity he was treated for dermatophytosis, endoparasitism, and pneumonia. Chronic pneumonia eventually necessitated a lung lobectomy. The pneumonia has resolved and he remains in captivity at White Oak Conservation Center.

Other panthers in captivity include FP204 (15 year-old female) at White Oak Conservation Center, FP210 (15 year-old male) at Jacksonville Zoo, and FP207 (13 year-old male) and FP208 (13 year-old female) at Lowry Park Zoo. FP's 204, 207, 208, and 210 represent the remaining individuals originally removed in 1991-92 for captive breeding purposes.

Florida Panther Reproduction

Eleven panther dens were documented during the study period by FWC, BCNP, and ENP producing a minimum of 25 neonate kittens (10♂, 10♀, 5 unknown). Neonate kittens were handled successfully at 9 dens and permanently marked with subcutaneous transponder chips (Table 2). Genetic material—skin biopsies, blood, hair, or saliva—was collected from each kitten handled at the den. A den of FP95 in ENP was not visited, however, 2 kittens were observed traveling with the mother when 3-months-old. Additionally, 3 kittens estimated to be 4 months old were verified by tracks traveling with FP69 after recapturing her in January. FP69’s den was undetected because prior to her recapture she was wearing a non-functioning radiocollar. BCNP personnel handled the kittens of FP102, FP124, and FP129. Lists of all kittens handled and known panther and Texas puma dens can be found in Appendices III and IV respectively. Female Florida panthers and Texas pumas have produced litters throughout the year, however, there is a decided peak of Florida panther denning from March – July (Fig. 1).

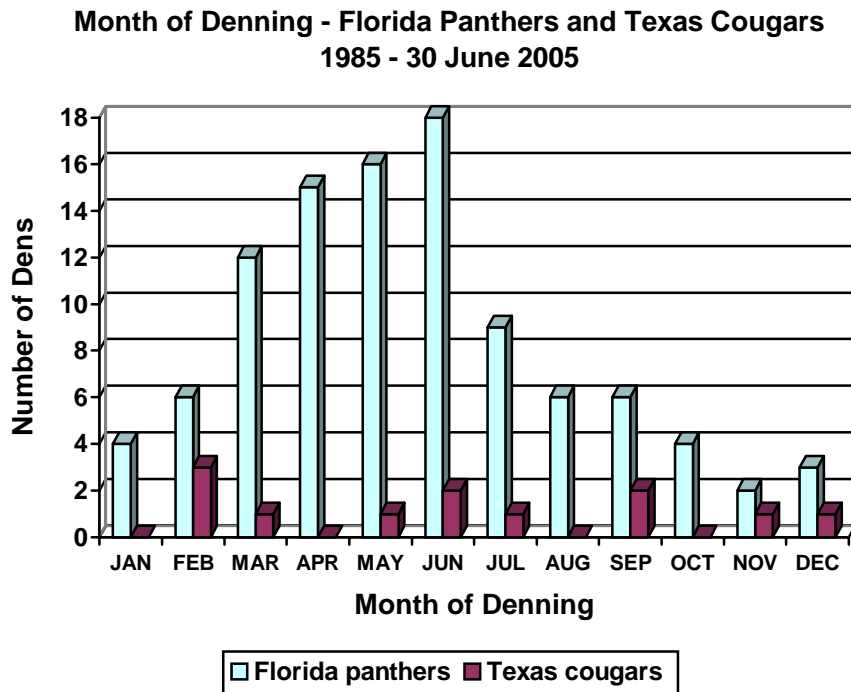


Figure 1 (Data from FWC and BCNP)

Female panthers have bred as young as 18 months-of-age (Maehr et al. 1989) and successful reproduction has occurred up to 11 years-of-age (Fig. 2). Mean age of denning females was 4.6 ± 2.1 years. Age at first reproduction for 19 known-aged female Florida panthers averaged 2.2 ± 0.246 (sd) years and ranged from 1.8 to 3.2 years. There was no difference ($t_{13,3} = -0.74$, $P = 0.24$) between ages of first reproduction for original Florida panthers (2.1 yrs. \pm 0.26; $n = 10$) and panthers with Texas ancestry (2.3 yrs. \pm 0.53; $n = 8$). Average litter size for all panthers was 2.4 ± 0.91 (sd) kittens. Seventy percent of all litters were comprised of either 2 or 3 kittens (Fig. 3). Frequencies were 16.4%, 36.9%, 34.2%, and 12.3% for litter sizes of 1, 2, 3, and 4 kittens, respectively. Mean birth intervals (elapsed time between successive litters) were 19.8 ± 9.0 (sd) months for female panthers ($n = 56$) and 22.3 ± 6.7 (sd) months for female Texas puma ($n = 5$). (Data from FWC and BCNP).

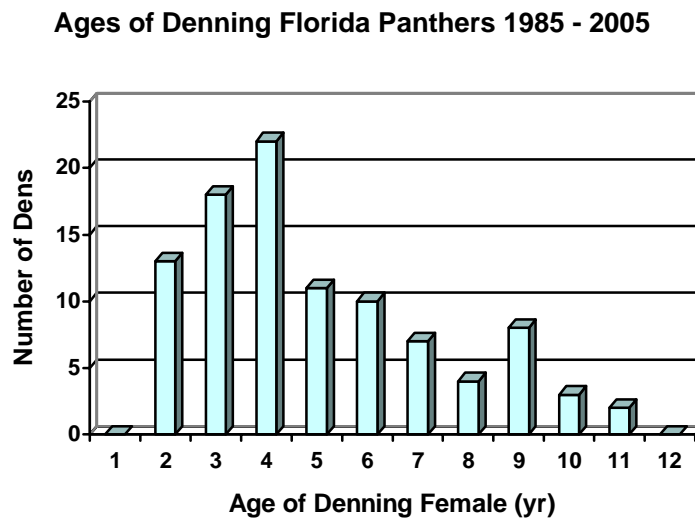


Figure 2 (Data from FWC and BCNP).

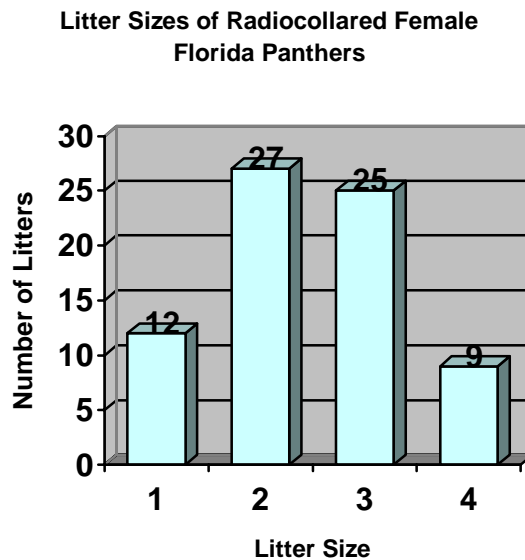


Figure 3 (Data from FWC and BCNP)

Florida Panther Mortality

A total of 19 free-ranging Florida panther (7 radiocollared, 12 uncollared) mortalities were recorded between 1 July 2004 and 30 June 2005. Three uncollared panthers that died had been handled previously as kittens. Vehicular collision accounted for 11 (uncollared $n = 10$, collared $n = 1$) free-ranging panther deaths – all in areas without underpasses and fencing. Intraspecific aggression accounted for 3 mortalities among radio-collared panthers. Other causes of mortality included unknown causes ($n = 3$), FeLV-related ($n = 1$), and unknown trauma ($n = 1$). A brief description of these mortalities can be found in Appendix VI. All documented Florida panther and Texas cougar mortalities occurring in South Florida since 1972 are listed chronologically by cause of death in Appendix V.

Ninety-one free-roaming radiocollared panthers have died since 1981 and intraspecific aggression has accounted for 42% of these mortalities (Fig. 4). Unknown causes and collisions with vehicles accounted for 24% and 19% of mortalities, respectively. Various diseases, infections, and other factors caused the remaining mortalities. The causes of mortality were independent of gender ($\chi^2 = 8.59$, $df = 5$, $P = 0.1882$).

**Causes of Mortality for Radiocollared Florida Panthers
(n = 91) 1981 - June 2005**

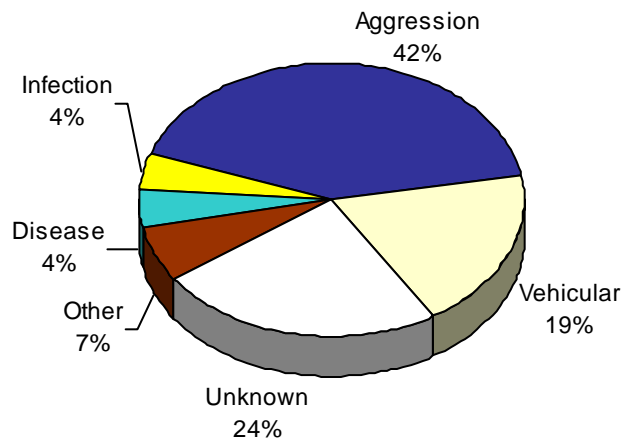


Figure 4

Survivorship curves (the probability of surviving from 1 time interval to the next) based on ages-at-death based on methods described by Heisey and Fuller (1985) for 38 female and 55 male panthers were estimated (Fig. 5). Female panthers exhibited low mortality rates throughout their lives as indicated by the gradual slope of the survivorship curve. Male panthers, conversely, exhibited a much steeper slope in their survivorship curve, with higher rates of mortality from 1 to 6 years-of-age, followed by more gradual mortality rates up to 12 years-of-age. From 1990-2004, mean annual survivorship of radiocollared adult panthers was greater for females (0.894 ± 0.099 ; Table 9) than males (0.779 ± 0.125 ; Table 8). These survivorship patterns were consistent with panther ecology where males compete for large home ranges that overlap with females and where females are more tolerant of overlap with other females (Maehr et al. 1991).

Estimated Survivorship of the Radiocollared Florida Panther Population by Sex

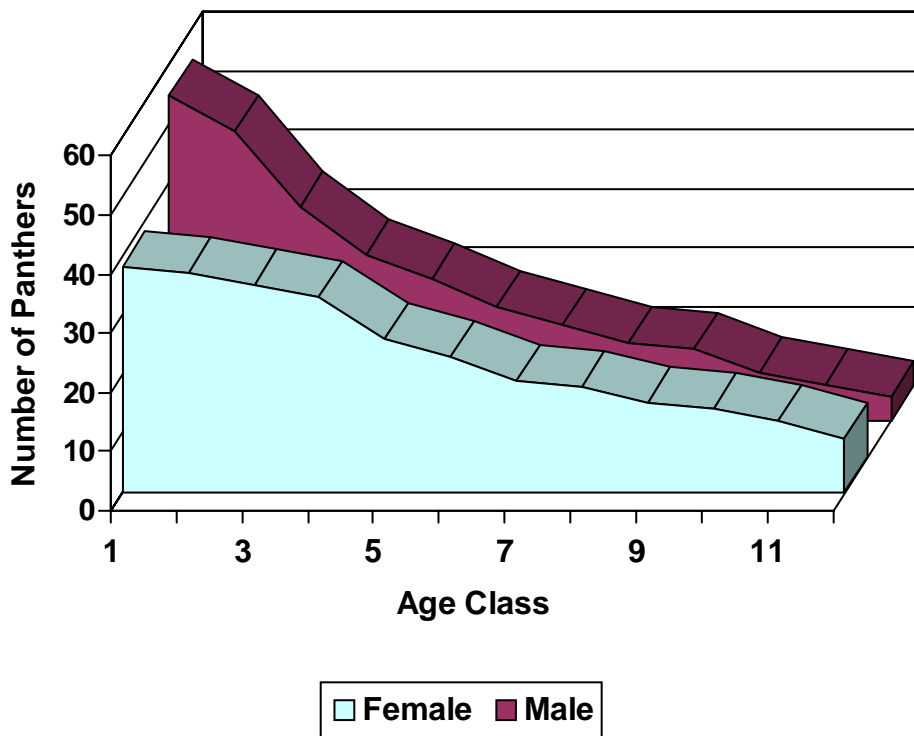


Figure 5 (Data from FWC and BCNP)

Status of Genetic Restoration

As of 27 January 2003, none of the 8 female Texas pumas introduced in 1995 remain in the wild. Five Texas pumas died in the wild and the remaining 3 were removed during the 2002-2003 study period and placed into permanent captivity. Five Texas pumas contributed 20 first-generation offspring, whereas the remaining 3 died prior to successful reproduction.

The frequency of kinked tails appears to have declined in the five-year period after 1995 as compared to earlier periods, which is consistent with the hypothesis that genetic introgression should reduce the frequency of this trait. Apparently, genetic introgression is reducing the occurrence of kinked

tails (Fig. 6). In the period from September 1995 to March 2001, the released Texas puma produced 20 offspring (Land et al 2004), none of which exhibited kinked tails.

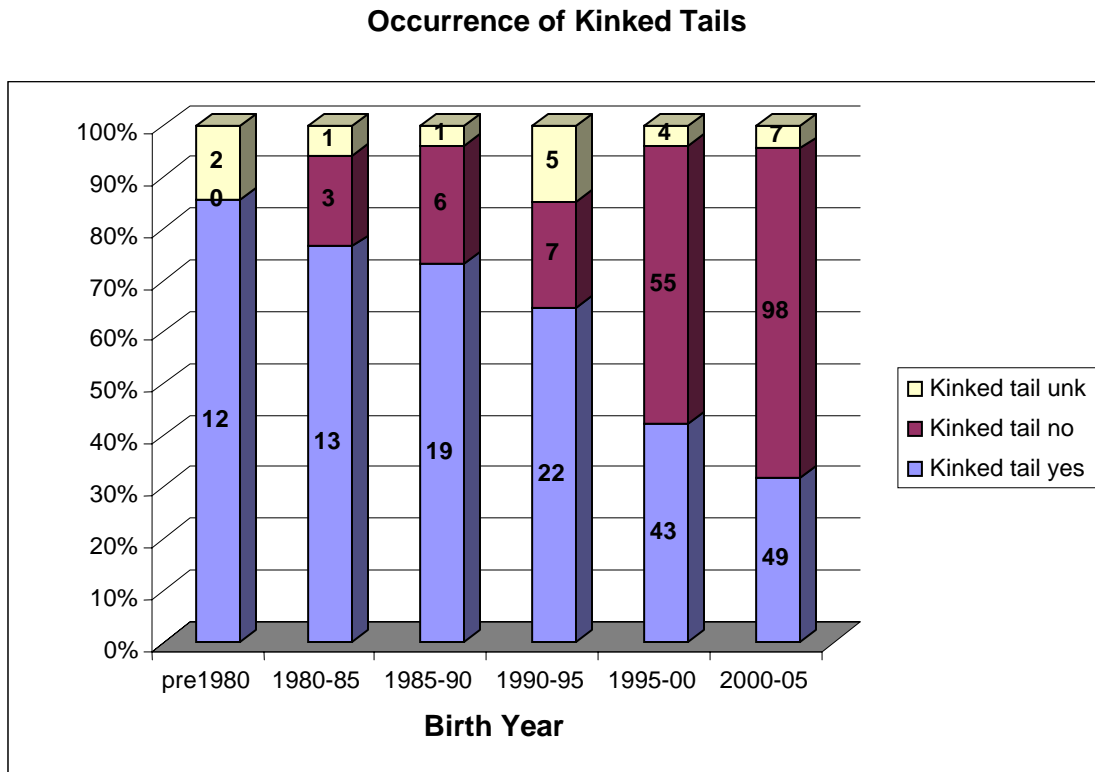


Figure 6. (Data from FWC and BCNP)

Unlike the presence of kinked tails, which can be assessed at any age (including as neonates handled at the den), the presence of cowlicks cannot be assessed until growth of guard hairs occurs by about 6-months of age. However, preliminary assessments suggest that genetic introgression is also reducing the occurrence of cowlicks (Fig. 7).

Occurrence of Cowlicks

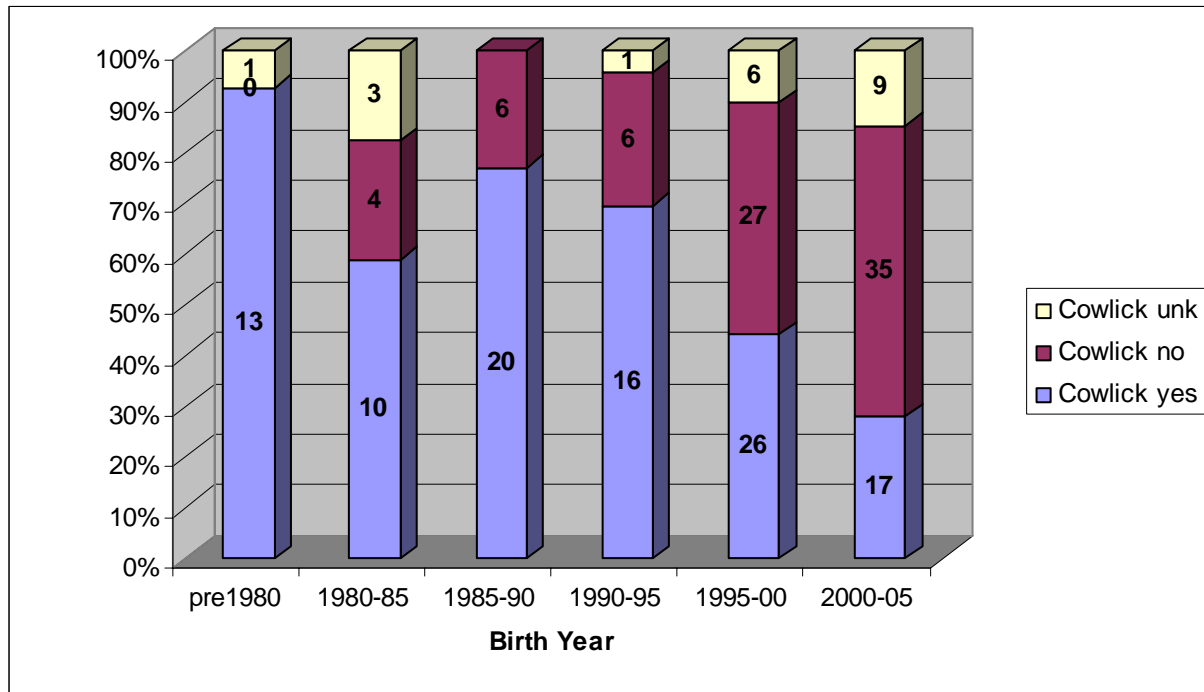


Fig. 7 (Data from FWC and BCNP).

No Texas puma descendants in the Florida panther population have exhibited cryptorchidism (Mansfield and Land 2002). Expression of cryptorchidism among original stock Florida panthers was increasing over time with an overall prevalence rate of 49%. Unilaterally cryptorchid males were capable of siring offspring, but no bilaterally cryptorchid males were known to reproduce. Furthermore, Mansfield and Land (2002) offered more evidence to corroborate the findings of O'Brien et al. (1990) and Barone et al. (1994) that cryptorchidism is caused by genetic factors, and that genetic restoration holds promise in reducing or eliminating occurrence of this trait.

Other morphological traits such as sperm deformities, atrial septal defects, and skull morphology can only be scored once the animal reaches maturity or at necropsy after death. A final report prepared by the FWC in collaboration with other cooperators will provide summaries of the occurrence of these traits to date, but the full extent of genetic restoration on panther morphology may only become apparent over the next decade.

SUMMARY

This is the tenth year of the study to evaluate Florida panther genetic restoration. Originally, the study was scheduled for completion in five years, but it has become apparent that the original schedule was overly optimistic. Collection and analyses of genetic samples continue and many of the latest samples are critical for evaluation of genetic restoration. Dr. Stephen O'Brien and his staff at the National Cancer Institute are culturing, analyzing, and archiving these samples. The importance of including samples from subsequent generations of Texas puma descendants gathered recently outweighed a premature end to the study. The goal is to continue genetic analyses and to provide measures of how the panther's genetic complement has been altered as well as providing insight into panther pedigree. This information should provide us the means to fully evaluate the success of the genetic restoration program and to enable us to develop a management strategy to preserve wild Florida panthers into the foreseeable future.

