

State: FloridaProject No. E-1-09Study Title: Big Cypress Watershed Deer/Wild Hog/Panther RelationshipsStudy No. 7A. Problem and Need

Preliminary food habits investigations have revealed that white-tailed deer and wild hogs are primary prey items of Florida panthers in the Big Cypress Swamp. Although the area appears to support a relatively low density of deer and hogs, panthers and sport hunting of deer and hogs have coexisted there for many years. Since deer and hogs are nutritionally important to the health and productivity of panthers, it is therefore essential to assess the status of the Big Cypress deer and wild hog herds to:

- 1) Determine the extent to which the deer and hog herds adequately serve as a prey base for Florida panthers that inhabit the area;
- 2) Determine whether sport hunting suppresses deer and hog numbers in such a manner as to impact food availability for panthers; and
- 3) Determine the potential to enhance deer numbers in the area to further benefit food availability to Florida panthers.

B. Expected Results and Benefits

This study should result in the development of management strategies that will facilitate maintenance of the Big Cypress deer herd at a level to produce the maximum crop of healthy deer each season for sporting and aesthetic uses consistent with the maintenance of a healthy panther population. An assessment of the potential importance of the wild hog to the panther should also result from this study.

Objective

To develop population models that will allow for the maintenance of the Big Cypress deer herd at a level to produce the maximum crop of healthy deer each season for sporting and aesthetic uses consistent with the maintenance of a healthy panther population. These models along with information gathered on wild hog distribution and abundance should also help identify potential benefits to panthers which could be derived from managing wild hogs on the area.

D. Status

Traditionally, hunting has been man's primary use of the Big Cypress. In the 1950's and 1960's, there was a tremendous increase in hunting activity in this area. Aerial photographs show a 440 percent increase in obvious ORV trails between 1953 and 1973. This suggests an increase in hunter use since much of the Big Cypress ORV travel is in conjunction with hunting activities. Factors contributing to this increase were south Florida's population growth, a major highway (SR 84) built across the area in 1966-67, more leisure time available to working people, and the development of ORVs which made it possible to traverse the entire Big Cypress with relative ease. Today, hunting is by far the dominant land use activity in the area. Deer, wild hog, and turkey are the primary game. Hunters generally take other species only when they happen to encounter them while searching for deer, wild hog or turkey, or during time of the day not considered optimal for deer, wild hog or turkey hunting (Duever, et al. 1979. Resource inventory and analysis of the Big Cypress National Preserve). The present Big Cypress Wildlife Management Area was established in 1970. Since that time, the Florida Game and Fresh Water Fish Commission has maintained voluntary check stations, initiated a habitat mapping project, and conducted random field surveys

to estimate densities of wildlife populations. Only minimal information is available, however, on deer and wild hog populations or harvests in the area. The panther population has been the subject of an intensive research project in the area since 1981. This research has focused on individual home range size and how these ranges relate to each other, daily and seasonal activity, social relationships, frequency of use of different habitat types and specific areas, frequency of kills, behavior in relation to water levels, wildfire and human activity, and reproductive success.

E. Approach

A step-down diagram of the approach is shown in Figure 1. In order to determine the number and distribution of deer and wild hog in the Big Cypress watershed, vegetation maps will be obtained and used to select transect strips and other designated routes that are representative of the Big Cypress. These routes will be traversed on a periodic basis and records kept of tracks/mile. These will be analyzed as to relative abundance in different habitat types. Also, records will be kept of deer and wild hog kill locations from information obtained at mandatory check stations and from hunter surveys. These locations will be plotted on the vegetation maps and analyzed by relative abundance in different habitat types. Spotlight counts and aerial surveys will be conducted initially to determine the feasibility of using these techniques in the Big Cypress watershed. In addition, a sample of deer (number yet to be determined) will be captured, radio-instrumented, and monitored on a systematic basis to determine habitat preferences and movements in relation to water levels, seasons, disturbance, etc.

Relative deer densities with respect to carrying capacity will be determined from APCs and other relative physical condition parameters

measured on deer collected on a periodic basis, from harvested deer checked at check stations, and automobile and illegally killed deer that may be examined.

