



Mississippi State UNIVERSITY

Department of Wildlife and Fisheries
Box 9690
Mississippi State, MS 39762-9690
(601) 325-3830 FAX (601) 325-8726

March 6 ,1996

Jacob Bowman
Mississippi State University
Box 9690
Mississippi State, Mississippi 39762

Stephen Gard
Mississippi Wetland Management District
P.O. Box 1070
Grenada, MS 38901

Dear Mr. Gard,

I am a graduate research assistant working toward my Phd on black bears at Mississippi State University. In a conversation with your office last week, I found that your office was unaware of the status of the black bear which Mississippi State University has collared on Dahomy NWR. I wanted to apologize for any misunderstanding about this bear and update your office on the status of this bear. The bear was captured in downtown Clarksdale, MS on June 4, 1995. It was then collared and released on Dahomy NWR that same day. Measurements were taken on the bear and it was tagged with large yellow cattle eartags with the numbers 4 and 5. This bear was a subadult male of approximately 150 lbs. See the attached map for each location:

- X. Release Site
1. 6/5/95
2. 6/8/95
3. 6/16/95 aerial location
4. 10/26/95 aerial location
5. 1/22/96 aerial location
6. 3/2/96 located in den tree
7. 3/3/96 darted and recollared at its' den tree

The lack of locations is a result of the bear chewing the antennae off its' collar, reducing the range of the collar, making ground locations difficult. The bear was located on March 3 in a den tree from the ground. I returned the next day with the necessary equipment and assistance. The bear was darted and removed from the tree so it could be recollared and measured. After work on the bear was complete, it was returned to the den tree before it awoke. The condition of the bear appeared to be excellent, and it showed no signs of problems resulting from its' collar.

I also have included the program narrative for the portion of my study which will occur in Mississippi. If at all possible I would like to stay a Dahomy NWR starting in late-April until early

June. This arrangement would allow me to run traplines in batture area for bears while still being able to make daily checks of the bear on Dahomy NWR. Thank you for your time. I can be reached at my office (601) 325-2996.

Sincerely,

A handwritten signature in cursive script, appearing to read "Jake Bowman". The signature is fluid and extends to the right with a long, sweeping tail.

Jake Bowman
Graduate Research Assistant

PROGRAM NARRATIVE

State: Mississippi

Project Number: W-48-43

Project Title: Statewide Wildlife Investigations Study:

Study Title: Black Bear Population Investigation in the Mississippi Delta

A. Problem and Need

Recently a question has arisen as to the population size of black bears (Ursus americanus) in Mississippi. This is of special concern because the Louisiana Black Bear (U. a. luteolus), the subspecies present in Mississippi, is federally listed as threatened and listed as endangered by the state. On-going research by Mississippi State University has investigated reports of bears throughout the state, and found substantial evidence of bears in the north Delta area.

One male bear was captured and radio-collared in Clarksdale, MS in 1995 and relocated to Dahomy National Wildlife Refuge. This bear has been tracked since it's capture and, to date, has not left the refuge. This bear will provide a better understanding of how much area a bear needs and their movement patterns.

The collared bear has been sighted by local residents in adjacent agricultural fields and crossing roads within the refuge. Comments from local residents has been positive to date. Research recently completed by White et. al (1995) found that hunting clubs in the north Delta area have a positive attitude toward black bears. However, in Arkansas, where bear numbers are much higher and bear damage is common, many hunting clubs would like to have fewer bears. Research in the future needs to study how to prevent or minimize bear damage before it occurs to ensure that attitudes toward bears remain positive.

B. Expected Results and Benefits

This study will allow managers to better understand the population size and needs of black bears in the Delta. In addition, steps can be initiated with cooperating landowners to prevent bear damage before it occurs.

C. Objectives

1. To capture and radio-collar as many black bears as possible.
2. To determine movement patterns of radio-collared bears.
3. To identify and mitigate black bear damage before it occurs.