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Table 1. Adult Florida panthers captured by the Florida Fish & Wildlife Conservation Commission from 01 July 2004 – 30 June 2005.

Cat ID	Sex	Capture Date	Capture Location ^a	Age	Weight (lb.)	Kinked Tail	Cowlick	Descended Testicles	Capture Comments and Medical Notes ^b
FP120	F	12 July 2004	BCNP	4 yr	72	N	N	N/A	Survived vehicle collision 11 July 2004. Removed with compound fracture to left rear femur. Rehabilitated and released 4 May 2005. Initial FeLV vaccine. Died 7 May 2005 from vehicle collision.
FP119	M	17 Nov 2004	FPNWR	2 yr 7 mo	93	N	N	2	Recaptured; previous “break-away” dropped-off on 11 Aug 2003. FeLV booster on 8 Dec 2004.
FP133	M	18 Nov 2004	BCNP	~4-5 yr	129	Y	N	2	Initial radiocollaring, FeLV vaccine.
FP107	F	06 Dec 2004	FPNWR	4 yr 7 mo	68	Y	Y	N/A	Routine radiocollar replacement, initial FeLV vaccine.
FP134	M	14 Dec 2004	BCNP	~2.5 yr	107	Y	Y	2	Initial radiocollaring, FeLV vaccine. Was with FP71.
FP135	M	17 Dec 2004	FPNWR	1 yr 8 mo	95	Y	N	2	Initial radiocollaring, FeLV vaccine. Previously handled as K147; born to FP101 April 2003.
FP69	F	03 Jan 2005	BCNP	7 yr 8 mo	76	Y	Y	N/A	Replaced failed (since 5 Feb 2001) VHF collar. Three ~4 mo old kittens confirmed by tracks 13 Jan 2005. Initial FeLV vaccine.
FP137	M	25 Jan 2005	OSSF	~2.5 yr	~145	N	N	2	Initial radiocollaring, FeLV vaccine. FeLV booster 18 March 2005.
FP48	F	18 Feb 2005	BCNP	13 yr 4 mo	86	Y	Y	N/A	Replaced failed (since 5 July 2000) VHF collar with Tellus GPS collar. Initial FeLV vaccine.
FP130	M	10 Mar 2005	Private ^f	1 yr 10 mo	137	Y	Y	2	Replaced VHF “break-away” with GPS collar. Removed to Gainesville vet school for observation because of urethral bleeding. Released near capture site 13 Mar 2005.
FP139	M	31 Mar 2005	OSSF	2 yr 10 mo	132	Y	Y	1	Initial radiocollaring, FeLV vaccine. Previously handled as K129; born to FP75 May 2002.

^aBCNP = Big Cypress National Preserve, FPNWR = Florida Panther national Wildlife Refuge, OSSF = Okaloacoochee Slough State Forest, Private = Private land.

^b All panthers tested negative for FeLV.

Table 2. Neonate kittens handled at Florida panther dens by the Florida Fish and Wildlife**Conservation Commission and National Park Service 01 July 2004 – 30 June 2005.**

Dam ID	Kitten ID	Sex	Location ^a	Date Handled	~ Age	Weight (g)	Kinked Tail	Comments
FP102 ^b	K170	F	BCNP	5 Aug 2004	2 wks	1191	N	No significant observations when handled. Kitten appeared in good health.
	K171	M	BCNP	5 Aug 2004	2 wks	936	N	“Least energetic of the 3”
	K172	F	BCNP	5 Aug 2004	2 wks	1106	N	No significant observations when handled. Kitten appeared in good health.
FP121	K173	F	BCSIR	1 Sept 2004	2 wks	1300	N	No significant observations when handled. Kitten appeared in good health.
FP124 ^b	K174	M	BCNP	29 Sept 2004	3 wks	1984	N	No significant observations when handled. Kitten appeared in good health. Very mobile.
FP124 ^b	K175	M	BCNP	10 Feb 2005	2 wks	1361	N	No significant observations when handled. Kitten appeared in good health.
	K176	M	BCNP	10 Feb 2005	2 wks	1077	N	Gum pale, less vigorous than littermates.
	K177	F	BCNP	10 Feb 2005	2 wks	1021	N	No significant observations when handled. Kitten appeared in good health.
FP110	K178	M	OSSF	7 Mar 2005	12 days		Y	No significant observations when handled. Kitten appeared in good health. Minimal workup.
	K179	F	OSSF	7 Mar 2005	12 days		Y	No significant observations when handled. Kitten appeared in good health. Minimal workup.
FP107	K180	F	Private land	15 Mar 2005	2 wks	1400	Y	No significant observations when handled. Kitten appeared in good health. Later abandoned and removed to permanent captivity.
	K181	F	Private land	15 Mar 2005	2 wks	1400	N	No significant observations when handled. Kitten appeared in good health. Later abandoned and removed to permanent captivity.
FP129 ^b	K182	F	BCNP	6 Apr 2005	10 days	765		No significant observations when handled. Kitten appeared in good health. Minimal workup.
	K183	M	BCNP	6 Apr 2005	10 days	822		No significant observations when handled. Kitten appeared in good health. Minimal workup.
	K184	M	BCNP	6 Apr 2005	10 days	879		No significant observations when handled. Kitten appeared in good health. Minimal workup.
FP113	K185	M	FPNWR	20 Apr 2005	2 wks	1340	Y	No significant observations when handled. Kitten appeared in good health.
	K186	F	FPNWR	20 Apr 2005	2 wks	1340	Y	No significant observations when handled. Kitten appeared in good health.
FP116	K187	M	BCNP	19 Jun 2005	3 wks	900	Y	Smallest of litter. Lighter fur color.
	K188	F	BCNP	19 Jun 2005	3 wks	1640	N	No significant observations when handled. Kitten appeared in good health.
	K189	M	BCNP	19 Jun 2005	3 wks	1820	N	No significant observations when handled. Kitten appeared in good health.

^aBCNP = Big Cypress National Preserve; BCSIR = Big Cypress Seminole Indian Reservation; OSSF = Okaloacoochee Slough State Forest; FPNWR = Florida Panther National Wildlife Refuge.

^bKittens handled by BCNP personnel.

Table 3. Individual and mean hematological values for adult and juvenile Florida panthers captured by the Florida Fish and Wildlife Conservation Commission and National Park Service 1 July 2004 to 30 June 2005.

Cat ID ^a	Hb ^b g/dl	HCT ^c %	WBC ^d 10 ³ /μl	RBC ^e 10 ⁶ /μl	MCV ^f fl	MCH ^g pg	MCHC ^h g/dl	polys ⁱ /μl	polys %	bands ^j /μl	bands %	lymphs ^k /μl	lymphs %	monos ^l /μl	monos %	eos ^m /μl	eos %	basos ⁿ /μl	basos %
FP 48	10	33	6.8	6.7	49	15.4	31.4	3400	50	0	0	1360	20	680	10	680	10	0	0
FP 69	13	38	9	7.46	51	16.8	33	5490	61	0	0	2070	23	360	4	1080	12	0	0
FP 79 ^u	11	33	9.1	6.45	51	16.7	32.8	7098	78	0	0	1456	16	273	3	273	3	0	0
FP 104 ^u	12	37	9.7	7.63	48	16	33.1	7275	75	0	0	1746	18	485	5	97	1	97	1
FP 107	11	35	13.8	7.49	47	14.7	31.5	10212	74	0	0	3036	22	552	4	0	0	0	0
FP 119	11	37	19.5	7.58	49	14.8	30.2	16965	87	0	0	1950	10	390	2	195	1	0	0
FP 127 ^u	14	44	6.4	8.01	55	16.9	30.8	4736	74	0	0	1600	25	64	1	0	0	0	0
FP 130	10	31	9.5	6.93	44	14.6	32.9	7125	75	0	0	1425	15	475	5	475	5	0	0
FP 133	12	39	12.9	8.48	46	14.5	31.4	9417	73	0	0	2322	18	387	3	774	6	0	0
FP 134	8.7	27	10.4	6.13	44	14.2	32.6	7592	73	0	0	2080	20	520	5	208	2	0	0
FP 135	11	31	5.8	6.97	45	15.2	33.9	3944	68	0	0	1392	24	348	6	58	1	58	1
FP 136 ^u	12	40	4.8	7.36	54	16.4	30.6	3360	70	0	0	1008	21	192	4	240	5	0	0
FP 137	12	32	7.6	6.87	47	17.2	36.8	5244	69	0	0	1976	26	304	4	0	0	76	1
FP 138 ^u	11	30	15.9	6.59	46	16.1	35	13992	88	0	0	795	5	795	5	318	2	0	0
FP 139	11	37	9.2	7.4	50	14.9	29.8	6992	76	0	0	1840	20	276	3	92	1	0	0
Mean	11	35	10	7.20	48.4	15.6	32.39	7523	72.73	0	0	1737	18.87	407	4.27	299.3	3.27	15.4	0.2
STD	1.2	4.5	4	0.62	3.36	1.01	1.89	3843	9.21	0	0	551	5.64	186	2.05	321.3	3.69	32.72	0.41

^aFP denotes panthers captured for radiocollaring.

^bHb = hemoglobin; ^cHCT = hematocrit; ^dWBC = white blood cells; ^eRBC = red blood cells; ^fMCV = mean red cell volume; ^gMCH = mean red cell hemoglobin; ^hMCHC = mean red cell hemoglobin concentration; ⁱpolys = polymorphonucleocytes; ^jbands = band cells; ^klymphs = lymphocytes; ^lmonos = monocytes; ^meos = eosinophils; ⁿbasos = basophil

^uCaptured by National Park Service.

Table 4. Individual and mean serum biochemical values for adult and juvenile Florida panthers captured by the Florida Fish and Wildlife Conservation Commission and National Park Service 1 July 2004 to 30 June 2005.

Cat ID ^a	P4 ng/ml	BUN ^b mg/dl	creat ^c mg/dl	TP ^d g/dl	alb ^e g/dl	bili ^f mg/dl	ALP ^g u/l	ALT ^h u/l	AST ⁱ u/l	cho ^j mg/dl	Ca ^k mg/dl	P ^l mg/dl	Na ^m meq/ml	K ⁿ meq/ml	Cl ^o meq/ml	Glob ^p g/dl	trig ^q mg/dl	CPK ^r u/l	Mg ^s meq/ml	Osm. ^t mosm/l
FP 48	8.3	29	2.7	7	3	0	4	33	56	120	8.9	3.9	153	4.6	116	4.1	8	579	1.7	312
FP 69	2.3	31	2.7	8.3	4	0	8	50	71	130	11	7.9	153	4.8	110	4.6	25	813	2	309
FP 79 ^u		75	1.8	7.4	3	0	13	42	46	106	9.4	5.5	160	4.3	118	4	174	173	2.3	340
FP 104 ^u		31	2.7	7.1	4	0	10	48	75	137	10	5.1	159	4.9	120	3.4	24	1236	2.4	326
FP 107	6.3	39	2.6	8.3	4	0	<3	34	67	109	10	7.3	164	5.5	114	4.8	27	734	1.9	334
FP 119		26	2.8	7.6	3	0	5	33	116	100	8.8	4.2	153	4.8	120	4.3	13	4117	2	309
FP 127 ^u		27	2.7	8.3	4	0	15	53	53	156	10	6	151	5.1	106	4.2	22	854	2.7	311
FP 130		38	1.7	6.1	3	0	21	47	40	173	9.9	5.8	146	4	110	2.9	16	205	2.5	302
FP 133		45	2.8	8.3	4	0	10	117	210	143	9.6	6	145	5	116	4.8	22	1332	1.5	306
FP 134		28	1.8	7.3	3	0	7	20	36	127	9.7	7	154	4.8	114	3.9	22	430	1.9	313
FP 135		22	2	7.3	4	0	19	29	45	127	9.7	5.6	149	4.2	114	3.5	11	501	1.8	298
FP 136 ^u	2.9	56	2.4	7	3	0	22	215	465	119	10	6.1	168	5.9	124	3.9	80	965	2	355
FP 137		43	1.4	6.7	4	0	39	38	40	159	9.9	6.9	154	4	110	3.1	89	364	1.7	316
FP 138 ^u		34	1.9	6.9	3	0	10	96	126	123	8.9	5.9	155	4.1	114	3.8	30	760	1.9	317
FP 139		51	1.8	8.1	4	0	<3	35	46	141	11	5.9	160	4.7	114	4.1	24	352	3.2	330
Mean	5	38	2.25	7.45	3	0	13	59	99	131	9.8	5.9	155	4.7	115	4	39	894	2.1	318.5
STD	2.8	14	0.49	0.69	0	0	10	50	111	20	0.6	1.1	6.3	0.5	4.6	0.6	44	956	0.45	15.56

^aFP denotes panthers captured for radiocollaring.

^bBUN = blood urea nitrogen; ^ccreat = creatinine; ^dTP = total protein; ^ealb = albumin; ^fbili = bilirubin; ^gALP = alkaline phosphatase; ^hALT = alanine aminotransferase; ⁱAST = aspartate aminotransferase;

^jchol = cholesterol; ^kCa = calcium; ^lP = phosphorus; ^mNa = sodium; ⁿK = potassium; ^oCl = chloride; ^pGlob = globulin; ^qtrig = triglyceride; ^rCPK = creatine kinase; ^sMg = magnesium; ^tOsm = osmolality.

^uCaptured by National Park Service.

Table 5. Reciprocal antibody titers to feline panleukopenia virus (FPV), feline calicivirus (FCV), feline viral rhinotracheitis virus (FVR), and canine distemper virus, presence of antibody to feline immunodeficiency virus (FIV), presence of feline leukemia virus (FeLV) antigen (ag), and reciprocal antibody (ab) titers to FeLV in Florida panthers sampled in south Florida, 2004-2005 by the Florida Fish and Wildlife Conservation Commission and National Park Service.

Cat ID ^a	Previously Vaccinated	FPV	FCV	FVR	FIV (kela) ^{b,d}	FIV (wblot) ^{c,d}	FeLV (ELISA ag)	FeLV (ELISA ab)	Canine Distemper Virus
FP 48	Yes	160 (P)	24 (P)	8 (N)	P	P	N	0.227	8 (N)
FP 60 ^e	Yes	40 (P)	8192 (P)	8 (N)	E	P	N	0.219	16 (P)
FP 69	Yes	80 (P)	8 (P)	8 (N)	E	P	N	0.252	8 (N)
FP 79 ^f	Yes	320 (P)	24 (P)	8 (N)	E	P	N	0.176	8 (N)
FP 104 ^f	Yes	80 (P)	128 (P)	8 (N)	P	P	N	0.133	8 (N)
FP 107	Yes	320 (P)	48 (P)	8 (N)	E	P	N	0.230	512 (P)
FP 119	Yes	40 (P)	128 (P)	8 (N)	E	P	N	0.237	8 (N)
FP 120	Yes	320 (P)	16 (P)	8 (N)	E	P	N	0.206	8 (N)
FP 127 ^f	Yes	1280 (P)	256 (P)	8 (N)	E	P	N	0.196	8 (N)
FP 130	Yes	40 (P)	12 (P)	8 (N)	E	P	N	0.385	8 (N)
FP 133	No	320 (P)	8 (P)	8 (N)	E	P	N	0.214	8 (N)
FP 134	No	640 (P)	8 (P)	8 (N)	P	P	N	0.246	8 (N)
FP 135	No	1280 (P)	12 (P)	8 (N)	N	N	N	0.240	512 (P)
FP 136 ^f	No	160 (P)	8 (N)	8 (N)	N	N	N	0.207	8 (N)
FP 137	No	640 (P)	12 (P)	8 (N)	N	N	N	0.239	8 (N)
FP 138 ^f	No	640 (P)	8 (P)	8 (N)	P	P	N	0.212	8 (N)
FP 139	No	160 (P)	8 (N)	8 (N)	N	N	N	0.213	256 (P)

^a FP denotes panther captured for radiocollaring.

^b Presence of antibodies determined by ELISA.

^c Presence of antibodies determined by Western Blot.

^d P=positive, N=negative, E=equivocal.

^e Captured FY03-04 but not included in the 03-04 annual report.

^f Captured by the National Park Service.

Table 6. Hair (1996-2005) and blood (2004-2005) mercury concentrations (ppm) in adult or juvenile Florida panthers live-captured by the Florida Fish and Wildlife Conservation Commission and National Park Service 1 July 2004 – 30 June 2005.

Cat ID ^a	Date	Sex	Age (yr)	Location ^b	Hair 96-97	Hair 97-98	Hair 98-99	Hair 99-00	Hair 00-01	Hair 01-02	Hair 02-03	Hair 03-04	Hair 04-05	Blood 04-05
FP 48	2/18/05	F	13.25	BCNP-BI		1.5							1.3	0.067
FP 55 ^{c,d}	8/10/04	F	11.5	BCNP-TR	4.3			3.7			0.56		7.8	-
FP 59 ^d	11/27/04	M	9.42	FPNWR			4.3		0.69			2.2	1.6	-
FP 69	1/3/05	F	7.75	BICY-AL			3.7						5.5	0.27
FP 79 ^c	3/3/05	M	9.5	BCNP			2.1		1.2			1.1	2.7	0.10
FP 91 ^{c,d}	8/13/04	F	5.17	BCNP				0.81	30	11			17	-
FP 104 ^c	3/1/05	M	4	BCNP					0.32		1.3		3.6	0.34
FP 107	12/6/04	F	4.58	FPNWR						4.3			12	0.86
FP 117 ^d	7/29/04	M	2.08	Alico							0.71	0.52	0.40	-
FP 119	11/17/04	M	2.58	FPNWR							0.3		4.3	0.24
FP 120 ^d	7/14/04	F	4	BCNP							3.5		0.98	-
FP 123 ^d	8/16/04	M	4.5	Collier Co.								0.31	0.18	-
FP 126 ^c	5/28/04	M	1	BCNP								7.9	-	-
FP 127 ^c	3/29/05	M	3	BCNP								0.62	7.8	0.53
FP 130	3/10/05	M	1.83	Westby Ranch								0.59	1.1	0.035
FP 132 ^d	7/23/04	M	3.25	OKS								0.17	0.32	-
FP 133	11/18/04	M	4.5	BCNP-BI									4.9	0.42
FP 134	12/14/04	M	2.5	BCNP-AL									4.9	0.21
FP 135	12/17/04	M	1.67	FPNWR									5.9	0.23
FP 136 ^c	1/13/05	F	5	BCNP									0.74	0.047
FP 137	1/25/05	M	2.5	OKS									1.3	0.044
FP 138 ^c	1/31/05	M	4	BCNP-TR									2.3	0.098
FP 139	3/31/05	M	2.83	BCNP									1.0	0.035
UCFP 66 ^d	8/9/04	M	1.75	I-75									3.8	-
UCFP 67 ^d	10/22/04	F	0.003	FPNWR									12	-
UCFP 68 ^{c,d}	10/1/04	F?	4.5	BCNP									7.3	-
UCFP 69 ^d	11/6/04	F	2	SR 29									0.76	-

^aFP = Florida Panther, UCFP = Uncollared Florida Panther. ^bBCNP = Big Cypress National Preserve (AL = Addition Lands, BI = Bear Island Unit, ML = Monument Lake Unit, TR = Turner River Unit), BC-SIR = Big Cypress Seminole Indian Reservation, ENP = Everglades National Park, FPNWR = Florida Panther National Wildlife Refuge, OKS = Okaloacoochee Slough Wildlife Management Area, PSSP = Picayune Strand State Preserve, PL = Private Lands north of FPNWR and BCNP-BI. ^cCaptured/collected by National Park Service. ^dNecropsied. ^eNot included in last year's table.