The sex and age structure of the Big Cypress deer and wild hog populations will be determined by sexing and aging deer and wild hogs checked out at mandatory check stations, deer collected during systematic collections, road-kills, confiscated illegal kills, and deer live-captured for the radio-telemetry work. Sex ratio information will be kept where practical during the spotlight counts, aerial counts, and general field observations. Tooth-sections will be made to evaluate the use of the technique for aging deer and wild hogs in south Florida.

One hundred thirty-two doe deer will be collected over a twenty-two month period from the Big Cypress watershed. Reproductive tracts will be removed and analyzed to determine chronology of reproductive and intra-uterine natality rates. Reproductive tracts from deer collected from other sources (illegal kills, road-kills, etc.) will also be removed and analyzed. Fawn/doe ratios will be determined from spotlight and aerial counts, field observations, and from radio-telemetry work. Estimates of reproductive rates will be calculated utilizing population reconstruction modeling techniques.

Age specific mortality rates will be estimated using changes-in-ratio techniques utilizing the age structure information derived from the check stations, periodic collections, and other examinations. An estimate of crippling loss will be made from analysis of hunter questionnaires. Predator mortality will be estimated from panther kill rates and bobcat food habits studies. Other mortality may be indicated by deer monitored with radio-telemetry.

In order to determine the relative importance of deer and wild hogs as prey species of the Florida panther in the Big Cypress watershed, field searches will be made to find and identify kills in those areas, where the movement data from the radio-instrumented panthers indicates a large kill has been made. Stomachs and scats will be analyzed when available as to the percentage of deer and wild hogs in the contents. (Jobs II-E-3-2, II-E-3-3 and II-E-3-4).

All of the data gathered in this study, as well as from related deer and panther studies, will be compiled and used to formulate population models for the deer and wild hog herds and panther population in the Big Cypress watershed.

Schedule:

<u>Job</u>	<u>Title</u>	<u>Completion Date</u>	<u>Manyears</u>
1	Deer & Wild Hog Numbers and Distribution	06/30/85	0.40
2	Deer & Wild Hog Age and Sex Structure	06/30/85	0.02
3	Deer Reproductive Status	06/30/85	0.25
4	Deer Mortality	06/30/85	0.35
5	Model Development	06/30/86	

Personnel: The project leader and other personnel are to be announced.