D. Approach

Job-1: Bear capture and survival monitoring

Bears will be captured using aldrich foot snares or culvert traps (Jonkel 1993). These are the standard traps used to capture black bears and rarely result in harm to the animal (Jonkel 1993). Capture will concentrate in April-June to minimize heat stress. Bears will be immobilized with a combination of telazol and Xylazine Hydrochloride (White et al., unpublished data). Standard body measurements (weight, body length, heart girth, ear, and leg measurements) will be obtained, and sex determined. A premolar will be removed and sectioned to determine age of the animal (Jonkel 1993). Each animal will be uniquely ear-tagged, lip-tattooed and fitted with radio-transmitters. Animals will be released at the capture site.

Bears will be tracked using radio-telemetry to determine movement patterns, emphasizing dispersal. Bears also will be tracked to determine if they are seeking new territories and colonizing new areas where future conflicts may occur. Dispersal will be tested using multiple response permutation procedure (Hölzenbein 1990). Program HOMER (Ackerman et al. 1990) will be used to calculate home ranges with a two-way analysis of variance to test differences among age groups and sex (Steel and Torrie 1980). Radio-telemetry also will be used to assess causes and timing of mortality factors of black bears. Program SURVIV will be used to compare survival rates (White and Garrott 1990).

Job-2: Estimate black bear population size

Infrared monitors with cameras will be used to estimate bear density using a mark-resight technique on areas where collared bears are present (Mace et al. 1994). This estimate will be compared to amount and type of damage to better understand interrelationships of density to damage. Program CAPTURE or a similar

mark-recapture program will be used to estimate bear densities (White and Clark 1994, White et al. 1982). Infrared monitors with cameras also will be used to determine cubs per sow. These systems will be placed facing openings of bear dens to photograph emerging sows with cubs. Cubs per sow with survival rates will be used to estimate rate of increase of the population to determine how densities may change in the future.

Job-3: To mitigate black bear damage before it occurs.

Sociological surveys will be used to assess concerns of private citizens about black bear damage on private lands where bears are determined to be present. In addition, hunting clubs will be surveyed following methods by White et al. (1995) to determine changes in attitudes over time. The survey of White et al. (1995) consisted of fourteen questions. Three addressed club demographics (i.e. acreage, membership size, age of club). Eight questions addressed frequency of bear sighting, and frequency, type, and cost of bear damage. The final three questions addressed the club's attitude towards bears and bear damage. For this study, further emphasis will be placed on estimating monetary losses, especially to agronomic crops; then, appropriate methods to prevent or reduce damage will be tested. The United States Department of Agriculture's Animal Damage Control will be consulted on appropriate animal damage control techniques including exclusion, cultural methods, frightening devices, and/or trapping/removal (Hygnstorm 1994). Success of prescribed management techniques will be determined by follow-up surveys and assessment of change in monetary value of damage. Chi-square will be used to analyze all survey data following methods used by White et al. (1995). All tests will use $\alpha = 0.05$ to test for differences.

E. Geographic Region

Emphasis will be placed on the northern Delta in Mississippi because of the apparent concentration of bears. Reports throughout the Delta of Mississippi will be investigated and if sufficient evidence exists, trapping will be initiated in these areas.

White, T.H., C.C. Shropshire, and M. Staten. 1995. Black bear
damage in the Mississippi alluvial valley. Proc. East.
Wildl. Damage Manage. Conf. 7:(in press).



Mississippi State UNIVERSITY

Department of Wildlife and Fisheries
Box 9690
Mississippi State, MS 39762-9690
(601) 325-3830 FAX (601) 325-8726

March 28 ,1996

Jacob Bowman
Mississippi State University
Box 9690
Mississippi State, Mississippi 39762

Stephen Gard
Mississippi Wetland Management District
P.O. Box 1070
Grenada, MS 38901

Dear Mr. Gard,

Thank you for your response to my letter. I would first like to apologize for my actions. I take full responsibility for working without a permit. I assumed that we had a permit when I was told to dart the bear but should have checked to make sure. I can assure you that this is not the way I normally do business. My time in the US Park Service taught me the importance of permits and always checking to make sure all regulations are followed. Again, I apologize for my actions and assure you that this type of situation will not arise in the future.

If possible, I would like to meet with you sometime in the near future. At this meeting I could be briefed in person on all pertinent regulations concerning my work on Dahomey NWR. In addition, I could further discuss with you my research and the use of the sub-headquarters facility at Dahomey NWR. I will call for a time which will be convenient for you.