Table 7. Survival to independence and established residency of radiocollared Florida panther and Texas puma descendant kittens in southern Florida, 1985-2005.

Cat ID	Sex	Capture Age (mo)	Capture Date	Live to Independence	Resident	Texas Genes	Birth Date	Loss Date	Loss Type	Loss Age	First Litter	Age at First Litter
FP10	M	5	1/15/1986	TRUE	FALSE	FALSE	8/15/1985	1/27/1987	AGGRESSION	1.5		
FP16	M	13	1/12/1987	TRUE	TRUE	FALSE	12/15/1985	1/3/2000	UNKNOWN	14.1		
FP19	F	9	2/9/1987	TRUE	TRUE	FALSE	5/15/1986	12/2/1997	OTHER	11.6	3/15/1988	1.8
FP22	F	5	3/18/1987	TRUE	TRUE	FALSE	10/15/1986	7/20/1991	OTHER	4.8		
FP29	M	6	1/3/1989	TRUE	TRUE	FALSE	5/15/1988	5/27/1992	OTHER	4.0		
FP30	M	9	1/6/1989	TRUE	FALSE	FALSE	3/15/1988	1/29/1990	AGGRESSION	1.9		
FP34	M	10	1/8/1990	TRUE	TRUE	FALSE	3/15/1989	11/15/1993	OTHER	4.7		
FP42	M	11	3/6/1990	TRUE	TRUE	FALSE	5/15/1989	6/22/1995	UNKNOWN	6.1		
FP43	M	9	5/1/1990	TRUE	FALSE	FALSE	7/15/1989	10/31/1991	AGGRESSION	2.3		
FP44	M	6	4/30/1991	TRUE	FALSE	FALSE	11/15/1990	7/6/1993	AGGRESSION	2.6		
FP45	M	6	5/8/1991	TRUE	TRUE	FALSE	11/15/1990	8/2/1998	AGGRESSION	7.7		
FP47	M	6	2/21/1992	TRUE	FALSE	FALSE	7/15/1991	2/19/1993	AGGRESSION	1.6		
FP48	F	4	2/24/1992	TRUE	TRUE	FALSE	10/15/1991				10/15/1993	2
FP50	M	8	3/4/1992	TRUE	FALSE	FALSE	5/15/1991	12/6/1993	VEHICLE	2.6		
FP52	F	6	5/5/1992	TRUE	TRUE	FALSE	10/15/1991	1/14/1995	VEHICLE	3.3	7/15/1993	1.8
FP53	M	10	2/10/1993	FALSE	FALSE	FALSE	4/15/1992	2/26/1993	AGGRESSION	0.9		
FP54	M	10	2/10/1993	TRUE	TRUE	FALSE	4/15/1992	10/23/2000	RADIOFAIL	8.5		
FP55	F	14	1/25/1994	TRUE	TRUE	FALSE	12/15/1992				4/15/1995	2.3
FP58	M	8	2/8/1995	TRUE	FALSE	FALSE	4/15/1994	3/30/1997	AGGRESSION	3.0		
FP59	M	6	1/4/1996	TRUE	TRUE	FALSE	6/15/1995	11/22/2004	AGGRESSION			
FP60	M	5	3/6/1996	TRUE	TRUE	FALSE	10/15/1995	6/29/2004	CAPTIVITY			
FP61	F	8	3/4/1997	TRUE	TRUE	TRUE	7/15/1996	6/6/2003	RADIOFAIL	6.9	3/15/1999	2.7
FP62	M	6	3/18/1997	TRUE	FALSE	FALSE	9/15/1996	7/24/2000	RADIOFAIL	3.9		
FP64	M	8	5/24/1997	TRUE	FALSE	FALSE	9/15/1996	3/26/1999	AGGRESSION	2.5		
FP65	M	11	11/19/1997	TRUE	TRUE	TRUE	12/15/1996					
FP66	F	12	12/9/1997	TRUE	TRUE	TRUE	12/15/1996	5/1/2000	RADIOFAIL	3.4	9/15/1998	1.8
FP67	F	8	1/19/1998	TRUE	TRUE	FALSE	6/15/1997	1/15/2003	AGGRESSION	5.6	8/15/2000	3.2
FP69	F	9	2/5/1998	TRUE	TRUE	FALSE	5/15/1997				7/15/1999	2.2
FP70	F	10	2/25/1998	TRUE	TRUE	TRUE	5/15/1997				6/15/1999	2.1
FP71	F	10	3/5/1998	TRUE	TRUE	TRUE	5/15/1997				6/15/1999	2.1
FP75	F	7	1/11/1999	TRUE	TRUE	FALSE	6/15/1998				3/15/2000	1.8

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Cat ID	Sex	Capture Age (mo)	Capture Date	Live to Independence	Resident	Texas Genes	Birth Date	Loss Date	Loss Type	Loss Age	First Litter	Age at First Litter
FP83	F	8	2/8/2000	TRUE	TRUE	TRUE	6/15/1999					
FP85	M	10	2/17/2000	TRUE	TRUE	TRUE	3/15/1999	3/1/2004	UNKNOWN			
FP86	F	8	2/21/2000	TRUE	TRUE	TRUE	6/15/1999	11/7/2003	SPINAL INJURY	4.4	4/15/2002	2.8
FP87	F	10	2/28/2000	TRUE	TRUE	TRUE	4/15/1999	6/20/2003	AGGRESSION	4.2	1/15/2001	1.8
FP88	F	9	3/2/2000	TRUE	TRUE	TRUE	6/15/1999				5/15/2001	1.9
FP90	M	9	3/8/2000	TRUE	FALSE	TRUE	6/15/1999	4/26/2001	VEHICLE	1.9		
FP91	F	9	3/17/2000	TRUE	TRUE	TRUE	6/15/1999	12/12/2003	AGGRESSION	4.5		
FP92	M	10	4/6/2000	TRUE	FALSE	TRUE	6/15/1999	9/15/2001	UNKNOWN	2.3		
FP93	F	14	4/10/2000	TRUE	TRUE	TRUE	2/15/1999				4/15/2002	3.2
FP94	F	10	5/1/2000	TRUE	TRUE	TRUE	7/15/1999					
FP96	M	9	1/7/2001	TRUE	FALSE	FALSE	4/15/2000	1/17/2002	AGGRESSION	1.8		
FP97	M	11	1/19/2001	TRUE	FALSE	FALSE	2/15/2000	12/2/2001	AGGRESSION	1.8		
FP99	M	11	1/26/2001	TRUE	TRUE	FALSE	2/15/2000	11/28/2002	VEHICLE	2.8		
FP103	F	7	3/13/2001	TRUE	TRUE	TRUE	8/15/2000					
FP104	M	7	4/2/2001	TRUE	TRUE	UNK	9/15/2000					
FP106	F	13	4/12/2001	TRUE	TRUE	FALSE	2/15/2000	2/20/2003	VEHICLE	3.0	5/15/2002	2.2
FP107	F	19	11/1/2001	TRUE	TRUE	FALSE	4/15/2000				6/15/2002	2.2
FP108	M	11	11/3/2001	TRUE	FALSE	TRUE	1/15/2001	11/16/2002	AGGRESSION	1.8		
FP113	F	6	10/23/2002	TRUE	TRUE	FALSE	4/15/2002				8/15/2004	2.3
FP114	M	6	10/23/2002	TRUE	FALSE	FALSE	4/15/2002	10/17/2003	AGGRESSION	1.5		
FP116	F	7	1/20/2003	TRUE	TRUE	TRUE	6/15/2002				4/15/2004	1.8
FP125	M	8	2/13/2004	TRUE	FALSE	UNK	6/1/2003	9/27/2004	RADIOFAIL			
FP126	M	8	2/13/2004	TRUE	FALSE	UNK	6/1/2003	1/1/2005	AGGRESSION			
FP130	M	9	3/4/2004	TRUE	FALSE	TRUE	5/15/2003					

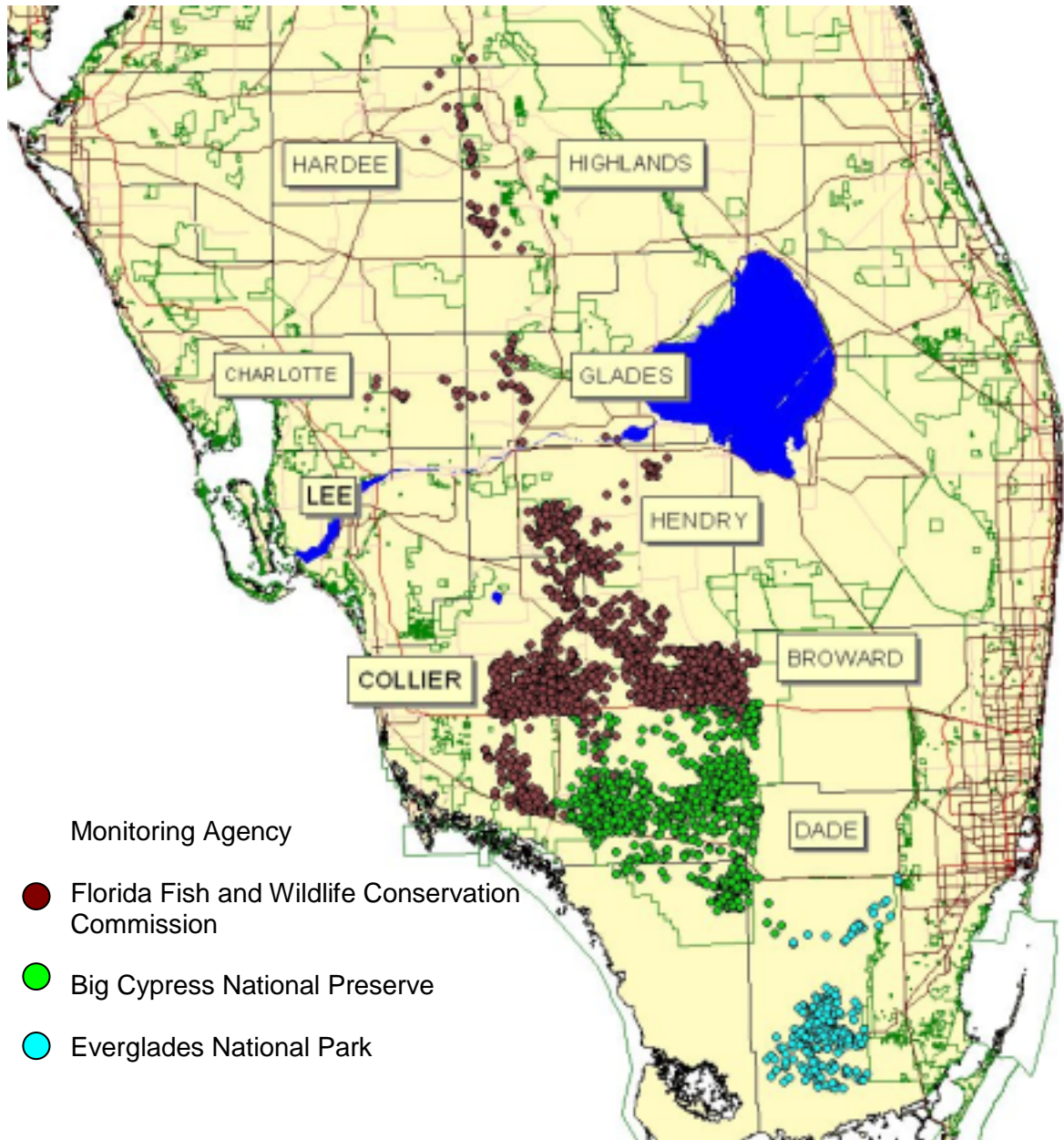
Table 8. Estimated annual survival rates (Heisey and Fuller 1985) for adult male Florida panthers in southern Florida based on radiocollared panthers from 1990-2004.

Year	No. of panthers	Radio-days	Total deaths	Mortality cause			Radio failure	Interval survival rate
				Aggression	Roadkill	Other		
1990	11	3044	4	1	1	2	0	0.698
1991	9	2977	1	1	0	0	0	0.885
1992	12	3847	2	1	0	1	0	0.827
1993	11	3270	4	2	1	1	0	0.640
1994	7	2324	2	2	0	0	0	0.730
1995	6	2152	0	0	0	0	0	1.000
1996	8	2860	0	0	0	0	0	1.000
1997	11	3171	1	1	0	0	0	0.891
1998	13	3966	3	2	1	0	0	0.759
1999	12	3530	4	3	1	0	0	0.661
2000	14	3353	5	2	1	2	1	0.646
2001	14	3986	3	1	1	1	0	0.833
2002	14	4209	5	3	2	0	1	0.648
2003	11	3248	2	2	0	0	0	0.799
2004	15	3720	4	0	0	4	0	0.675
<i>n</i>								15
Mean ± SD								0.779 ± 0.125
95% CI								0.716 ± 0.842

Table 9. Estimated annual survival rates (Heisey and Fuller 1985) for adult female Florida panthers in southern Florida based on radiocollared panthers from 1990-2004.

Year	No. of panthers	Radio-days	Total deaths	Mortality cause			Radio failure	Interval survival rate
				Aggression	Roadkill	Other		
1990	13	4374	2	2	0	0	0.846	
1991	11	3656	2	0	0	2	0.811	
1992	12	4158	0	0	0	0	1.000	
1993	12	4380	0	0	0	0	1.000	
1994	14	4599	2	0	1	1	0.853	
1995	13	4363	1	0	1	0	0.920	
1996	12	4392	0	0	0	0	1.000	
1997	14	4533	1	0	0	1	0.922	
1998	17	4990	2	1	0	1	0.864	
1999	17	5878	0	0	0	0	1.000	
2000	26	7675	2	0	1	1	0.909	
2001	27	8470	1	1	0	0	0.958	
2002	27	8473	5	3	0	2	0.806	
2003	28	7214	9	3	1	5	0.634	
2004	17	5810	2	1	0	1	0.882	
							<i>n</i>	15
							Mean ± SD	0.894 ± 0.099
							95% CI	0.841 to 0.949

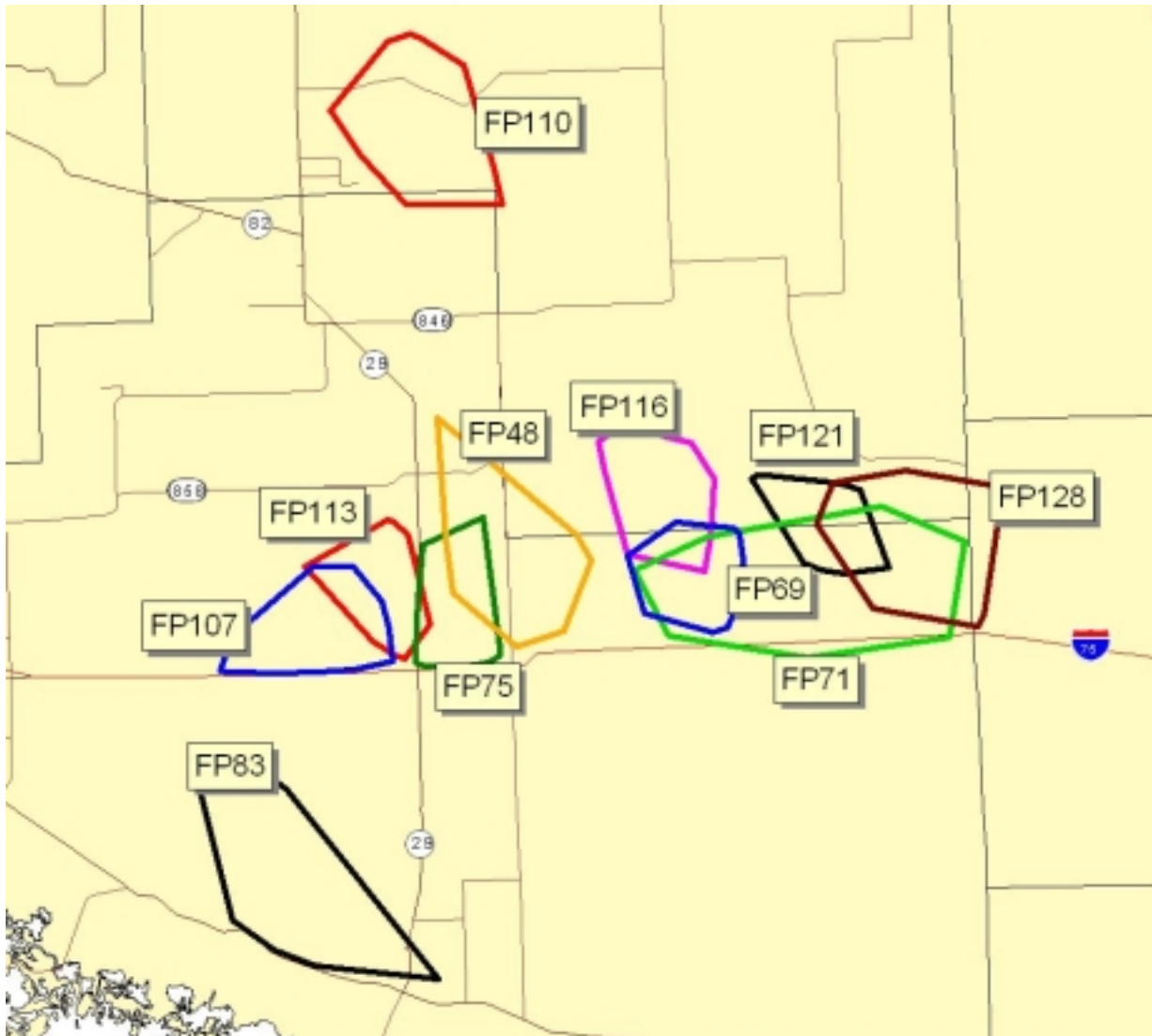
Locations of all Radiocollared Florida Panthers in Southern Florida 01 July 2004 – 30 June 2005