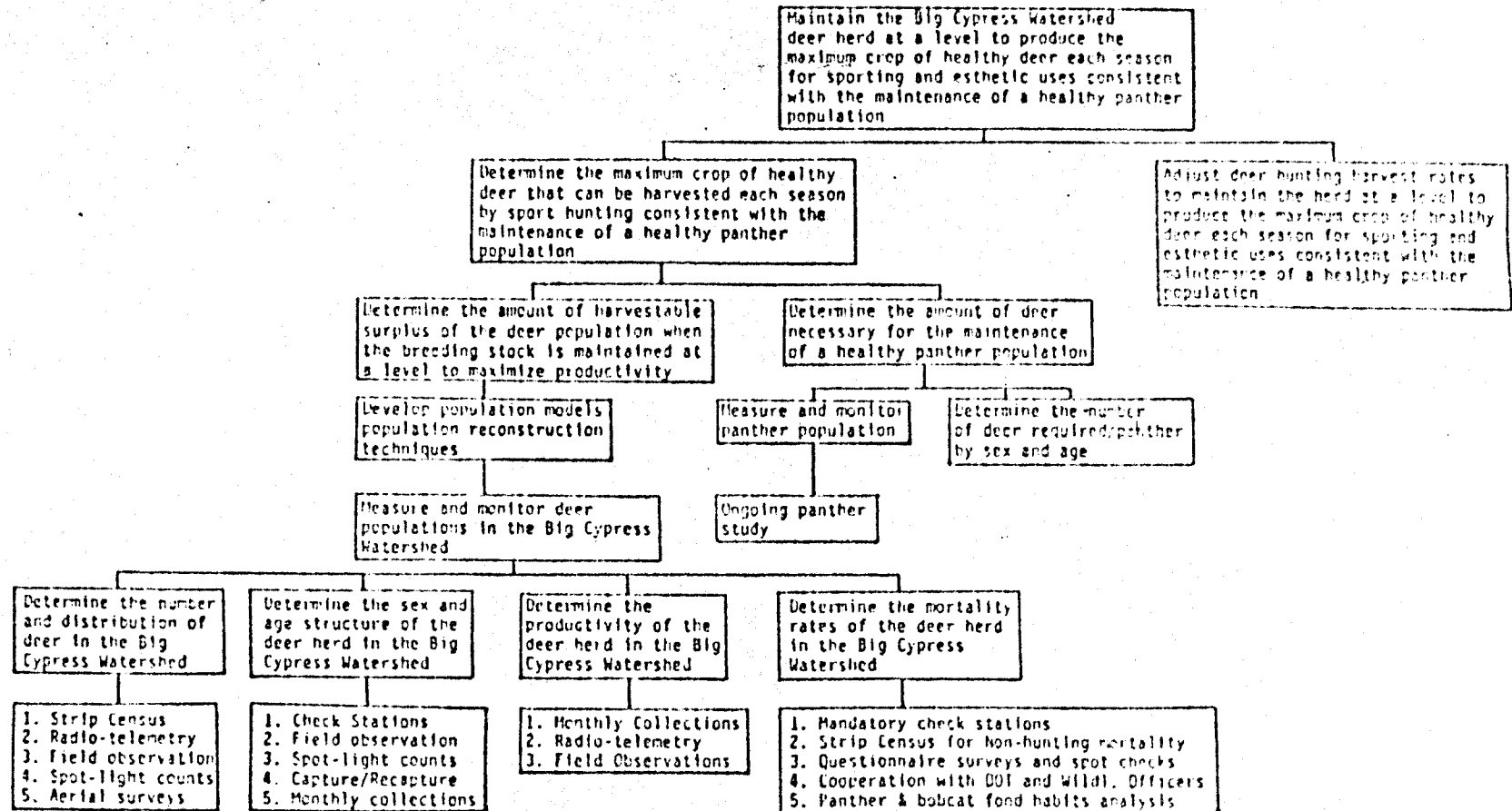
F. Geographic Location

Big Cypress Wildlife Management Area.

G. Related Federal Projects

This study is an integral part of the Florida Panther Recovery Plan Implementation Project, Endangered Species Project E-1-II-E.

FIGURE 1



JOB DESCRIPTION

State: Florida

Project Number: E-1-09

Section Number: II

Subsection Number: E

Study Number: 7

Job Number: 1

Project Title: Endangered Wildlife

Section Title: Recovery Plan Implementation

Subsection Title: Florida Panther Plan Implementation

Study Title: Big Cypress Deer/Panther Model

Job Title: Deer & Wild Hog Numbers and Distribution

Objective: To determine the number and distribution of deer and wild hog in the Big Cypress Watershed.

Procedures:

- 1) Vegetation maps will be made or obtained of the Big Cypress Watershed.
- 2) A system of transect strips and other designated routes that are representative of the Big Cypress Watershed will be covered periodically on a systematic basis.
- 3) A record of tracks/kilometer will be kept and analyzed as to relative abundance of deer and wild hog in different habitat types.
- 4) A record will be kept of deer and wild hog kill locations from information obtained at mandatory check stations and from hunter surveys.
- 5) These kill locations will be plotted on the vegetation maps and analyzed as to relative abundance in different areas.
- 6) Spot-light counts and aerial surveys will be conducted initially to determine the feasibility of using these techniques in the Big Cypress Watershed.
- 7) A sample of deer (number yet to be determined) will be captured, radio-instrumented, and monitored on a systematic basis to determine habitat preferences and movements in relation to water levels, seasons, disturbance, etc.

Job Schedule: 1 July 1984 to 30 June 1985

Costs: _____

Many years: _____

Principal Investigator: J. C. Potoski, Biological Administrator

JOB DESCRIPTION

State: Florida

Project Number: E-1-09

Section Number: II

Subsection Number: E

Study Number: 7

Job Number: 2

Project Title: Endangered Wildlife

Section Title: Recovery Plan Implementation

Subsection Title: Florida Panther Plan Implementation

Study Title: Big Cypress Deer/Panther Model

Job Title: Deer & Wild Hog Age and Sex Structure

Objective: To determine the current sex and age structure of deer and wild hogs in the Big Cypress Watershed.