Enclosed is the capture data you requested. No photos are available at this time but I think I could have them for you in the next few weeks. This data is all that we have recorded for this bear. The state of Mississippi requires a quarterly report on my research. I will send you a copy of this report and it should keep you abreast of my research. If you need any further information, I can be contacted at my office (601) 325-2996.

Sincerely,

A handwritten signature in cursive script that reads "Jake Bowman".

Jake Bowman
Graduate Research Assistant

325-2996 = *Jacob's*
Office

BLACK BEAR CAPTURE DATA FORM

Investigator: Jacobson/Leopold Capture Date: June 4, 1995
 Bear Number: MS 4 Lip Tattoo: " _____ " Sex: Male
 Ear Tag Number: Right Yellow 5 Left Yellow 4 Misc. Markers _____
 Chest Blaze: _____ Estimated Age: _____ Actual (Lab) Age: 2
 Transmitter Collar: Yes No _____ Frequency 149.681 Number _____ Channel _____

Capture Location:
 County Columbia Township _____ Specific Locale Downtown Clarksdale
 X= _____ Y= _____

Release Location: N. West side - at gate on back side by fields
 County _____ Township _____ Specific Locale Dahomy Refuge
 X= _____ Y= _____

DRUG DATA

Drug: Telazol Dose: 1st 2nd 3rd started recovery in truck
 Amount Administered (CC's) 500mg 500mg (5500) 2cc by hand at 5:50 to keep sedated
 Time Administered (Military) 1645 6:08
 Time Bear was Manageable 1st reaction licks head wag 6:25 Time Bear was Walking 6:20
 Method of Injection dart Site of Injection _____
 Drug Remarks: Vet on site had darted twice with xylazine / dart injury to right rear leg

PHYSICAL DATA

Estimated Weight: 150 Scale Weight: _____ Tooth Extracted: _____ (Right/Left)
 Upper Canine: (L/R) est 3.5cm chipped rt. canine mm Cond. _____ Dental Formula: _____ (L-R)
 Total Length: 148 cm Neck Girth: 50 cm Chest Girth: 95 cm Zyg. Cir. _____ mm
 FPW: _____ mm FPL: _____ mm HPW: _____ mm HPL: _____ mm Parasites 4 ticks recovered
 Rectal Temp.: 100.7 °F at (time) 18:10 Respiration: _____ /minute Pulse: _____ BPM
 Appearance of Testes/Mammas: (Describe) good
 Vulva Rating (1-3): _____ Description _____
 Offspring Present: _____
 Blood Sample: Yes No _____ Scats Present: Yes _____ No Nos. _____

Other Remarks (Body Cond., Scars, Injuries): possible bone damage right hind femur from dart Samples Collected:
 _____ JR _____
 _____ JR _____
 _____ JR _____
 _____ JR _____
 _____ JR _____
 _____ JR _____

measures
 eye-eye 7 cm
 crown-nose 36.5
 ear notch-tip 11.5
 nose-eye 13.5 cm

BLACK BEAR TISSUE SAMPLE DATA FORM

Investigator: Jacobson Leopold - Date collected: 6-4-95

Population ID: _____ Bear number: M5 4

Sample type (check those that apply):

- blood (number of EDTA tubes _____)
 blood serum (number of clot tubes _____)
 ear plug (1 or 2 ?)
 other tissue = _____
 skull

Capture location:

State MS County Cohomq Township _____

Site name _____

UTM coordinates _____ X _____

Bear data (See diagram for measurement definitions):

Sex: M F Age 2 years

Color phase: black cinnamon Chest blaze: yes no

Weight est 150 lbs Total body length 148 cm

Fore leg girth _____ Neck girth 50 cm

Chest girth 95 cm Head width _____

Zygomatic circumference _____

Known relationships with other bears (e.g., son of #101):

Comments (general body condition, problems with sample, ...etc.):
excellent

Return to: John Kasbohm
Department of Fisheries & Wildlife Sciences
148 Cheatham Hall
Virginia Tech
Blacksburg, VA 24061-0321