Appendix I, Figure 1

**Minimum Convex Polygon Home Ranges of Radiocollared Adult Female Florida Panthers
July 2004 - June 2005**

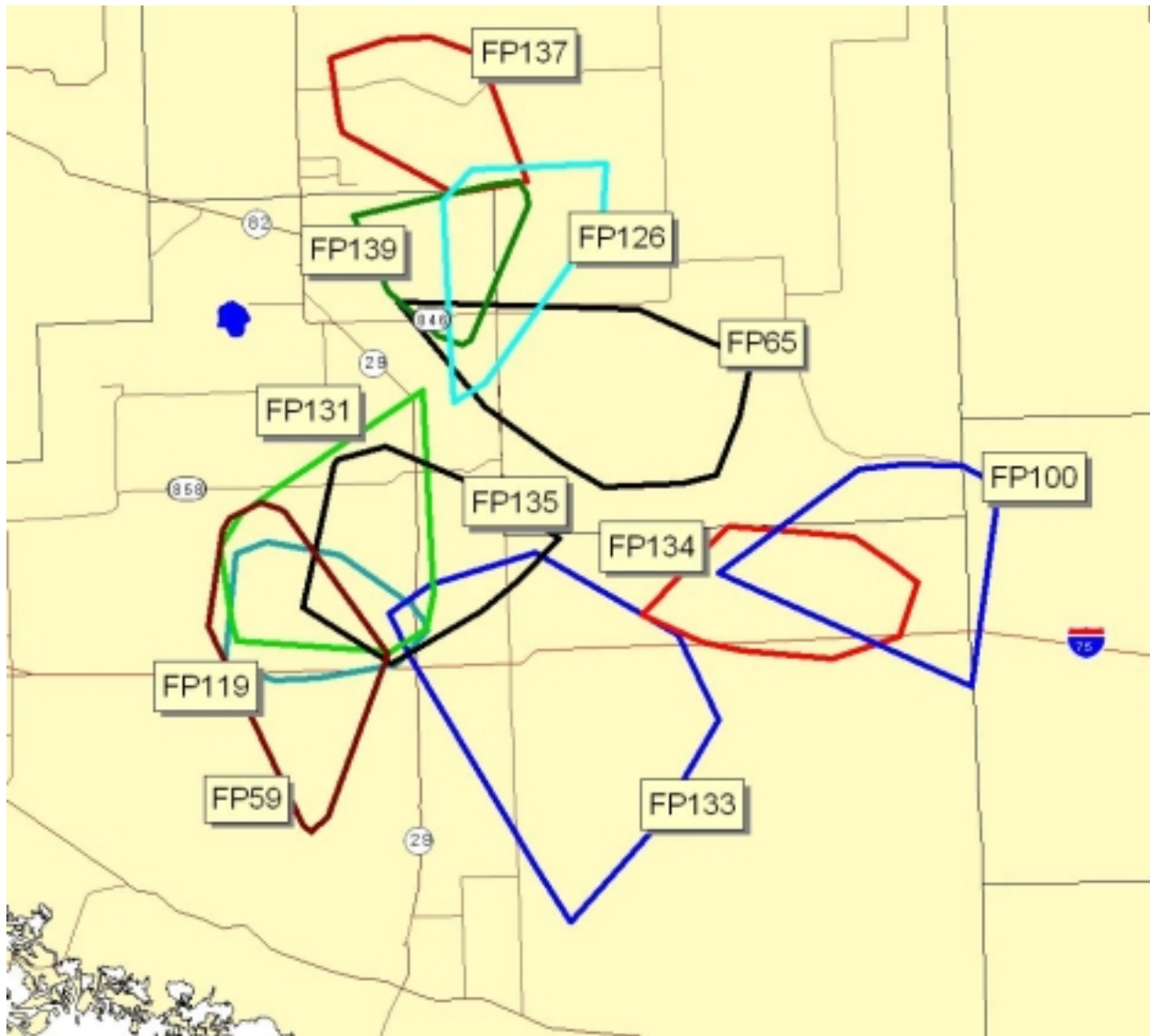
Panther	MCP (km ²)	Panther	MCP (km ²)
FP48	138.3	FP113	67.6
FP69	68.0	FP116	85.6
FP71	258.1	FP110	133.2
FP75	69.7	FP121	59.0
FP83	172.8	FP128	150.9
FP107	90.7		



Appendix I, Figure 2
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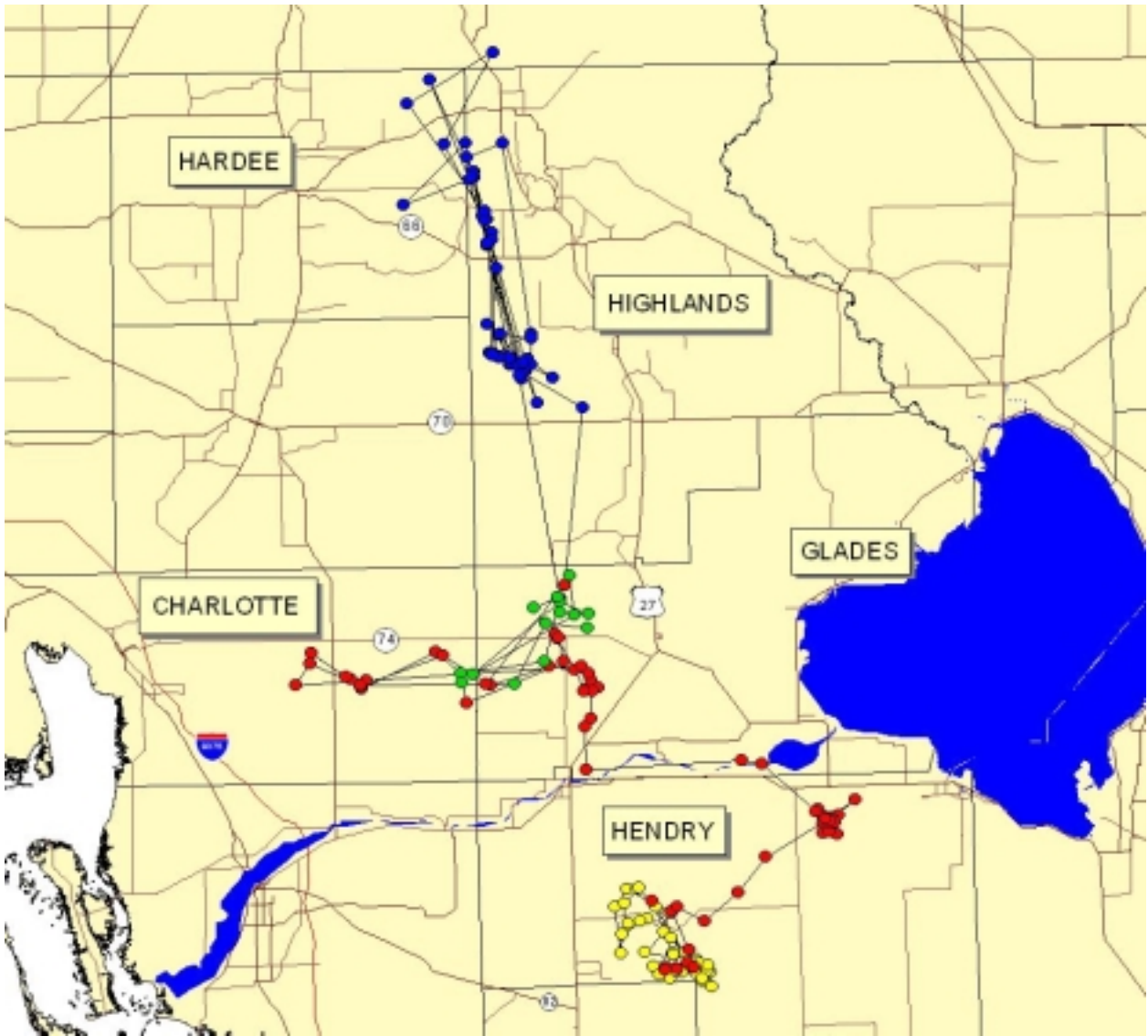
**Minimum Convex Polygon Home Ranges of Radiocollared Adult Male
Florida Panthers
01 July 2004 – 30 June 2005**





Panther	MCP (km ²)	Panther	MCP (km ²)
FP59	237.5	FP133	472.9
FP65	300.3	FP134	182.4
FP100	259.5	FP135	238.7
FP119	145.7	FP137	148.1
FP126	170.1	FP139	119.5
FP131	509.0		



Appendix I, Figure 3

**Natal Range and Dispersal Locations of Male Florida Panther FP130
05 March 2004 – 30 June 2005**



- | | |
|---|---|
|  Natal Range 3-5-04 to 5-26-04 |  11-24-04 to 5-04-05 |
|  5-27-04 to 11-23-04 |  05-05-05 to 6-31-05 |

Appendix I, Figure 4

Appendix II. List of radio-instrumented Florida panthers and Texas pumas in southern Florida from 10 February 1981 to 30 June 2005.

Data from FWC and BCNP.

Cat ID ^a	Sex	Capture Date	Age at First Capture	Birth Date	Dam	Sire	Use Area ^b	Death Date	Cause of Death
FP01	M	10 Feb 1981	10	-	-	-	Fakahatchee	14 Dec 1983	Vehicle (SR 84 mm 18)
FP02	M	20 Feb 1981	10	-	-	-	Fakahatchee	27 Nov 1984	Intraspecific aggression
FP03	F	23 Jan 1982	9	-	-	-	Fakahatchee	17 Jan 1983	Capture
FP04	M	27 Jan 1982	7-8	-	-	-	Fakahatchee	18 Apr 1985	Vehicle (SR 84 mm17)
FP05	F	23 Feb 1982	7-8	-	-	-	FPNWR	23 Nov 1982	Unknown
FP06	M	27 Feb 1982	6-8	-	-	-	Raccoon Pt. (North Swamp)	16 Apr 1982	Unknown
FP07	M	02 Mar 1982	6-7	-	-	-	Raccoon Pt.- Fakahatchee	26 Oct 1985	Vehicle (SR 29 C. prison)
FP08	F	25 Mar 1984	9-10	-	-	-	Fakahatchee	20 Aug 1988	Liver failure, old age
FP09	F	26 Jan 1985	3-4	-	-	-	Fakahatchee	-	-
FP10	M	15 Jan 1986	5 mo.	Aug 1985	FP09	-	GG Estates, Fakahatchee	27 Jan 1987	Intraspecific aggression
FP11	F	21 Jan 1986	4-5	-	-	-	Bear Island, Price's	25 Feb 2001	Intraspecific aggression
FP12	M	28 Jan 1986	5	-	-	-	Bear Is., FPNWR, FSSP	08 Nov 1994	Intraspecific aggression
FP13	M	27 Feb 1986	4-5	-	-	-	Bear Is. To Alico	14 Dec 1987	Vehicle (SR 29 Sunniland)
FP14	F	07 Dec 1986	5-6	-	-	-	Everglades	21 Jun 1991	unknown
FP15	F	13 Dec 1986	5-6	-	-	-	Everglades	10 Jun 1988	unknown
FP16	M	12 Jan 1987	12-14 mo.	-	FP14	-	Everglades to Stairsteps	3 Jan 2000	Unknown
FP17	M	20 Jan 1987	6-7	-	-	-	Gum Swamp to Nobles	20 Jul 1990	Unknown
FP18	F	22 Jan 1987	7-8	-	-	-	Gum Swamp, Scofields, BCSIR	01 Oct 1990	Intraspecific aggression
FP19	F	09 Feb 1987	9 mo.	May 1986	FP11	FP12	Bear Is., Prices, FPNWR	02 Dec 1997	Aortic aneurysm
FP20	M	10 Mar 1987	3-4	-	-	-	Alico to Bear Island	24 Aug 1988	Heart defect

Cat ID^a	Sex	Capture Date	Age at First Capture	Birth Date	Dam	Sire	Use Area^b	Death Date	Cause of Death
FP21	F	16 Mar 1987	12-14 mo.	-	FP14	-	Everglades/White Oak	26 Dec 1997	Euthanasia
FP22	F	18 Mar 1987	5-6 mo.	-	FP15	-	Everglades	20 Jul 1991	Infection
FP23	F	18 Mar 1987	5-6 mo.	-	FP15	-	ENP, SBCNP	25-26 Nov 2000	Unknown
FP24	M	30 Jan 1988	3-4	-	-	-	Highlands Co.	22 Aug 1988	Unknown
FP25	M	16 Feb 1988	4-5	-	-	-	FPNWR	26 Aug 1988	Intraspecific aggression
FP26	M	01 Mar 1988	5-6	-	-	-	BCSIR, NBCNP	08 Jul 1994	Intraspecific aggression
FP27	F	11 Apr 1988	2-3	-	-	-	Everglades	23 Jul 1989	Unknown
FP28	M	29 Nov 1988	1.5	-	-	-	Ft. Myers, Lake Hicpochee, Gum Swamp to Nobles	25 Sep 1992	Intraspecific aggression
FP29	M	03 Jan 1989	6.5 mo.	May 1988	FP11	FP20	Bear Island, Gum Swamp	27 May 1992	Pseudorabies
FP30	M	06 Jan 1989	9 mo.	Mar 1988	FP19	FP13	Bear Is., Prices, FPNWR, FSSP	29 Jan 1990	Intraspecific aggression
FP31	F	12 Jan 1989	7-9	-	-	-	FPNWR	03 Mar 1994	Vehicle (SR 29 Sunniland)
FP32	F	03 Feb 1989	2-2.5	-	-	-	FPNWR	12 Sep 2002	Unknown (old age?)
FP33	M	05 Mar 1989	1.5-2	-	-	-	Loop Rd. to Gum Swamp	23 Nov 1989	Rabies
FP34	M	08 Jan 1990	10 mo.	Mar 1989	FP31	FP12	FPNWR, BCSIR, Gum Swamp	15 Nov 1993	Esophageal puncture
FP35	M	15 Jan 1990	10 mo.	Mar 1989	FP31	FP12	Regency Farms	24 Jan 1990	Bacterial infection from capture
FP36	F	27 Jan 1990	4-5	-	-	-	Nobles	10 Oct 1998	Unknown natural causes
FP37	M	30 Jan 1990	3-4	-	-	-	FSSP, FPNWR, Bear Is.	26 Nov 1990	Vehicle (SR 29 Miles City)
FP38	F	08 Feb 1990	4.5	-	-	-	Raccoon Pt., Cons. Area 3a	04 Aug 1994	pleuritis in chest
FP39	M	19 Feb 1990	3-4	-	-	-	ENP	18 May 1990	Pyrothorax
FP40	F	26 Feb 1990	1.5-2	-	-	-	Nobles, Bear Island	01 Feb 1998	Intraspecific aggression
FP41	F	28 Feb 1990	1.5-2	-	-	-	Nobles, BCSIR	22 Sep 1990	Intraspecific aggression
FP42	M	06 Mar 1990	11 mo.	May 1989	FP14	FP16	Everglades, Raccoon Pt.	22 Jun 1995	Unknown
FP43	M	01 May 1990	9.5 mo.	Jul 1989	FP19	FP12	FPNWR, Nobles	31 Oct 1991	Intraspecific aggression

Cat ID ^a	Sex	Capture Date	Age at First Capture	Birth Date	Dam	Sire	Use Area ^b	Death Date	Cause of Death
FP44	M	30 Apr 1991	6 mo.	Nov 1990	FP40	FP26	Bakers, Naples, ENP, SBCNP	06 Jul 1993	Intraspecific aggression
FP45	M	08 May 1991	6 mo.	Nov 1990	FP19	FP12	FPNWR, NBCNP, BCSIR	02 Aug 1998	Intraspecific aggression
FP46	M	30 Jan 1992	2-2.5	-	-	-	Bear Island, Gum Swamp, Okaloacoochee Slough	03 Feb 1999	Intraspecific aggression
FP47	M	21 Feb 1992	6 mo.	Jul 1991	FP11	FP12	Bear Island, Belle Meade, FSSP	19 Feb 1993	Intraspecific aggression
FP48	F	24 Feb 1992	4 mo.	Oct 1991	FP31	FP12	NBCNP	-	-
FP49	F	25 Feb 1992	2	-	-	-	NBCNP	03 Jan 2002	Intraspecific aggression
FP50	M	04 Mar 1992	8 mo.	May 1991	FP36	FP26	Nobles, Alico, Devils Garden	06 Dec 1993	Vehicle (CR 846 5 mi E of Immokalee)
FP51	M	26 Mar 1992	3	-	-	-	FSSP, FPNWR	17 Jul 1998	Vehicle (SR 29)
FP52	F	05 May 1992	6 mo.	Oct 1991	FP31	FP12	FPNWR, Sadie Cypress	14 Jan 1995	vehicle (CR 846 & Dupree Rd)
FP53	M	10 Feb 1993	10 mo.	Apr 1992	FP19	FP12	FPNWR	26 Feb 1993	Intraspecific aggression
FP54	M	10 Feb 1993	10 mo.	Apr 1992	FP40	-	FSSP, FPNWR	-	-
FP55	F	25 Jan 1994	2 yrs.	Dec 1992	FP23	FP42	SBCNP	12 July 2004	Intraspecific aggression
FP56	F	03 Feb 1994	2-3	-	-	-	NBCNP	-	-
FP57	F	31 Jan 1995	3	-	-	-	FPNWR, FSSP	-	-
FP58	M	08 Feb 1995	8 mo.	Apr 1994	FP56	-	NBCNP, FPNWR, FSSP	30 Mar 1997	Intraspecific aggression
FP59	M	04 Jan 1996	6 mo.	Jun 1995	FP48	-	NBCNP, FPNWR, FSSP	22 Nov 2004	Intraspecific aggression
FP60	M	06 Mar 1996	5 mo.	Oct 1995	FP40	-	NBCNP, FSSP, FPNWR, Turner River	-	-
TX101	F	05 Apr 1995	-	-	-	-	BCSIR	29 Mar 2000	Unknown
TX102	F	05 Apr 1995	-	-	-	-	E. Hendry County	22 Sep 1995	Vehicle (CR833 5 mi. N BCSIR)
TX103	F	04 May 1995	-	-	-	-	SBCNP	19 Aug 1999	Metabolic complications from pregnancy
TX104	F	24 Mar 1995	-	-	-	-	Fakahatchee Strand, Belle Meade	18 Apr 1998	Gunshot
TX105	F	05 Jul 1995	-	-	-	-	ENP	-	Removed from wild 1/27/2003
TX106	F	09 Apr 1995	-	-	-	-	PSSF, FPNWR, FSSP	-	Removed from wild 1/8/2003

Cat ID ^a	Sex	Capture Date	Age at First Capture	Birth Date	Dam	Sire	Use Area ^b	Death Date	Cause of Death
TX107	F	04 May 1995	-	-	-	-	SBCNP	18 Jan 2001	Pneumonia
TX108	F	26 Jul 1995	-	-	-	-	ENP	-	Removed from wild 11/18/2003
FP61	F	04 Mar 1997	8 mo.	Jul 1996	TX108	FP16	ENP	-	-
FP62	M	18 Mar 1997	6.5 mo.	Sep 1996	FP48	-	Catfish Creek, Polk Co.	-	-
FP63	M	13 Apr 1997	2	-	-	-	BCSIR, NBCNP, Private Lands	15 Jan 2000	Vehicular trauma / Drowning
FP64	M	24 May 1997	8 mo.	Sep 1996	FP48	-	Corkscrew Marsh	26 Mar 1999	Intraspecific aggression
FP65	M	19 Nov 1997	11 mo.	Dec 1996	TX101	FP45	Okaloacoochee Slough	-	-
FP66	F	09 Dec 1997	1	Dec 1996	TX101	FP45	Belle Meade, FPNWR, Private Lands	-	-
FP67	F	19 Jan 1998	8 mo.	Jun 1997	FP56	FP45	BCSIR, Private Lands	15 Jan 2003	Intraspecific aggression (FP65)
FP68	M	23 Jan 1998	4.5	-	-	-	NBCNP	01 Mar 2000	Unknown (likely intraspecific aggression)
FP69	F	05 Feb 1998	9 mo.	May 1997	FP40	FP45	NBCNP	-	-
FP70	F	25 Feb 1998	10 mo.	May 1997	TX107	-	SBCNP	-	-
FP71	F	05 Mar 1998	10 mo.	May 1997	TX107	-	SBCNP	-	-
FP72	M	24 Apr 1998	2.5	-	-	-	BCSIR	23 Dec 1998	Intraspecific aggression
FP73	F	12 Nov 1998	3	Sep 1995	TX101	-	BCSIR	27 June 2003	Unknown
FP74	M	12 Nov 1998	1.5	-	FP73 _{F1}	-	Fisheating Creek, Glades and Highlands Co.	08 Sep 1999	Vehicle (SR 27 north of Palmdale)
FP75	F	11 Jan 1999	7 mo.	Jun 1998	FP48	FP68	NBCNP	-	-
FP76	M	13 Jan 1999	22 mo.	-	-	-	FPNWR, SBCNP	13 Nov 1999	Intraspecific aggression (FP54)
FP77	F	22 Jan 1999	1.5-2	-	-	-	NBCNP, BCSIR	12 July 2003	Unknown
FP78	F	16 Feb 1999	2.0	-	-	-	FPNWR	17 Oct 2002	Intraspecific aggression
FP79	M	03 Mar 1999	3.5	Sep 1995	TX101	-	BCNP	-	-
FP80	F	14 Jan 2000	4.0	-	-	-	BCSIR	10 Feb 2000	Vehicle (BCSIR)
FP81	M	14 Jan 2000	4.0	-	-	-	BCSIR, Hendry Co. private lands	-	-