Procedures:

- 1) Deer and wild hogs checked out at the mandatory check stations will be sexed and aged.
- 2) Deer collected during the monthly collections will be aged.
- 3) Sex ratio information of White-tailed deer will be kept where practical during the spot-light counts, aerial counts, and general field observations.
- 4) Road-killed White-tailed deer and wild hogs and confiscated illegal kills will be sexed and aged.
- 5) Tooth-sections will be made to evaluate the use of the technique for aging White-tailed deer and wild hog in south Florida.
- 6) All deer live captured for the radio-telemetry work will be sexed and aged.

Work Schedule: 1 July 1984 to 30 June 1985

Costs: _____

Manyears: _____

Principal Investigator: J. C. Roboski, Biological Administrator I

JOB DESCRIPTION

State: Florida

Project Number: E-1-09

Section Number: II

Subsection Number: E

Study Number: 7

Job Number: 3

Project Title: Endangered Wildlife

Section Title: Recovery Plan Implementation

Subsection Title: Florida Panther Plan Implementation

Study Title: Big Cypress Deer/Panther Model

Job Title: Deer Reproductive Status

Objective: To determine the reproductive status and trends of deer in the Big Cypress Watershed.

Procedures:

- 1) A sample of 132 doe deer will be collected over 22 months from the Big Cypress Watershed.
- 2) Reproductive tracts will be removed and analyzed to determine reproduction seasons and intra-uterian natality rates.
- 3) Reproductive tracts from deer collected from other sources (illegal kills, roadkills, etc.) will also be removed and analyzed.
- 4) Fawn/doe ratios will be determined from spot-light and aerial counts, field observations, and from radio-telemetry work.
- 5) Estimates of reproductive rates will be calculated utilizing population reconstruction modeling techniques.

Work Schedule: 1 July 1984 to 30 June 1985

Posts: _____

Manyears: _____

Principal Investigator: J. C. Roboski, Biological Administrator I

JOB DESCRIPTION

State: Florida

Project Number: E-1-09

Section Number: II

Subsection Number: E

Study Number: 7

Job Number: 4

Project Title: Endangered Wildlife

Section Title: Recovery Plan Implementation

Subsection Title: Florida Panther Plan Implementation

Study Title: Big Cypress Deer/Panther Model

Job Title: Deer Mortality

Objective: To determine the rate and sources of mortality of deer in the Big Cypress Watershed.

Procedures:

- 1) Age specific mortality rates will be estimated using changes in ratio techniques utilizing the age structure information derived from the check stations, monthly collections, and other examinations.
- 2) An estimate of crippling loss will be made from analysis of hunter questionnaires.
- 3) Predator mortality will be estimated from panther kill rates and bobcat food habits studies.
- 4) Other mortality may be indicated by deer monitored by radio-telemetry.

Work Schedule: 1 July 1984 to 30 June 1985

Posts: _____

Many years: _____

Principal Investigator: J. C. Poboski, Biological Administrator I

JOB DESCRIPTION

State: Florida

Project Number: E-1-09

Section Number: II

Subsection Number: E

Study Number: 7

Job Number: 5

Project Title: Endangered Wildlife

Section Title: Recovery Plan Implementation

Subsection Title: Florida Panther Plan Implementation

Study Title: Big Cypress Deer/Panther Model

Job Title: Model Development

Objective: To develop a population model for the deer herd and panther population in the Big Cypress Watershed.

Procedures:

- 1) Data gathered in the other jobs of this study will be compiled and used to formulate a model using population reconstruction techniques.
- 2) Data gathered on the wild hog population will be compiled and evaluated with respect to the Deer/Panther population model.

Work Schedule: 1 July 1984 to 30 June 1985

Tests: _____

Many years: _____

Principal Investigator: J. C. Roboski, Biological Administrator I