BLACK BEAR CAPTURE DATA FORM

Investigator: Bowman, Coggin, Walock Capture Date: 3/3/96

Bear Number: _____ Lip Tattoo: " _____ " Sex: male

Ear Tag Number: Right 5 Yellow Left 4 Yellow Misc. Markers _____

Chest Blaze: less than 3/4" Estimated Age: _____ Actual (Lab) Age: _____

Transmitter Collar: Yes No _____ Frequency 151.520 Number 151.522 Channel _____

Capture Location: County _____ Township _____ Specific Locale _____
X= _____ Y= _____

Release Location: County _____ Township _____ Specific Locale _____
X= _____ Y= _____

DRUG DATA

Drug: telazol Dose: 1st 2nd 3rd
Amount Administered (CC's) 2cc (500mg)
Time Administered (Military) 0955
Time Bear was Manageable _____ Time Bear was Walking _____
Method of Injection _____ Site of Injection _____
Drug Remarks: _____

PHYSICAL DATA

Estimated Weight: _____ Scale Weight: 150 lbs Tooth Extracted: (Right/Left)
Upper Canine: (L/R) 1 mm Cond. 1 Dental Formula: _____ (L-R)
Total Length: 1555 mm Neck Girth: 502 mm Chest Girth: 862 mm Zyg. Cir. 501 mm
FPW: 125 mm FPL: 105 mm HPPW: 95 mm HPL: 230 mm Parasites _____
Rectal Temp.: 96.1 °F at (time) 1040 Respiration: 7 /minute Pulse: 8 BPM
Appearance of Testes/Mammae: (Describe) normal
Vulva Rating (1-3): _____ Description _____
Offspring Present: _____
Blood Sample: Yes No _____ Scats Present: Yes _____ No _____ Nos. _____

Other Remarks (Body Cond., Scars, Injuries): _____ Samples Collected: _____
JR _____
JR _____
JR _____
JR _____
JR _____
JR _____

Bear returned to den while still drugged 1105 but had already show eye + tongue movement



United States Department of the Interior

FISH AND WILDLIFE SERVICE

MISSISSIPPI WETLAND MANAGEMENT DISTRICT

P.O. Box 1070

GRENADA, MISSISSIPPI 38901



June 12, 1996

Ms Cathy Shropshire *601-362-9212*
Game Division
Mississippi Department of Wildlife, Fisheries and Parks
P.O. Box 451
Jackson, MS 39205

Dear Ms Shropshire:

The Mississippi Wetland Management District administers Dahomey National Wildlife Refuge in Bolivar County. Dahomey is approximately eight miles west of Cleveland, bisected by State Highway 446, and is about two miles east of the mainline Mississippi River levee. Our current ownership is about 10,000 acres composed of about 8,500 acres of bottomland hardwood forest, 300 acres of old fields and reforestation areas, and 1,200 acres of agricultural lands.

Since June of 1995, a collared immature black bear male has inhabited Dahomey and has been monitored continuously since that time. The bear continues to be closely monitored by Mississippi State University (MSU) PhD student Jacob Bowman under the direction of Dr. Harry Jacobson. We have entered into a cooperative agreement with MSU wherein Jake will use the facilities at Dahomey for the next two years and will continue to track the bear.

It is our desire to capture either a pregnant female bear or a female with cub(s) from the lower White River in Arkansas and release the bear on Dahomey in late July or August this year. Our purpose is through cooperation with the MSU research project to determine if bears will imprint on Dahomey and use the refuge habitat and the nearby batture lands as permanent habitat. To date, the local landowners have welcomed the existing bear and no problems have been encountered. An extensive landowner survey is also part of the research study. Of course, should problems arise with any released bears, we will remove/relocate the problem bears at our expense.

I would appreciate the concurrence of the Department concerning the placement of bears from the lower White River of Arkansas on Dahomey National Wildlife Refuge. I have corresponded with the Arkansas Game and Fish Commission and have permission from a landowner adjacent to White River National Wildlife Refuge to trap the bears to be released.

Should you have any questions, please do not hesitate to call me
at (601) 226-8286.

Sincerely Yours

A handwritten signature in black ink, appearing to read "S. W. Gard". The signature is written in a cursive style with a large, sweeping initial "S".

Stephen W. Gard
Project Leader