Cat ID ^a	Sex	Capture Date	Age at First Capture	Birth Date	Dam	Sire	Use Area ^b	Death Date	Cause of Death
FP82	F	25 Jan 2000	3.0	-	-	-	Okaloacoochee Slough	9 May 2003	Unknown (possible IA)
FP83	F	08 Feb 2000	8 mo.	Jun 1999	TX106	FP54	FSSP	-	-
FP84	M	11 Feb 2000	1.0	-	FP73	-	Dispersed from BCSIR to Fisheating Creek	20 Apr 2000	Unknown
FP85	M	17 Feb 2000	10-11 mo.	Mar 1999	FP61	FP16	ENP	1 Mar 2004	Unknown
FP86	F	21 Feb 2000	8 mo.	Jun 1999	FP71	FP79	SBCNP	7 Nov 2003	Spinal trauma
FP87	F	28 Feb 2000	10 mo.	Apr 1999	FP55	FP79	SBCNP	19 Jun 2003	Intraspecific aggression
FP88	F	02 Mar 2000	9 mo.	Jun 1999	FP70	FP79	SBCNP	-	-
FP89	M	02 Mar 2000	2.5	-	-	-	SBCNP	9 Nov 2000	Intraspecific aggression
FP90	M	08 Mar 2000	9 mo.	Jun 1999	FP71	FP79	SBCNP	26 April 2001	Vehicle (US27 Terrytown)
FP91	F	17 Mar 2000	9 mo.	Jun 1999	FP70	FP79	SBCNP	12 Dec 2003	Intraspecific aggression
FP92	M	06 Apr 2000	10 mo.	Jun 1999	FP70	FP79	SBCNP	Sep 2001	Unknown
FP93	F	10 Apr 2000	14 mo.	Feb 1999	TX107	FP79	SBCNP	-	-
FP94	F	01 May 2000	10 mo.	Jul 1999	TX105	FP16	ENP	-	-
FP95	F	07 Nov 2000	2.8 yrs.	Nov 1998	TX108	FP16	ENP	-	-
FP96	M	07 Jan 2001	9 mo.	Apr 2000	FP78	FP59	FPNWR	17 Jan 2002	Intraspecific aggression
FP97	M	19 Jan 2001	11 mo.	-	FP105	-	FPNWR	2 Dec 2001	Intraspecific aggression
FP98	M	25 Jan 2001	3	-	-	-	Bear Island, Hendry Co. private lands	1 July 2002	Vehicle (SR29 N of Pistol Pond)
FP99	M	26 Jan 2001	11 mo.	-	FP105	-	FPNWR	28 Nov 2002	Vehicle (CR846 Collier fairgrounds)
FP100	M	31 Jan 2001	4	-	-	-	NBCNP, BCSIR	-	-
FP101	F	5 Feb 2001	2	-	-	-	NBCNP, BCSIR	-	-
FP102	F	20 Feb 2001	3	Feb 1998	FP55	-	Turner River	-	-
FP103	F	13 Mar 2001	7 mo.	Aug 2000	FP102	-	BCNP-Sandy Road	-	-
FP104	M	2 Apr 2001	6-7 mo.	-	-	-	Turner River	-	-

Cat ID ^a	Sex	Capture Date	Age at First Capture	Birth Date	Dam	Sire	Use Area ^b	Death Date	Cause of Death
FP105	F	12 Apr 2001	6	-	-	-	FPNWR	1/15/2002	Unknown
FP106	F	12 Apr 2001	13 mo.	-	FP105	-	FPNWR	20 Feb 2003	Vehicle (SR29 Sunniland)
FP107	F	01 Nov 2001	19 mo.	Apr 2000	FP78	FP59	FPNWR	-	-
FP108	M	03 Nov 2001	11 mo.	Jan 2001	FP87	FP79	BCNP-N of Oasis	16 Nov 2002	Intraspecific aggression
FP109	M	10 Feb 2002	10+	-	-	-	OK Slough	~23 Feb 2003	Unknown
FP110	F	13 Feb 2002	13 mo.	Dec 2000	FP82	FP65	OK Slough	-	-
FP111	M	14 Feb 2002	10	-	-	-	OK Slough	4 Sep 2002	Intraspecific aggression
FP112	F	25 Feb 2002	3-4	-	-	-	Bear Island	11 Sep 2002	Intraspecific aggression
FP113	F	23 Oct 2002	6 mo.	Apr 2002	FP78	FP59	FPNWR, White Oak	-	-
FP114	M	23 Oct 2002	6 mo.	Apr 2002	FP78	FP59	FPNWR, White Oak	17 Oct 2003	Intraspecific aggression
FP115	F	26 Nov 2002	4-5	-	-	-	OK Slough	17 May 2003	Pneumonia (FeLV positive)
FP116	F	20 Jan 2003	7 mo.	Jun 2002	FP67	-	Hendry Co. private lands	-	-
FP117	M	25 Feb 2003	11 mo.	-	-	-	BCSIR Game Pen	28 Jul 2004	Unknown
FP118	F	5 Mar 2003	11 mo.	-	-	-	BCSIR Game Pen	3 Apr 2003	Unknown
FP119	M	2 Apr 2003	1	Apr 2002	FP93	FP79	BCNP – East Crossing Strand	-	-
FP120	F	8 Apr 2003	3	-	-	-	BCNP – W Turner River Rd.	7 May 2005	Vehicle (US 41 Turner River)
FP121	F	2 Dec 2003	2.5	-	-	-	BCSIR	-	-
FP122	F	30 Jan 2004	2-2.5	-	-	-	OK Slough	13 Feb 2004	Pneumonia/feline leukemia
FP123	M	2 Feb 2004	3.5	-	-	-	OK Slough	15 Mar 2004	Intraspecific aggression
FP124	F	13 Feb 2004	3-4	-	-	-	Loop Road, BCNP	-	-
FP125	M	13 Feb 2004	8 mo.	-	FP124	-	Loop Road, BCNP	-	-
FP126	M	13 Feb 2004	8 mo.	-	FP124	-	Loop Road, BCNP, OK Slough	1 Jan 2005	Intraspecific aggression
FP127	M	16 Feb 2004	2	-	-	-	Turner River Rd., BCNP	-	-

Cat ID ^a	Sex	Capture Date	Age at First Capture	Birth Date	Dam	Sire	Use Area ^b	Death Date	Cause of Death
FP128	F	18 Feb 2004	3.7	Jun 2000	FP77	-	BCSIR/Add Lands	-	-
FP129	F	20 Feb 2004	3	Jan 2001	FP87	FP79	Raccoon Point, BCNP	-	-
FP130	M	4 Mar 2004	9.5 mo.	May 2003	FP110	-	OK Slough	-	-
FP131	M	10 Mar 2004	5	-	-	-	FPNWR	-	-
FP132	M	17 Mar 2004	3	-	-	-	OK Slough/Dinner Island	22 Jul 2004	Feline leukemia
FP133	M	18 Nov 2004	4.5	-	-	-	Bear Island, Deep Lake, Turner River	-	-
FP134	M	14 Dec 2004	2.5	-	-	-	Addition Lands	-	-
FP135	M	17 Dec 2004	1.7	Apr 2003	FP101	FP65	FPNWR/private lands	-	-
FP136	F	13 Jan 2005	3.5	-	-	-	BCNP	13 Jun 2005	Spinal fracture
FP137	M	25 Jan 2005	2.5	-	-	-	OK Slough/private lands	-	-
FP138	M	31 Jan 2005	4	-	-	-	BCNP/BCSIR	-	-
FP139	M	31 Mar 2005	2.9	May 2002	FP75	FP100	OK Slough/private lands	-	-

^aFP denotes panthers captured for radiocollaring.

^bENP = Everglades National Park; BCSIR = Big Cypress Seminole Indian Reservation; PSSF = Picayune Strand State Forest; FPNWR = Florida Panther National Wildlife Refuge; OSSF = Okaloacoochee Slough State Forest; NBCNP = Big Cypress National Preserve north of Interstate 75; FSSP = Fakahatchee Strand State Preserve; SBCNP = Big Cypress National Preserve south of Interstate 75.

Appendix III. List of panther kittens, including Texas intercrosses, handled at dens by FWC and BCNP from 1992-June 2005.

Female #	Kitten #	Sex	Transponder #	Date Marked	Age in Days	Sire	Date Collared	Eventual Panther #	Alive or Dead	Kinked tail at birth	Kinked tail at > 6 mo
FP40	K01	M	not marked	4/7/1992	14-21	FP28	2/10/1993	FP54	a	U	Y
FP40	K02	M	not marked	4/7/1992	14-21	FP28			u	U	
FP40	K03	M	not marked	6/18/1993	21	FP26			u	N	
FP40	K04	F	not marked	6/18/1993	21	FP26			u	N	
FP40	K05	F	not marked	6/18/1993	21	FP26			u	N	
FP48	K06	M	not marked	10/30/1993	8	FP12			u	U	
FP48	K07	F	not marked	10/30/1993	8	FP12			u	U	
FP48	K08	F	not marked	10/30/1993	8	FP12			u	U	
FP56	K09	M	not marked	4/21/1994	14	unknown			u	Y	
FP56	K10	F	not marked	4/21/1994	14	unknown			u	Y	
FP56	K11	M	not marked	4/21/1994	14	unknown			u	N	
FP19	K12	F	not marked	5/17/1994	14-17	FP51			u	N	
FP19	K13	F	not marked	5/17/1994	14-17	FP51			u	N	
FP55	K14	F	not marked	4/8/1995	12	FP42			u	N	
FP55	K15	F	not marked	4/8/1995	12	FP42			u	N	
FP48	K16	M	12A4640	6/20/1995	12	unknown	1/7/1996	FP59	A	Y	N
FP48	K17	F	129FE45	6/20/1995	12	unknown			u	Y	
TX101	K18	F	F82665	10/10/1995	21	unknown	11/12/1998	FP73	A	N	N
TX101	K19	M	F79CB9	10/10/1995	21	unknown	3/3/1999	FP79	A	N	N
FP56	K20	M	762141	10/31/1995	14	FP45			d	Y	
FP56	K21	M	632448	10/31/1995	14	FP45			d	Y	
FP56	K22	M	F6642F	10/31/1995	14	FP45			d	Y	
TX106	K23	F	11DFD74	12/1/1995	21	FP51			u	N	
FP36	K24	F	12AB55F	2/6/1996	14	FP45			u	Y	
FP36	K25	M	1147C9B	2/6/1996	14	FP45			u	Y	
FP36	K26	M	11DF0DA	2/6/1996	14	FP45			u	Y	
FP19	K27	F	114DAFE (11363DC)	4/17/1996	24	FP54/FP51			u	Y	
FP19	K28	F	11EOD50	4/17/1996	24	FP54/FP51			u	Y	
FP56	K29	F?	11EAB72T	8/14/1996	14	FP45			d	Y	
FP56	K30	F?	1142876	8/14/1996	14	FP45			d	Y	
FP48	K31	M	7037C2	9/18/1996	14-17	unknown	3/18/1997	FP62	a	N	Y
FP48	K32	M	11EA2EC	9/18/1996	14-17	unknown	5/24/1997	FP64	D	Y	Y

Female #	Kitten #	Sex	Transponder #	Date Marked	Age in Days	Sire	Date Collared	Eventual Panther #	Alive or Dead	Kinked tail at birth	Kinked tail at > 6 mo
FP48	K33	M	6FFD52	9/18/1996	14-17	unknown		UCFP50	D	Y	U
TX105	K34	F	11EAO30T	10/4/1996	30-35	FP16			u	N	
TX101	K35	M	12AFFBF	12/21/1996	4	FP45	11/19/1997	FP65	A	N	N
TX101	K36	F	142581A	12/21/1996	4	FP45	12/9/1997	FP66	a	N	N
FP40	K37	M	1146911	5/14/1997	21	FP45			u	N	
TX107	K38	F	1311B3B	6/4/1997	30+	unknown	3/5/1998	FP71	a	N	N
TX107	K39	F	771B4D	6/4/1997	30+	unknown	2/25/1998	FP70	a	N	N
FP56	K40	M	1412E16	6/17/1997	25-28	FP45			u	Y	
FP56	K41	F	14259BF	6/17/1997	25-28	FP45			d	Y	
FP56	K42	F	1425A07	6/17/1997	25-28	FP45	1/19/1998	FP67	A	N	N
FP56	K43	M	12C2B93	6/17/1997	25-28	FP45			u	Y	
FP55	K44	M	12A9E4AT	10/2/1997	25-30	unknown			u	N	
TX108	K45	F	1D1DFDOT	2/11/1998	21	FP16	11/7/2000	FP95	A	N	N
TX108	K46	M	143E96ET	2/11/1998	21	FP16			u	N	
TX106	K47	M	1D3E32OT	2/17/1998	7-10	FP54			d	N	
FP55	K48	F	121134F	2/25/1998	14	unknown	2/20/2001	FP102	A	N	N
FP55	K49	F	1D2B3AET	2/25/1998	14	unknown			u	N	
FP55	K50	M	12A94A6T	2/25/1998	14	unknown			u	N	
FP48	K51	M	1D2A504T	6/27/1998	28	unknown			u	Y	
FP66	K52	M	1D21638T	10/2/1998	12	FP72			d	N	
FP66	K53	F	1C49E48T	10/2/1998	12	FP72			d	N	
FP66	K54	M	1D2CBC3T	10/2/1998	12	FP72			d	N	
FP49	K55	M	1211046	2/23/1999	25	unknown			d	N	
TX107	K56	F	1327679T	3/11/1999	21+	FP79			u	N	
TX107	K57	M	14245FOT	3/11/1999	21+	FP79			u	N	
TX107	K58	F	12A9FE5T	3/11/1999	21+	FP79	4/10/2000	FP93	A	N	N
FP61	K59	M	1EFF6EFT	4/6/1999	14	FP16	1/17/2000	FP85	A	N	N
FP55	K60	F	1EFFA75T	5/10/1999	24-26	FP79	2/28/2000	FP87	A	N	N
FP55	K61	M	1EFF978T	5/10/1999	24-26	FP79			u	Y	
TX106	K62	F	114C9D7T	6/18/1999	14	FP54/FP60			D	N	
TX106	K63	F	12AFC11T	6/18/1999	14	FP54/FP60	2/8/2000	FP83	A	N	N
FP70	K64	F	1E2EB33T	6/23/1999	10-12	FP79	3/2/2000	FP88	A	N	N
FP70	K65	M	703A4AT	6/23/1999	10-12	FP79	4/6/2000	FP92	A	N	N

Female #	Kitten #	Sex	Transponder #	Date Marked	Age in Days	Sire	Date Collared	Eventual Panther #	Alive or Dead	Kinked tail at birth	Kinked tail at > 6 mo
FP70	K66	F	1EFFF55T	6/23/1999	10-12	FP79	3/17/2000	FP91	A	N	N
FP71	K67	M	1E2EBFET	7/4/1999	17	FP79	3/8/2000	FP90	D	N	N
FP71	K68	F	20509A9T	7/4/1999	17	FP79	2/21/2000	FP86	A	N	N
FP71	K69	M	1E2F6B7T	7/4/1999	17	FP79			d	N	
FP71	K70	F	1E2DF2BT	7/4/1999	17	FP79			a	N	
FP69	K71	M	1E2F276T	8/1/1999	7	unknown			u	Y	
FP69	K72	F	1F07255T	8/1/1999	7	unknown			u	N	
FP69	K73	F	1FO14C2T	8/1/1999	7	unknown			u	N	
FP48	K74	F	1EFFF38T	10/25/1999	14-17	FP63,FP68			d	N	
FP48	K75	F	1FO1BEDT	10/25/1999	14-17	FP63,FP68			d	U	
FP66	K76	M	1D2C5F6T	12/24/1999	14	FP60			D	N	
FP66	K77	F	1F00067T	12/24/1999	14	FP60			u	N	
FP66	K78	F	1E2F2D6T	12/24/1999	14	FP60			u	N	
FP78	K79	F	1D1CDD8T	4/26/2000	10-14	FP59	11/1/2001	FP107	A	Y	Y
FP78	K80	M	1F07DD7T	4/26/2000	10-14	FP59	1/7/2001	FP96	A	Y	Y
FP77	K81	M	1D3B75CT	6/27/2000	28	?			u	N	
FP77	K82	F	1433F77T	6/27/2000	28	?	2/18/2004	FP128	A	N	N
FP77	K83	M	1D3A078T	6/27/2000	28	?			u	N	
FP67	K84	M	143F34DT	8/19/2000	12	?			d	Y	
FP67	K85	F	1E2E834T	8/19/2000	12	?			d	N	
FP82	K86	F	1E2F17ET	1/3/2001	14	FP65	2/13/2002	FP110	A	N	N
FP82	K87	F	1E2EFB7T	1/3/2001	14	FP65			u	Y	
FP82	K88	M	1F00D57T	1/3/2001	14	FP65			u	N	
FP87	K89	F	20501C5T	2/7/2001	14-21	FP79	2/20/2004	FP129	A	N	N
FP87	K90	M	1E2F06B	2/7/2001	14-21	FP79	11/3/2001	FP108	A	N	N
FP87	K91	M	1F071F4T	2/7/2001	14-21	FP79			u	N	
TX106	K92	F	600DBE9	3/17/2001	14-16	FP60			u	N	
TX106	K93	M	600CCC4	3/17/2001	14-16	FP60			u	N	
FP88	K94	M	1E2EB3DT	5/25/2001	21	?			D	N	N
FP88	K95	F	1EFF463T	5/25/2001	21	?			u	N	
FP88	K96	M	1F00576T	5/25/2001	21	?			u	N	
FP88	K97	F	204F878T	5/25/2001	21	?			u	N	
FP67	K98	F	11D5AFD	5/26/2001	21	?		UCFP49	D	N	N

Female #	Kitten #	Sex	Transponder #	Date Marked	Age in Days	Sire	Date Collared	Eventual Panther #	Alive or Dead	Kinked tail at birth	Kinked tail at > 6 mo
FP67	K99	M	1248B13T	5/26/2001	21	?			u	N	
FP67	K100	M	600EFAF	5/26/2001	21	?			u	N	
FP67	K101	M	600E363	5/26/2001	21	?			u	N	
FP75	K102	M	600E58A	6/15/2001	10-12	FP59			u	Y	
FP75	K103	M	6000FA1	6/15/2001	10-12	FP59			u	N	
FP55	K104	M	1EFFFC5T	6/28/2001	17	?			d	N	
FP102	K105	M	1E2DFA4T	7/12/2001	21	FP79			u	N	
FP102	K106	M	600E036	7/12/2001	21	FP79			u	N	
FP49	K107	M	000600F828	8/27/2001	21	?			u	N	
FP77	K108	M	000600F0EA	8/30/2001	30	?			u	N	
FP73	K109	M	000600FD77	3/3/2002	7	?			u	N	
FP73	K110	M	0001E2D9E2T	3/3/2002	7	?			u	N	
FP73	K111	F	000600A2C9	3/3/2002	7	?			u	N	
FP95	K112	F	0001E2E9D3T	4/21/2002	25	FP85			u	N	
FP93	K113	F	0001EFF813T	4/23/2002	18	FP79			u	N	
FP93	K114	F	000600CC53	4/23/2002	18	FP79			u	N	
FP93	K115	M	0001F071E4T	4/23/2002	18	FP79	4/2/2003	FP119	A	N	N
FP93	K116	F	0001F01C76T	4/23/2002	18	FP79			u	N	
FP78	K117	F	000600CDB3	4/30/2002	21	FP59			d	Y	
FP78	K118	F	000600DB01	4/30/2002	21	FP59			d	Y	
FP78	K119	F	000600E3E3	4/30/2002	21	FP59	10/23/2002	FP113	A	Y	Y
FP78	K120	M	0001F01D1CT	4/30/2002	21	FP59	10/23/2002	FP114	A	Y	Y
FP101	K121	M	000204F9EAT	5/9/2002	10	?			u	N	
FP101	K122	F	0001E2D6FDT	5/9/2002	10	?			u	N	
FP83	K123	M	000631AED6	5/12/2002	28	?			u	N	
FP106	K124	F	0001F003A0T	5/27/2002	10	?			u	Y	
FP106	K125	M	0001D2CBC4T	5/27/2002	10	?			u	Y	
FP106	K126	M	0001E2E8F6T	5/27/2002	10	?			u	Y	
FP55	K127	F	000600EAD2	5/30/2002	10	FP79			u	N	
FP75	K128	M	000600E84B	6/6/2002	10	FP100/FP98			D	Y	Y
FP75	K129	M	00060101BC	6/6/2002	10	FP100/FP98	3/31/2005	FP139	A	Y	Y
FP112	K130	M	0001EFF497T	6/15/2002	7	FP100/FP98			d	Y	
FP112	K131	M	000600E4CE	6/15/2002	7	FP100/FP98			d	Y	
FP67	K132	F	000600D0F1	6/18/2002	10	?	1/20/2003	FP116	A	Y	Y

Female #	Kitten #	Sex	Transponder #	Date Marked	Age in Days	Sire	Date Collared	Eventual Panther #	Alive or Dead	Kinked tail at birth	Kinked tail at > 6 mo
FP67	K133	M	000600EBA8	6/18/2002	10	?			d	Y	
FP67	K134	M	000600E776	6/18/2002	10	?			d	Y	
FP107	K135	M	0006010509	7/7/2002	9-10	?			u	Y	
FP107	K136	F	000600F465	7/7/2002	9-10	?			u	Y	
FP102	K137	F	0006318229	7/19/2002	15	FP79			u	N	
FP102	K138	M	000630E287	7/19/2002	15	FP79			u	N	
FP61	K139	F	000204FBC3T	9/27/2002	10	?			u	N	
FP61	K140	M	000600D0D4	9/27/2002	10	?			u	E	
FP61	K141	M	000600F2F8	9/27/2002	10	?			u	N	
FP61	K142	F	0001D29A56T	9/27/2002	10	?			u	N	
FP87	K143	F	000600DD57	3/25/2003	15	FP79			u	N	
FP87	K144	M	chipped # unk	3/25/2003	15	FP79			u	N	
FP87	K145	F	chipped # unk	3/25/2003	15	FP79			u	?	
FP101	K146	F	00062EDF9D	4/19/2003	10	FP65/FP100			u	N	
FP101	K147	M	0006328F81	4/19/2003	10	FP65/FP100	12/17/2004	FP135	A	N	Y
FP101	K148	F	00062E2A15	4/19/2003	10	FP65/FP100			u	N	
FP110	K149	F	000600F8DE	6/3/2003	6-10	?			u	N	
FP110	K150	M	000600CCD1	6/3/2003	6-10	?	3/4/2004	FP130	A	N	Y
FP110	K151	F	000600C049	6/3/2003	6-10	?			u	N	
FP93	K152	F	000600037C	8/5/2003	21	FP60			u	N	
FP93	K153	M	0005FFE2D6	8/5/2003	21	FP60			u	N	
FP93	K154	M	0006000B2A	8/5/2003	21	FP60			u	N	
FP120	K155	F	0005FFEBOA	2/7/2004	14	?			u	N	
FP120	K156	M	0005FFE0DA	2/7/2004	14	?			D	N	
FP75	K157	M	0006327AC0	3/21/2004	23	?			u	Y	
FP75	K158	M	000632781C	3/21/2004	23	?			u	Y	
FP75	K159	F	00062EE361	3/21/2004	23	?			u	N	
FP116	K160	F	0006479F70	5/1/2004	14	FP65			u	N	
FP116	K161	F	000647D7A6	5/1/2004	14	FP65			u		
FP116	K162	M	0006485640	5/1/2004	14	FP65			u		
FP107	K163	M	0006327255	5/21/2004	7	?			u	Y	
FP107	K164	M	0006326E04	5/21/2004	7	?			u	Y	
FP107	K165	F	000632227C	5/21/2004	7	?			u	N	
FP107	K166	F	000647A475	5/21/2004	7	?			u	N	
FP70	K167	F	00064DBAB1	6/6/2004	12	?			u	N	

Female #	Kitten #	Sex	Transponder #	Date Marked	Age in Days	Sire	Date Collared	Eventual Panther #	Alive or Dead	Kinked tail at birth	Kinked tail at > 6 mo
FP70	K168	M	00064DAB32	6/6/2004	12	?			u	N	
FP70	K169	F	00064D7C86	6/6/2004	12	?			u	N	
FP102	K170	F	00064DEB7D	8/5/2004	15	FP79			u	N	
FP102	K171	M	00064DDEEA	8/5/2004	15	FP79			u	N	
FP102	K172	F	00064D918C	8/5/2004	15	FP79			u	N	
FP121	K173	F	0006000738	9/1/2004	14	?			u	N	
FP124	K174	M	000647D79D	9/29/2004	21+	?			D	N	
FP124	K175	M	0005FFF5E1	2/10/2005	14	?			u	N	
FP124	K176	M	00064D67F9	2/10/2005	14	?			u	N	
FP124	K177	F	0006000D6B	2/10/2005	14	?			u	N	
FP110	K178	M	000601E07A	3/7/2005	12	?			u	Y	
FP110	K179	F	00064DD051	3/7/2005	12	?			u	Y	
FP107	K180	F	000600E4BB	3/15/2005	14	FP119/FP131			A	Y	
FP107	K181	F	000600F978	3/15/2005	14	FP119/FP131			A	N	
FP129	K182	F	0006482822	4/6/2005	10	?			u	N	
FP129	K183	M	00064DE502	4/6/2005	10	?			u	N	
FP129	K184	M	00064D7610	4/6/2005	10	?			u	N	
FP113	K185	M	000647B5F9	4/20/2005	15	FP131/FP133			u	Y	
FP113	K186	F	000647AE8B	4/20/2005	15	FP131/FP133			u	Y	
FP116	K187	M	00064D6A85	6/19/2005	22	?			u	Y	
FP116	K188	F	000647AE8E6	6/19/2005	22	?			u	N	
FP116	K189	M	000647BC03	6/19/2005	22	?			u	N	
FP128	K190	M	64D816A	7/21/2005	24	?			u	Y	
FP128	K191	M	647C7FE	7/21/2005	24	?			u	N	
FP75	K192	M	000647CDE9	8/7/2005	7	FP135			u	Y	
FP75	K193	F	00064DB63B	8/7/2005	7	FP135			u	Y	
FP75	K194	F	00064DAC56	8/7/2005	7	FP135			u	N	
FP75	K195	M	000600E8A6	8/7/2005	7	FP135			u	Y	

^aFP denotes panthers captured for radiocollaring; K denotes kittens handled at panther or Texas puma dens; TX denotes Texas pumas used for Panther Genetic Restoration.

^ba = no evidence of mortality, presumed alive; A = known to be alive; d = some evidence of mortality, presumed dead; D = known to be dead; u = last seen at den, status unknown.

Appendix IV. List of all known dens of radio-instrumented female Florida panthers and Texas pumas in southern Florida from June

1985 to June 2005. Kitten numbers preceded with K indicate natal den was visited. Data from FWC and BCNP.

Cat ID	Den Date	Location ^a	UTM-E	UTM-N	Habitat	No. of Kittens	Kittens Handled	Sire
FP09	Jun-85	S Golden Gate Estates	unknown	unknown	?	1?	FP10♂ den not visited	Unknown
FP09	Jun-87	FSSP	454400	2891300	hardwood hammock	1?	den not visited	FP12
FP09	May-89	FSSP	461100	2878600	mixed swamp	?	den not visited	Unknown
FP09	Jul-90	FSSP	462300	2882200	mixed swamp	2?	FP202♂, FP203♂ den not visited ^b	FP37
FP09	Jun-93	FSSP	456000	2873800	hardwood hammock	Unsuccessful?	den not visited	FP51
FP11	May-86	BCNP - Bear Island	468100	2896400	pine/palmetto	3?	FP19♀ den not visited	FP12
FP11	May-88	BCNP - Bear Island	468100	2896400	pine/palmetto	1?	FP29♂ den not visited	FP20
FP11	Apr-90	BCNP - Bear Island	469900	2898700	pine/palmetto	1?	♀(roadkill) den not visited	FP12
FP11	Jul-91	Price's	469800	2907100	hardwood hammock	1?	FP47♂ den not visited	FP12
FP11	Mar-93	BCNP - Bear Island	468900	2896200	hardwood hammock	?	den not visited	FP12?
FP14	Apr-89	Long Pine Key	537200	2799200	hardwood hammock	2?	FP42♂, den not visited	FP16
FP14	Mar-91	Long Pine Key	536900	2808000	hardwood hammock	Unsuccessful	den not visited	FP16
FP15	May-88	Long Pine Key	525100	2807200	hardwood hammock	Unsuccessful	den not visited	FP16
FP19	Mar-88	Price's	468100	2906000	Hardwood hammock	4?	FP30♂ den not visited	FP13
FP19	Jul-89	FPNWR	460600	2893700	Hardwood hammock	1?	FP43♂ den not visited	FP12
FP19	Nov-90	Rock Spring Island	460600	2902700	Pine/palmetto	2?	FP205♀ ^b , FP45♂ den not visited	FP12
FP19	Mar-92	NE Hog Pond	459800	2900700	Pine/palmetto	2?	UCFP21♀, FP53♂ den not visited	FP12
FP19	May-94	FPNWR	464600	2902900	Pine/palmetto	2	K12♀, K13♀	FP51?
FP19	Apr-96	Barfield's	463100	2904500	Palmetto/oaks	2	K27♀, K28♀d	FP54, FP51?
FP23	Aug-92	Raccoon Point	502300	2877300	Unknown	2	FP209♀, FP210♂ ^b	FP42
FP23	Dec-92	Raccoon Point	502800	2872100	Unknown	1?	FP55♀ den not visited	FP42
FP31	Mar-89	Catherine Island	454000	2907000	Pine/palmetto	3?	FP34♂, FP35♂ den not visited	FP12
FP31	Jul-90	Regency Farms	459900	2903900	Pine/palmetto	2?	FP201♂, FP204♀ den not visited ^b	FP12
FP31	Sep-91	Barfield's	464700	2906000	Hardwood hammock	2?	FP48♀, FP52♀ den not visited	FP12
FP32	Mar-89	Catherine Island	457100	2898600	pine/palmetto	unsuccessful?	den not visited	Unknown
FP32	May-92	FPNWR	457400	2897400	pine/palmetto	1?	FP208♀ ^b	FP12
FP32	Mar-96	FPNWR	464600	2896200	pine/palmetto	1	UCFP24 (Dead ♀)	
FP36	Mar-90	BCSIR	492500	2906200	Hardwood hammock	?	den not visited	Unknown
FP36	May-91	BCNP - Add Lands	491100	2899000	Pine/palmetto	2?	FP207♂ ^b , FP50♂ den not visited	FP26

Cat ID	Den Date	Location ^a	UTM-E	UTM-N	Habitat	No. of Kittens	Kittens Handled	Sire
FP36	Oct-93	N of BCSIR	489100	2909400	Pine/palmetto	1?	den not visited	FP26, FP34
FP36	Jun-95	Canoe Lake Strand	502800	2901300	Pine/palmetto	?	den not visited	FP45?
FP36	Feb-96	Wilson Cypress	499800	2895400	Pine/palmetto	3 (remains of 4th)	K24♀,K25♂,K26♂,UCFP44	FP45
FP40	Nov-90	Baker's Grade	487100	2896300	pine/palmetto		2	FP206♀ ^b , FP44♂ den not visited
FP40	Mar-92	Baker's Grade	485000	2897700	pine/palmetto	2	FP54♂, K02♂	FP28?
FP40	Jun-93	Baker's Grade	486900	2896900	pine/palmetto	3	K03♂,K04♀,K05♀	FP26
FP40	?	?	unknown	unknown	?	2?	FP60♂, ♀ tracks, den not visited	Unknown
FP40	May-97	BCNP - Add Lands	488100	2899200	pine/palmetto	2	FP69♀, K37♂	FP45
FP48	Oct-93	BCNP - Bear Island	475900	2901600	pine/palmetto	3	K06♂,K07♀,K08♀	FP12
FP48	Jun-95	Dozier Hammock	482100	2903600	pine/palmetto	2	FP59♂,K17♀	Unknown
FP48	Sep-96	NE Doctor's Ham.	480200	2904000	vines/ferns	3	FP62♂,FP64♂,UCFP50♂	Unknown FP68 or
FP48	Jun-98	BCNP - Bear Island	476300	2899200	pine/palmetto	2	K51♂, FP75♀	FP45 FP63 or
FP48	Oct-99	BCNP - Bear Island	476100	2896100	Palmetto, myrtle	2	K74♀, K75♀(abandoned)	FP68
FP49	Jan-99	BCNP - Add Lands	497300	2897600	pine/palmetto	1	K55♂	Unknown
FP49	Aug-01	BCNP - Add Lands	495400	2900800	pine/palmetto	1	K107♂	Unknown
FP52	Jul-93	Sadie Cypress	467800	2918600	mixed swamp	2?	1♂ (roadkill) den not visited	FP46
FP52	Jul-94	Sadie Cypress	469600	2919000	Cypress swamp	?	den not visited	Unknown
FP55	Apr-95	BCNP	483700	2871800	pine/palmetto	2	K14♀,K15♀	FP42
FP55	Sep-97	Lake BCNP - N Burns BCNP - N Monument	483300	2864800	pine/palmetto	1	K44♂	Unknown
FP55	Feb-98	Lake	490500	2869800	pine/palmetto	3	FP102♀,K49♀,K50♂	Unknown
FP55	Apr-99	BCNP BCNP - NE Airplane	479500	2876800	Palmetto/myrtle	2	FP87♀, K61♂	Unknown
FP55	Jun-01	Prairie	481000	2882000	Palmetto	1	K104♂	FP79
FP55	May-02	BCNP	479900	2874300	pine/palmetto	1	K127♀	FP79
FP55	Sep-03	BCNP					den not visited	Unknown
FP56	Apr-94	Baker's Grade	485800	2897300	pine/palmetto	3	K09♂,K10♀,K11♂	Unknown
FP56	Oct-95	North BCSIR	490700	2901600	pine/palmetto	3	K20♂,K21♂,K22♂	FP45
FP56	Aug-96	North BCSIR	490700	2907400	Palmetto	2	K29♀?,K30♀?	FP45
FP56	Jun-97	Bakers Grade	485900	2897600	pine/palmetto	4	K40♂,K41♀,K43♂, FP67♀	FP45
FP57	Jun-98	FSSP	461200	2880600	mixed swamp	?	den not visited	FP54
FP61	Mar-99	Long Pine Key	537300	2810700	Hardwood hammock	1	FP85♂	FP16

Cat ID	Den Date	Location ^a	UTM-E	UTM-N	Habitat	No. of Kittens	Kittens Handled	Sire
FP61	Sep-02	ENP - East	544624	2829732	hardwood/Schinus	4	K139♀, K140♂, K141♂, K142♀	Unknown
FP66	Sep-98	Belle Meade	438700	2893600	pine/palmetto	3	K52♂, K53♀, K54♂	FP72
FP66	Dec-99	Private lands	464100	2909100	Cypress, cabbage	3	K76♂, K77♀, K78♀	FP60
FP67	Aug-00	Private lands	486100	2910700	palmetto	2	K84♂, K85♀	Unknown
FP67	May-01	Private lands	486200	2909800	pine/palmetto	4	K98♀, K99♂, K100♂, K101♂	Unknown
FP67	Jun-02	Private lands	481600	2909300	palmetto	3	FP116♀, K133♂, K134♂	Unknown
FP69	Jul-99	BCNP - NE of Baker's Camp	485500	2902000	Palmetto	3	K71♂, K72♀, K73♀	Unknown
FP70	Jun-99	BCNP - NE of Monument Lake	491200	2865700	pine/palmetto	3	FP88♀, FP92♂, FP91♀	FP79
FP70	May-04	BCNP - Turner River Unit	472758	2867123	Pine/palmetto	3	K167♀, K168♂, K169♀	Unknown
FP71	Jun-99	BCNP	497700	2893800	pine/palmetto	4	FP90♂, FP86♀, K69♂, K70♀	FP79
FP73	?	?	unknown	unknown	?	1?	FP74♂ den not visited	-
FP73	Feb-99	BCSIR	unknown	unknown	?	1?	FP84♂ den not visited	-
FP73	Feb-02	BCNP - Addition Lands	507900	2900000	palmetto	3	K109♂, K110♂, K111♀	Unknown
FP75	Apr-00	Private lands	466400	2904800	hardwood hammock	Unsuccessful	den not visited	
FP75	Jun-01	BCNP - Bear Island	466800	2899400	pine/palmetto	2	K102♂, K103♂	FP59 FP98,
FP75	May-02	BCNP - Bear Island	466000	2894800	palmetto	2	K128♂, K129♂	FP100
FP75	Mar-04	BCNP - Bear Island	468375	2894039	palmetto	3	K157♂, K158♂, K159♀	Unknown
FP77	May-00	BCNP - Addition Lands	501300	2900100	Palmetto	3	K81♂, K82♀, K83♂	Unknown
FP77	Aug-01	BCNP - Addition Lands	502600	2903900	pine/palmetto	1	K108♂	Unknown
FP78	Apr-00	FPNWR	464500	2896900	Pine/cabbage	2	FP107♀d, FP96♂	FP59
FP78	Apr-02	FPNWR	457500	2897700	pine/palmetto	4	K117♀, K118♀, K119♀, K120♂	FP59
FP82	Dec-00	OK Slough	472600	2933600	sawgrass marsh	3	K86♀, K87♀, K88♂	FP65
FP83	Apr-02	FSSP	460800	2871500	fern bed	1	K123♂	Unknown
FP83	Jun-04	FSSP	457980	2872720	?	?	den not visited	Unknown
FP87	Jan-01	BCNP	496600	2868600	palmetto	3	K89♀, FP108♂, K91♂	FP79
FP87	Mar-03	BCNP - N of Oasis	499508	2866287	pine/palm	3	K143♀, K144♂, K145♀	FP79
FP88	May-01	BCNP - Loop Unit	500200	2855800	sawgrass marsh	4	K94♂, K95♀, K96♂, K97♀	Unknown
FP93	Apr-02	BCNP - Turner River Unit	484500	2874500	palmetto	4	K113♀, K114♀, FP119♂, K116♀	FP79
FP93	Jul-03	BCNP - Turner River	482328	2884460	hardwood hammock	3	K152♀, K153♂, K154♂	FP60

Cat ID	Den Date	Location ^a	UTM-E	UTM-N	Habitat	No. of Kittens	Kittens Handled	Sire
FP95	Mar-02	ENP - Long Pine Key	533700	2807600	Brazilian pepper	1	K112♀	FP85
FP101	Apr-02	BCSIR	494300	2905200	pine/palmetto	2	K121♂, K122♀	Unknown
FP101	Apr-03	Private lands BCNP - Monument	486563	2909969	palmetto/vines	3	K146♀, K147♂, K148♀	FP65/FP100
FP102	Jun-01	Lake BCNP - Monument	491400	2865600	mixed swamp	2	K105♂, K106♂	FP79
FP102	Jul-02	Lake	493060	2867279	palmetto	2	K137♀, K138♂	FP79
FP102	Aug-04	BCNP - Burns Lake	480302	2864437	pine palmetto	3	K170♀, K171♂, K172♀	FP79
FP106	May-02	FPNWR	464500	2903200	hardwood hammock	3	K124♀, K125♂, K126♂	Unknown
FP107	Jun-02	FPNWR	452200	2894400	pine palmetto	2	K135♂, K136♀	Unknown
FP107	May-04	FPNWR	456931	2897722	Pine/palmetto	4	K163♂, K164♂, K165♀, K166♀	Unknown FP119,
FP107	Mar-05	FPNWR	457847	2899232	pine palmetto	2	K180♀, K181♀	FP131
FP110	Jun-03	OK Slough	467115	2938383	palmetto/vines	3	K149♀, K150♂, K151♀	Unknown
FP110	Feb-05	OK Slough	464327	2941397	pine palmetto	2	K178♂, K179♀	Unknown FP98,
FP112	Jun-02	BCNP - Bear Island	473300	2901600	palmetto	2	K130♂, K131♂	FP100
FP113	Aug-04	FPNWR	463905	2898064	?	1?	UCFP67	Unknown FP131,
FP113	Apr-05	FPNWR Hendry Co. Gum	462031	2901852	pine palmetto	2	K185♂, K186♀	FP133
FP116	May-04	Swamp BCNP- Addition	486643	2910307	pine/palmetto	3	K160♀, K161♀, K162♂	FP65
FP116	May-05	Lands BCNP - Turner River	489645	2902126	pine palmetto	3	K187♂, K188♀, K189♂	Unknown
FP120	Jan-04	Unit	474804	2861042	pine/palmetto	2	K155♀, K156♂	Unknown
FP121	Aug-04	BCSIR	498034	2908025	cypress/ferns	1	K173♀	Unknown
FP124	Sep-04	BCNP - Stairsteps	509023	2844191	Hardwood hammock	1	K174♂	Unknown
FP124	Jan-05	BCNP - Pinecrest	508391	2848891	tropical hardwood	3	K175♂, K176♂, K177♀	Unknown
FP128	Jun-05	BCSIR	506203	2904252	Hardwood hammock	2	K190♂, K191♂	Unknown
FP129	Apr-05	BCNP- Corn Dance	503345	2875065	Pine/palmetto	3	K182♀, K183♂, K184♂	Unknown
TX101	Sep-95	BCSIR	500000	2906900	pine/palmetto	2	FP73♀, FP79♂	Unknown
TX101	Dec-96	BCSIR	499400	2907600	Palmetto/oak	2	FP65♂, FP66♀	FP45
TX105	Sep-96	ENP - Long Pine Key	523200	2808000	tropical hardwood	1	K34♀	FP16
TX105	Jul-99	ENP - Long Pine Key	530700	2808300	Brazilian pepper	1?	FP94F1♀ den not visited	FP16
TX106	Nov-95	S Golden Gate Estates	447100	2885200	Cypress/mixed	1	K23♀	FP51
TX106	Feb-98	N Golden Gate Estates	447800	2895700	vines/cabbage	1	K47♂	FP54, 59?

Cat ID	Den Date	Location^a	UTM-E	UTM-N	Habitat	No. of Kittens	Kittens Handled	Sire
TX106	Jun-99	PSSF	453600	2891600	Cabbage	2	K62♀, FP83♀	FP54
TX106	Mar-01	FPNWR	453400	2896200	pine/palmetto	2	K92♀, K93♂	FP60
TX107	May-97	BCNP - N of Oasis BCNP - N of	496500	2869100	pine/palmetto	2	FP70♀, FP71♀	Unknown
TX107	Feb-99	Buckskin Prairie	493800	2875700	pine/palmetto	3	K56♀, K57♂d, FP93♀	FP79
TX108	Jun-96	ENP - Long Pine Key	532300	2809300	tropical hardwood	1?	FP61♀ den not visited	FP16
TX108	Feb-98	ENP - Long Pine Key	530100	2809500	tropical hardwood	2	FP95♀, K46♂	FP16

^aENP = Everglades National Park; BCSIR = Big Cypress Seminole Indian Reservation; PSSF = Picayune Strand State Forest; FPNWR = Florida Panther National Wildlife Refuge; OSSF = Okaloacoochee Slough State Forest; NBCNP = Big Cypress National Preserve north of Interstate 75; FSSP = Fakahatchee Strand State Preserve; SBCNP = Big Cypress National Preserve south of Interstate 75.

^bKittens removed from wild into captive breeding program.

Appendix V. Florida panther and Texas Puma Mortalities and Injuries Sorted by Cause in Southern Florida from 2 February 1972 to 30

June 2005. Data from FWC and BCNP.

Panther ID	Death Date	Sex	Age (yr)	Location	Cause
FP03	1/17/1983	F	9+	FSSP	Capture
FP35	1/24/1990	M	10 mo	Gainesville	Capture-Related Abandonment (infection)
FP20	8/24/1988	M	4-5	Bear Island	Congenital Heart Defect
FP21	12/26/1997	F	11-12	White Oak	Euthanasia
FP86	11/7/2003	F	4.5	UF-Gainesville	Euthanasia
FP115	5/17/2003	F	4-5	OK Slough SF - Sick Island	FeLV
FP122	2/13/2004	F	2-3	OKSSF, NW Wild Cow Island	FeLV
FP132	7/22/2004	M	3-3.5	OKSSF	FeLV
FP22	7/20/1991	F	5	ENP	Infection
FP34	11/15/1993	M	5	SE Hendry Co. L28	Infection (bacterial from lacerated esophagus)
FP02	10/27/1984	M	14+	FSSP	Intraspecific Aggression
FP10	1/27/1987	M	16-20 mo	Mud Lake Strand - by adult male panther	Intraspecific Aggression
FP25	8/26/1988	M	4-5	FPNWR - bacterial infection from panther fight	Intraspecific Aggression
FP30	1/29/1990	M	22 mo	FSSP, Killed by adult male FP37	Intraspecific Aggression
FP41	9/26/1990	F	2	Hendry Co. W. of BCSIR - killed by FP28	Intraspecific Aggression
FP18	10/3/1990	F	9	Hendry Co. So. of CR 846 near Rock Lake, killed by FP28	Intraspecific Aggression
FP43	11/1/1991	M	2	BCSIR, Hendry Co. - killed by FP26	Intraspecific Aggression
FP28	9/25/1992	M	5.5	BCSIR, Hendry Co. - possibly killed by FP26	Intraspecific Aggression
FP47	2/19/1993	M	18 mo	Killed by male FP51 in FSSP	Intraspecific Aggression
FP53	2/26/1993	M	11 mo	Private lands N of FPNWR-killed, eaten by uncollared male	Intraspecific Aggression
FP44	7/6/1993	M	2.5	Raccoon Pt. BCNP-killed by FP42	Intraspecific Aggression
FP26	7/8/1994	M	11-12	4 mi. E. Hendry Prison - killed by FP46, punctured skull	Intraspecific Aggression
FP12	11/8/1994	M	13-14	Private lands, Hendry County - died of infected bite wounds by FP46	Intraspecific Aggression
FP58	3/30/1997	M	3	Sadie Cypress - septicemia from bite wounds	Intraspecific Aggression
FP40	2/2/1998	F	10	Bear Island - E Harrell Strand, died of infected bite wounds	Intraspecific Aggression
FP64	2/14/1998	M	1.5	SR 29 at clearcut, FPNWR	Intraspecific Aggression
FP45	8/2/1998	M	7.5	BCSIR, Hendry Co.	Intraspecific Aggression
FP72	12/23/1998	M	3-4	BCSIR, Hendry Co.- killed by uncollared male	Intraspecific Aggression
FP46	2/3/1999	M	9-9.5	Private land S. CR 846, Hendry Co	Intraspecific Aggression

Panther ID	Death Date	Sex	Age (yr)	Location	Cause
FP64	3/26/1999	M	2.5	Audubon's Corkscrew Sanctuary - killed by uncollared male	Intraspecific Aggression
FP76	11/13/1999	M	2.5-3	FSSP, 1.9 mi W of SR 29 off of Lancaster Grade, killed by FP54	Intraspecific Aggression
FP89	11/10/2000	M	3.5	BCNP, 2 mi NW of Mud Lake - killed by FP79	Intraspecific Aggression
FP11	2/27/2001	F	19-20	200 yds. S of CR 846, 1 mi E of Dupree Rd.	Intraspecific Aggression
FP97	12/2/2001	M	2	E of Gopher Ridge Grove N of Immokalee	Intraspecific Aggression
FP49	1/3/2002	F	12	BCNP Addition Lands - Killed by uncollared male	Intraspecific Aggression
FP96	1/15/2002	M	1.75	N end Big Corkscrew Island	Intraspecific Aggression
FP111	9/5/2002	M	9-10	OK Slough N of CR832	Intraspecific Aggression
FP112	9/11/2002	F	4	BCNP - Bear Island	Intraspecific Aggression
FP78	10/16/2002	F	6	FPNWR - Fire Tower	Intraspecific Aggression
FP67	1/15/2003	F	5.5	Hendry Co. - Gum Slough, killed by FP65	Intraspecific Aggression
FP109	2/22/2003	M	10+	OK Slough N of CR832	Intraspecific Aggression
FP82	5/10/2003	F	6	OK Slough	Intraspecific Aggression
FP87	6/19/2003	F	4	BCNP - 7 mi NNE of Oasis	Intraspecific Aggression
FP114	10/17/2003	M	1.5	FPNWR, S of Oil Pad Rd. SR29	Intraspecific Aggression
FP91	12/12/2003	F	4.5	BCNP, Turner River Unit	Intraspecific Aggression
FP55	7/7/2004	F	~11.5	BCNP	Intraspecific Aggression
FP59	11/22/2004	M	9.4	Just east of Ford Test Track, Collier Co.	Intraspecific Aggression
FP126	1/1/2005	M	1.6	1/2 mile S CR 846, Sadie Cypress	Intraspecific Aggression
FP08	8/20/1988	F	13-15	Gainesville	Liver Failure (old age)
FP32	9/12/2002	F	15	FPNWR - Rock Island	Malnutrition (old-age)
TX103	8/19/1999	F	-	SBCNP, southern Lostman's Pines 1mile N of ENP boundary	Metabolic Complications Associated with Pregnancy
FP38	8/4/1994	F	9	Conservation Area 3A	Pleuritis (from chest puncture)
FP29	5/27/1992	M	4	Hendry Co., Gum Swamp	Pseudorabies
FP39	6/18/1990	M	3-4	ENP	Pyrothorax
FP33	11/25/1989	M	3	2 mi. NW of Hendry Prison	Rabies
FP19	12/2/1997	F	11.5	FPNWR (Merry Xmas)	Ruptured Aorta
UCFP02	3/8/1978	M	2-3	L-28, Dade County	Shooting
UCFP10	5/22/1983	F	adult	L-8 canal near Canal Point, Palm Beach County	Shooting
UCFP08	12/1/1983	M	3-6	Seminole Indian Reservation, Hendry County	Shooting
UCFP11	10/30/1984	F	2-3	Corbett WMA, Palm Bch. Co. (Elmer Brooker)	Shooting
UCFP14	3/23/1985	F	2-3	CSSP, Collier Co. (skeleton)	Shooting
FP09	1/1/1986	F	not fatal	Golden Gate Estates, So. of SR 84	Shooting
TX104	4/18/1998	F	6-7	S of Sabal Palm Road in citrus gr	Shooting

Panther ID	Death Date	Sex	Age (yr)	Location	Cause
FP108	11/16/2002	M	22 mo	BCNP Raccoon Pt.	Traumatic Neck Injury
UCFP03	2/1/1979	M	unknown	US 41, Gannet Strand	Unknown
FP06	4/16/1982	M	6-7	NE BCNP	Unknown
FP05	11/18/1983	F	8-9	Fakahatchee Conserv. Club	Unknown
FP15	6/10/1988	F	7-8	ENP	Unknown
FP24	8/22/1988	M	3-5	Glades Co. near Palmdale	Unknown
FP27	7/23/1989	M	3-4	ENP	Unknown
FP17	7/23/1990	M	9	Addition lands near Tangerine Camp	Unknown
FP14	6/20/1991	F	10-11	ENP	Unknown
FP42	6/22/1995	M	6	Turner River Unit	Unknown
FP16	1/3/2000	M	14	NE boundary of ENP	Unknown
FP68	3/1/2000	M	5-7	NBCNP W of Tangerine tram	Unknown
TX101	3/29/2000	F	-	BCSIR 1/4 mi W of game pen, 3/4 mi S of canal	Unknown
FP84	4/20/2000	M	14 mo	Fisheating Creek WMA, N side of creek, 5 mi W of US 27	Unknown
FP23	12/1/2000	F	14	BCNP 2 mi E of Turkey Foot	Unknown
TX107	1/18/2001	F	8-9	BCNP 11 Mile Rd.	Unknown
FP92	9/1/2001	M	2.2	N Flint Pen Strand, CREW	Unknown
FP105	1/16/2002	F	~7	FPNWR, SW corner of clearcut	Unknown
FP118	4/4/2003	F	1	BCSIR - Game Pen	Unknown
UCFP55	5/11/2003	M	1-1.5	BCSIR Safari Pen	Unknown
UCFP56	5/12/2003	M	1-1.5	BCSIR Safari Pen	Unknown
UCFP57	5/15/2003	F	4-6	BCSIR Safari Pen	Unknown
FP73	6/28/2003	F	7 yr 10 mo	BCSIR - Game Pen	Unknown
FP77	7/12/2003	F	6	BCSIR- Game Pen	Unknown
FP85	3/1/2004	M	5	ENP	Unknown
FP117	7/28/2004	M	27 mo	0.75 mi S of CR832, ~0.2mi E. of Wild Cow Grade	Unknown
UCFP67	9/2/2004	F	< 7 days	FPNWR - Ridge Road	Unknown
UCFP68	9/30/2004	F	3-6	SBCNP - N of Oasis Ranger Station	Unknown
UCFP24	3/18/1996	F	1.5-2 weeks	FPNWR	Unknown (dehydrated)
FP36	10/10/1998	F	14+	NBCNP E. of L28 interceptor canal	Unknown (likely natural)
UCFP28	2/13/1972	M	2-3	SR 25 S of Moore Haven	Vehicle
UCFP04-(G80-4)	12/23/1979	F	1.5-2.5	SR 29 just N SR 84	Vehicle
UCFP05-(G80-15)	2/7/1980	M	1.5-2.5	SR 29 near Sunniland	Vehicle
UCFP06-(G81-19)	4/19/1981	F	2-3	SR 29 near Copeland	Vehicle
UCFP09-(G83-22)	3/18/1983	M	2-3	US 27 Palmdale	Vehicle

Panther ID	Death Date	Sex	Age (yr)	Location	Cause
FP01	12/14/1983	M	12-14	SR 84 18 MM	Vehicle
Big Guy	11/2/1984	M		US 41	Vehicle - Injured, removed to captivity
UCFP12-(G84-26)	11/12/1984	F	8-10	SR 84 16 MM	Vehicle
UCFP13-(G85-BNZ)	1/8/1985	F	1.5-2	SR 84 MM16	Vehicle
FP04	4/18/1985	M	12+	SR 84 17 MM	Vehicle
NONE	5/12/1985	F	Unk	CR 951 2 mi N US 41	Vehicle
FP07	10/26/1985	M	10	SR 29 4 mi S SR 84	Vehicle
UCFP15	11/15/1986	F	4-5	SR 84 16.5 MM	Vehicle
FP20	6/17/1987	M	3-4	CR 858 .8 mi E SR 29	Vehicle - Injured
FP13	12/14/1987	M	6-8	SR 29 Sunniland	Vehicle
FP21	7/23/1988	F	2.5	1 mi E US1 on Palm Drive	Vehicle - Injured
FP28	11/29/1988	M	1.5-2	near Daniels Rd. RSW	Vehicle - Injured
UCFP18-(RK-850)	1/25/1989	M	3	CR 850 1.5 mi S SR 80	Vehicle
UCFP19-(RK-846)	6/18/1990	M	10 mo	CR 835 (846) 1 mi E CR 833	Vehicle
FP37	11/26/1990	M	4-5	SR 29 .5 mi N I-75	Vehicle
UCFP20-(FP11'S)	2/4/1991	F	9 mo	SR 29 Pistol Pond Bridge	Vehicle
NONE	4/7/1992	M	Unk	Alico Rd.	Vehicle
UCFP21-(FP19'S)	11/9/1992	F	7 mo	SR 29 Sunniland	Vehicle
UCFP22	8/9/1993	M	2-3	Daniels Rd 1 mi E I-75	Vehicle
FP50	12/6/1993	M	2.5	CR 846 5 mi E of Immokalee	Vehicle
UCFP23-(FP52'S)	2/28/1994	M	8 mo	3 mi N on County Line Rd	Vehicle
FP31	3/3/1994	F	12-14	SR 29 Sunniland	Vehicle
FP52	1/14/1995	F	3.3	CR 846 near Dupree Rd	Vehicle
TX102	9/21/1995	F	4	CR 833 just N CR 835 (846)	Vehicle
UCFP29	4/24/1996	M	3-5	5.5 mi E SR 29 on CR 832	Vehicle
UCFP30	5/2/1996	F	1	US 41 @ Turner River	Vehicle
UCFP31	7/13/1997	?	unk	CR 846 1.5 mi W CR 858	Vehicle
UCFP25	6/13/1998	F	2	CR 846 3 mi E CR 858	Vehicle
FP51	7/17/1998	M	9	SR 29 @ Bear Island Grade	Vehicle
UCFP26	9/17/1998	M	3-5	US 41	Vehicle
UCFP27	7/8/1999	F	2	Farm road E Hendry Prison	Vehicle
FP74	9/8/1999	M	2.5	US 27 near Venus	Vehicle
UCFP33	10/29/1999	M	11 mo	CR 833 2 mi N BCSIR	Vehicle
FP80	2/10/2000	F	4-5	200 FT. W Swamp Safari, BCSIR	Vehicle
K76-(FP66)	2/28/2000	M	3 mo	1 mi W SR 29, on CR 858	Vehicle

Panther ID	Death Date	Sex	Age (yr)	Location	Cause
UCFP34	3/23/2000	M	1.5-2	CR846 2 mi E County Line	Vehicle
UCFP35	6/23/2000	M	1.5-2	CR846 2 mi E Immokalee	Vehicle
UCFP36	8/13/2000	F	1.7	CR 846 E of Immokalee near powerline	Vehicle
UCFP37	12/29/2000	F	5	4.5 mi E SR29 on CR846	Vehicle
UCFP38	4/14/2001	F	2	CR 833 1 mi N BCSIR, Hendry Co.	Vehicle
FP90	4/26/2001	M	1.9	US 27 2.5 mi N of Terrytown	Vehicle
UCFP39	5/7/2001	F	10 mo	SR 29 1/2 mi N of Jerome	Vehicle
UCFP40	5/7/2001	M	10 mo	SR 29 1/2 mi N of Jerome	Vehicle
UCFP41	5/22/2001	M	2-3	SR 29 Sunniland, near Mine Rd	Vehicle
UCFP42	6/14/2001	F	3-4	CR846, 1 mi E of powerline	Vehicle
UCFP43	8/17/2001	M	2-3	CR846 1 mi E of powerline	Vehicle
UCFP45	4/5/2002	M	3	3.4 mi N of Palmdale, Glades Co.	Vehicle
UCFP46	4/10/2002	M	6 mo	1/2 mi N of Deep Lake, Collier	Vehicle
FP98	7/1/2002	M	4-5	1 KM N Pistol Pond, SR 29	Vehicle
UCFP48	11/10/2002	F	8-9 mo	CR846 5-6 mi E of Immokalee	Vehicle
UCFP49 (K98)	11/25/2002	F	19 mo	CR846 3-4 mi E of Immokalee	Vehicle
FP99	11/28/2002	M	33 mo	CR846 1/4 mi N of Collier Co. Fairgrounds	Vehicle
UCFP50 (K33)	1/26/2003	M	3-4	CR846 3.4 mi E of Everglades Blvd	Vehicle
FP106	02/20/2003	F	3	SR29 at Sunniland Mine Entrance	Vehicle
UCFP51	3/10/2003	M	1.5-2.0	I-4, 0.25 mi E of I-75, near Tamps	Vehicle
UCFP52	3/20/2003	M	2-3	CR833, 2mi S of CR832, Hendry Co.	Vehicle
UCFP53	5/25/2003	F	2-3	SR29, 1.4 mi N of CR858, Collier Co	Vehicle
UCFP54	6/3/2003	M	8-10 mo	SR29, 1.7 mi N of CR858, Collier Co.	Vehicle
UCFP58	6/30/2003	F	~1	CR846 3/4 mi E of Everglades Blvd	Vehicle
UCFP59	11/2/2003	F	3-4 mo.	CR 858, 1.2 miles W of SR 29	Vehicle
UCFP60	12/9/2003	M	~2-3	US41, ~ 1 mi E of CR92	Vehicle
UCFP61	12/25/2003	F	~2-3	CR833, 1.7 mi N of CR846 Intersection	Vehicle
UCFP62	1/11/2004	F	~7-8 mo	US41 near 40 Mile Bend	Vehicle
UCFP63	2/26/2004	M	~3.5	I-75, MM99 East Bound Lane	Vehicle
UCFP64	3/3/2004	?	?	SR66, ~0.75 mi W of SR635	Vehicle
UCFP65	4/6/2004	M	~2	SR29, 200 YD N of Bear Island Grade	Vehicle
UCFP66	6/27/2004	M	~3	I-75, MM93 0.5 mi W of Everglades Blvd	Vehicle
FP120	5/7/2005	F	5	US41 at Turner River	Vehicle
K156	8/2/2004	M	6 mo	US41 at Turner River	Vehicle
K94	8/17/2004	M	3 yr 3 mo	I-75, near MM98 East Bound Lane	Vehicle

Panther ID	Death Date	Sex	Age (yr)	Location	Cause
UCFP69	10/25/2004	F	2	SR 29 2.5 miles N of CR 858	Vehicle
UCFP70	12/1/2004	F	1	SR 29 at Owl Hammock Curve	Vehicle
K128	12/6/2004	M	2.5	CR 832 1 mi E of RR Grade	Vehicle
UCFP71	2/4/2005	M	2-3	US 41 just E of 11 Mile Road	Vehicle
UCFP72	2/25/2005	M	2	SR 29 near Jerome	Vehicle
UCFP73	4/7/2005	M	7 mo	CR951 S of Rattlesnake Hammock Road	Vehicle
FP120	5/7/2005	F	5	US41 near Turner River	Vehicle
UCFP74	6/4/2005	M	3	I-95, St. John's/Flagler Co. line	Vehicle
UCFP75	6/19/2005	M	2	SR 29 at Owl Hammock Curve	Vehicle

Appendix VI. Summary of Florida Panther Mortalities in Southern Florida from 1 July 2004 to 30 June 2005

Florida Panther 55.—The carcass of this approximately 11.5-year-old radio-collared female was recovered 12 July 2004, following detection of a mortality signal during a routine monitoring flight. The remains, which had been reduced to bones and hide by scavengers, were found in the Big Cypress National Preserve (BCNP) between US41 and I-75. Necropsy was performed at the Wildlife Research Laboratory (WRL) in Gainesville, and cause of death was suspected to be due to intraspecific aggression (ISA) based on compressive fractures of the nasal bones. No congenital defects were observed although severe autolysis and scavenging precluded complete examination (a slight kink in the last vertebrae of the tail was noted at previous captures). Rabies IFA and FeLV ELISA antigen test were not possible due to severe autolysis.

Florida Panther 59.— The carcass of this approximately 9.5-year-old radio-collared male was recovered on 22 November 2004, from private land just west of the Florida Panther National Wildlife Refuge (FPNWR) in Collier county. Numerous punctures were observed on the face and cranium. Field sign included panther scrapes on the trail to FP59's location. FP131 was known to be nearby and was possibly the aggressor. Necropsy was performed at the WRL, and cause of death was confirmed to be ISA. Congenital defects observed included a slightly kinked tail, a cowlick, and a cleft in the spleen. Brain tissue tested unsatisfactory for rabies by IFA and thoracic blood was negative for feline leukemia virus (FeLV).

Florida Panther 117.—The carcass of this approximately 2.5-year-old radio-collared male was recovered from private lands to the east of Okaloacoochee Slough State Forest (OKS) about one mile from a major road on 28 July 2004, following detection of a mortality signal during a routine flight. There were no signs of thrashing or obvious signs of trauma, although blood tinged fluid drained from the mouth and nose when turned over for examination. Blood collected post-mortem tested negative for FeLV. Necropsy was performed at the University of Florida, College of Veterinary Medicine (UF-CVM), and an immediate cause of death was not determined. Upon microscopic examination of tissues,

mild perivascular lymphocytic inflammation (encephalomyelitis) was seen in the cerebrum, brainstem, and spinal cord suggesting viral infection. However, viral culture, PCR (canine distemper virus, pseudorabies virus, Flaviviruses, Alphaviruses, encephalomyocarditis virus, *Neospora caninum*, *Toxoplasma gondii*, and *Sarcocystis neurona*), IHC (canine distemper virus), and rabies IFA of brain tissue were negative. PCR and IHC of brain tissue were also negative for FeLV. Toxicological tests performed at Michigan State University included gas chromatography (liver), heavy metal concentrations (kidney), anticoagulant screen (liver), and chlorinated pesticide concentrations (fat); all tests were negative or showed insignificant toxin levels. Congenital defects observed were limited to a small cleft in the spleen. The cause of death for FP117 remains open but was likely viral; the case is still under investigation.

Florida Panther 120.— FP120 was a 4-year-old radio-collared female (died at 5-years-of-age) that was injured in a collision with a vehicle on 11 July 2004, on US41 at the Turner River near Ochopee in the BCNP. The panther was transported to UF–CVM for treatment and then to White Oak Conservation Center for rehabilitation. Ten months following the accident, FP120 was released 6-7 miles north of US 41 and 4-5 miles east of SR 29 in Big Cypress National Preserve; BCNP biologists reported that she began moving south immediately after her release and was located within a half of mile north of US 41 on 6 May 2005. FP120 was struck and killed by a vehicle on US 41 near Turner River Road, Collier County, 7 May 2005, three days after her release.

Vehicular collision was confirmed as the cause of death at necropsy. The stomach was empty except for unidentified small mammal hair and bones. Mild pleural adhesions were noted in the left thorax – possibly the result of the initial accident. Congenital defects were limited to a small cleft in the spleen. Rabies IFA and FeLV ELISA antigen tests were negative.

Florida Panther 126.— FP126 was a 1.5 year-old male panther that had been relocated to OKS due to its presence near the Green Corn Dance Ceremonial site. FP126 established a home range in and around OKS during the subsequent 7 months but was found dead 3 January 2005 on private land ½ mile south of CR846 and 1.5 miles west of County Line Road following detection of a mortality signal. Field

sign suggested ISA, and FP65 was located within ½ mile the same day. Intraspecific aggression as the cause of death was confirmed at necropsy. Congenital defects were limited to a small cleft in the spleen. Rabies IFA was not performed due to severe autolysis; FeLV SNAP test of thoracic blood was negative.

Florida Panther 132.— FP132 was a 3 year-old radio-collared male that died 22 July 2004, due to septicemia likely secondary to FeLV infection. The panther's movements had become restricted approximately 5 days prior to death. Necropsy revealed a large abscess over the right quadriceps muscle, interstitial pneumonia, and septicemia. Aerobic cultures were taken of the abscess and lungs resulting in heavy growth of β -hemolytic *Streptococcus* sp. FeLV SNAP test of serum and aqueous humor, and IFA of blood smears were positive. Immunohistochemistry of spleen and lymph node were positive for p27 antigen. ELISA antigen of serum at Antech Diagnostics was negative, but this is believed to be an erroneous result. Virus was cultured at OSU. FP132 was positive for FeLV by ELISA antigen (venous serum), IFA (blood smear), IHC, PCR, and viral culture. FP132 may have been infected by FP123 following ISA in March 2004. Congenital defects were limited to a cleft in the spleen.

Florida Panther 136.— FP136 was a 4 year-old radio-collared female that was found dead due to unknown causes 14 June 2005, in the Turner River Unit of BCNP. The panther had originally been captured and radio-collared by the NPS on 13 January 2005. At capture, NPS personnel noted chronic healed injuries to the left shoulder and back (scapula and adjacent spinous processes). FP136 had restricted movements since 25 May 2005, and had been in the same location for approximately 2 weeks before death. FP136 was emaciated but there were no obvious signs of trauma. The panther was collected by NPS within 2 hr of death and was delivered to the Wildlife Research Laboratory (Florida Fish and Wildlife Conservation Commission, Gainesville). FP136 was subsequently transported to the UF-CVM for necropsy the next day (15 June).

Whole body radiographs taken prior to necropsy revealed bullet fragments beneath the skin and in the musculature on the right side of the chest. Healed fractures were observed in the left scapula and spinous processes of the adjacent cervical vertebrae. A more recent fracture and dislocation of the spinal

column was also observed lower in the back (2nd and 3rd lumbar vertebrae). Rounding of the fracture edges indicated the lumbar vertebral fractures to be approximately 2-3 weeks old.

At necropsy, gross findings included emaciation, abrasions and ulcers on the hindlimbs, healed fractures of the left scapula and adjacent spinous processes, and acute fracture/luxation of the lumbar vertebrae. Copper-plated bullet fragments were recovered from the muscle and subcutaneous tissues of the thorax, primarily on the right side. No evidence of trauma (skin perforation, hemorrhage, muscle/tissue damage) associated with the bullet fragments was observed.

Microscopically, chronic inflammation was observed in tissues around the bullet fragments. Interestingly, evidence of degeneration (demyelination and vacuolation) was observed in the white matter of the mesocephalon of the brain. The causes of these and changes and their relationship to the panther's condition are unknown but similar changes have been seen in at least one captive panther. Further examination of these tissues is being performed by veterinary pathologists at the University of California (Davis).

Bullet fragments recovered at necropsy were sent to the National Fish and Wildlife Forensics Laboratory (Ashland, Oregon) for analysis. The fragments were examined macroscopically, microscopically, and by x-ray fluorescence spectrometry; however, rifling was not present and caliber could not be determined.

FP136 survived a shooting at some time prior to her initial capture. The bullet likely entered the left side and fragmented after hitting the dorsal aspect of the left scapula and cervical spinous processes. These fragments continued into the subcutaneous tissues and muscle of the right side. The fragments apparently did not penetrate the thorax and are not believed to have resulted in serious injury. The lumbar vertebrae fracture likely occurred 3 weeks before death. The cause of this fracture is unknown.

Congenital defects observed were limited to small cleft in the spleen. Rabies IFA and FeLV ELISA antigen tests were negative.

Florida Panther Kitten 94.— The carcass of this 3.25-year-old uncollared male was recovered from the median on I-75 near mile marker 98 beyond the panther fence wildlife crossing area on 17

August 2004. A transponder chip was found identifying it as K94, a kitten of FP88 that was last handled by NPS at 3 weeks of age in May 2001. Necropsy was performed at WRL, and vehicular collision was confirmed as the cause of death. Congenital defects observed were limited to a double cleft in the spleen. Rabies IFA and a FeLV snap test were both negative.

Florida Panther Kitten 128.— The carcass of this 2.5-year-old uncollared male was recovered on 7 December 2004, from CR832 about 1 mile east of the old railroad grade. A transponder chip identified the carcass to be K128, a kitten of FP75 that was last handled when 10 days old in June 2000. Necropsy at the WRL confirmed vehicular collision as the cause of death. Congenital defects included a kinked tail, a cowlick, and a cleft in the spleen. Rabies IFA and a FeLV snap test were negative.

Florida Panther Kitten 156.— Big Cypress National Preserve biologists recovered the carcass of K156 from US41 east of Ochopee in Collier County on 2 August 2004. The female kitten was approximately 6 months of age and weighed 20 lbs. K156 was one of two kittens whose mother, FP120, was captured on 11 July 2004 for treatment following collision with a vehicle. Attempts to find her two kittens were unsuccessful following her capture. Necropsy was performed at WRL, and vehicular collision was confirmed as the cause of death. The kitten was severely emaciated and would not likely have survived had it not been hit by car. Congenital defects observed were limited to a small cleft in the spleen. A FeLV snap test of thoracic blood was negative; rabies IFA was not performed due to severe skull/brain trauma.

Uncollared Florida Panther 67.— UCFP67 was a dependent 1-week-old female kitten of FP113 found dead 2 September 2004 in the FPNWR. No sign of a den or other kittens was seen. Necropsy was performed at WRL and abnormalities observed included dehydration, emaciation, enlarged kidneys, enlarged submandibular lymph nodes, and numerous small lacerations over the caudal portion of the body. There was no milk in the stomach. Cause of death was likely septicemia, dehydration, and malnutrition. No congenital defects were observed. A FeLV snap test of thoracic blood was negative.

Uncollared Florida Panther 68.— This uncollared 3 to 6-year-old female Florida panther was found approximately 1 mile north of BCNP Oasis Visitor Center in a small pine island surrounded by

swamp buggy trails on 30 September 2004. It was estimated to have been dead up to 2 days. Based on matted vegetation, it is thought that the panther was alive and at the site for several days. There was no sign of thrashing or struggle, no sign of other panthers, and no sign of humans other than the exotic plant removal crew who found the carcass. A necropsy was performed at WRL and cause of death could not be determined; however, severe autolysis and scavenging precluded complete examination. No congenital defects were observed (spleen not available for examination). Whole body radiographs were negative for bullet fragments. An FeLV snap test of thoracic blood was negative.

Uncollared Florida Panther 69.—This uncollared approximately 2-year-old female was found dead 25 October 2004, on SR29 approximately 2.5 miles north of CR858. Necropsy was performed at WRL, and vehicular collision was confirmed as the cause of death. Numerous tapeworms were found in the small intestine. Congenital defects observed included a kink in the tail, a cowlick, and a cleft in the spleen. A FeLV snap test of thoracic blood was negative. Brain was unsatisfactory for Rabies IFA.

Uncollared Florida Panther 70.— This uncollared approximately 1-year-old female was killed 1 December 2004, on SR29 at the curve by owl hammock radio tower about 5.5 miles south of Immokalee. Necropsy was performed at WRL, and vehicular collision was confirmed as the cause of death. Congenital defects observed were limited to a cleft in the spleen. Rabies IFA and FeLV SNAP test of venous blood were negative.

Uncollared Florida Panther 71.—This uncollared 2 to 3-year-old male was killed on US41 just east of 11-mile Road 11 February 2005. Necropsy was performed at WRL, and vehicular collision was confirmed as the cause of death. Congenital defects observed were limited to a cleft in the spleen. Rabies IFA and FeLV SNAP test of venous blood were negative.

Uncollared Florida Panther 72.— This uncollared approximately 2-year-old male panther was hit and killed 25 February 2005, on SR29 in Jerome. The moderately scavenged carcass was transported to WRL for necropsy, and vehicular collision was confirmed as the cause of death. Congenital defects observed were limited to a cowlick and a cleft in the spleen. A FeLV snap test was negative. Rabies IFA was not performed due to severe autolysis.

Uncollared Florida Panther 73.—This uncollared approximately 7-month-old male was killed 7 April 2005, on CR951 near Edison Community College. Necropsy was performed at WRL, and vehicular collision was confirmed as the cause of death. Congenital defects observed were limited to a very small cleft in the spleen. A FeLV snap test of femoral blood was negative. Rabies IFA was not performed due to severe autolysis.

Uncollared Florida Panther 74.—This uncollared 3-year-old male was hit and killed on a bridge in the south bound lane of I-95 on the St. Johns-Flagler County line on 4 June 2005. UCFP74 was necropsied at WRL, and vehicular collision was confirmed as the cause of death. Congenital defects observed were limited to a cleft in the spleen. Rabies IFA and a FeLV snap test of thoracic blood were negative.

Uncollared Florida Panther 75.—This uncollared 2 to 3-year-old male was killed 19 June 2005, on SR29 at the curve by owl hammock radio tower about 5.5 miles south of Immokalee. Necropsy was performed at WRL, and vehicular collision was confirmed as the cause of death. Congenital defects observed included a kinked tail, a cowlick, and a cleft in the spleen. A FeLV snap test of femoral blood was negative. Rabies IFA was unsatisfactory.

Appendix VII. Aerial telemetry accuracy estimated by recovery of radiocollared panther carcasses or discovery of radiocollared panther dens.

Cat ID	Date	GPS Location		Flight Location		Distance	Type		
		EWUTM	NSUTM	EWUTM	NSUTM				
FP76	11/13/1999	462421	2881806	462500	2882200	401.84	death	AVGDIST	117.71
FP84	4/20/2000	460012	2982446	460300	2982300	322.89	death	COUNT	40
FP89	11/9/2000	484485	2884281	484500	2884200	82.38	death	STDDEV	93.9934
FP97	12/2/2001	465509	2926001	465500	2926000	9.06	death	CONFIDE	29.12832
FP49	1/3/2002	493213	2900108	493200	2900100	15.26	death		
FP105	1/15/2002	462385	2899168	462400	2899200	35.34	death		
FP92	9/15/2001	430933	2924962	430900	2924900	70.24	death		
FP111	9/4/2002	466864	2942850	466700	2942800	171.45	death		
FP112	9/11/2002	474998	2900155	475000	2900200	45.04	death		
FP78	10/17/2002	465297	2896039	465300	2896000	39.12	death		
FP32	9/12/2002	451442	2892859	451400	2892900	58.69	death		
FP67	1/15/2003	480986	2909860	480800	2909900	190.25	death		
FP73	3/3/2002	507954	2899970	508000	2900000	54.92	den		
FP78	4/30/2002	457513	2897669	457500	2897700	33.62	den		
FP101	5/9/2002	494316	2905244	494100	2905100	259.60	den		
FP83	5/12/2002	460796	2871524	460900	2871800	294.94	den		
FP106	5/27/2002	464472	2903247	464400	2903200	85.98	den		
FP75	6/6/2002	465967	2894804	466100	2894800	133.06	den		
FP112	6/15/2002	473274	2901576	473200	2901600	77.79	den		
FP67	6/18/2002	481599	2909277	481500	2909300	101.64	den		
FP107	7/7/2002	452223	2894360	452000	2894300	230.93	den		
FP77	8/30/2001	502626	2903898	502600	2903900	26.08	den		
FP49	8/27/2001	495337	2900840	495200	2900900	149.56	den		
FP75	6/15/2001	466823	2899382	466800	2899500	120.22	den		
FP67	5/26/2001	486177	2909773	486300	2909800	125.93	den		
TX106	3/17/2001	453401	2896211	453400	2896300	89.01	den		
FP82	1/3/2001	472619	2933590	472400	2933300	363.40	den		
FP67	8/19/2001	486062	2910750	486000	2910900	162.31	den		
FP109	2/26/2003	467475	2943647	467600	2943600	133.54	death		
FP109	2/24/2003	467475	2943647	467400	2943600	88.51	death		
FP109	2/21/2003	467475	2943647	467600	2943500	192.96	death		
FP82	5/13/2003	472357	2929848	472400	2929900	67.48	death		
FP110	6/3/2003	467115	2938383	467100	2938400	22.67	den		
FP114	10/16/2003	465207	2896201	465193	2896199	14.14	death		
FP122	2/13/2004	467173	2935428	467292	2935303	172.59	death		
FP123	3/17/2004	473157	2930309	473125	2930292	36.24	death		
FP75	3/21/2004	468375	2894039	468312	2894050	63.95	den		
FP59	11/22/2004	450385	2895682	450138	2895495	309.80	death		
FP126	1/3/2005	469917	2921265	469944	2921291	37.48	death		
FP110	1/13/2005	464294	2940425	464304	2940461	37.36	Prey site		
FP110	3/7/2005	464327	2941397	464360	2941577	183.00	den		
FP107	3/15/2005	457847	2899232	457961	2899255	116.30	den		