

**ARIZONA GAME AND FISH DEPARTMENT
HABITAT PARTNERSHIP PROGRAM
HABITAT ENHANCEMENT AND WILDLIFE MANAGEMENT PROPOSAL**

PROJECT INFORMATION

Project Title: PILOT PROJECT COLLECTING BEAR HAIR SAMPLES TO DERIVE A POPULATION ESTIMATE IN UNIT 24A FROM DNA ANALYSIS

Project No.07-722

Region/GMU: VI/Unit 24A

HPC: Payson

Project Type: Game Management – population estimates.

Project Description: Arizona currently estimates bear populations through density estimates based on high, medium, and low habitat quality. This population estimate is then used to determine a sow harvest objective to maintain the viability of a population by managing for a sow harvest below 40% annually. In Arizona the sow harvest objective by Game Management Unit can range from one to seventeen. Tooth age data from harvested bears is also evaluated to determine the status of a bear population. Although the age class of harvested bears has provided wildlife managers with valuable information to monitor population trends, data to determine a quantitative population estimate is not currently available.

Use of DNA analysis from collected bear hair samples has become the most reliable and efficient way to get a defensible bear population estimate for an area (i.e. Game Management Unit). Many eastern states and most of the Canadian Provinces already use this technique to determine their bear population estimates to support ongoing bear hunting programs.

Wildlife Species to Benefit: Bears: A reliable population estimate enables Wildlife Managers to recommend appropriate sow harvest objectives to support hunting and maintain viable bear populations, especially in units with low bear densities.

Possible Funding Partners: Research Branch

Implementation Schedule:

Beginning:

Completed: Field work completed now need analysis.

NEPA Compliance: (if applicable)

Completed: Yes ____ No ____

Projected Completion Date:

PROJECT FUNDING

SBG Funds Requested: \$3,500.00

Cost Share Funds: \$0.0

Total Project Costs: \$ 3,500.00

PARTICIPANT INFORMATION

Applicant: Jon Hanna, Game Specialist, Region VI
(please print)
Telephone: 480-324-3555

Address: 7200 East University, Mesa, AZ 85207

AGFD Contact and Phone No. (If applicant is not AGFD personnel)	
Coordinated with: Brain Wakeling, Game Branch; Todd Atwood, Research Branch; Natalie Robb, Unit 24A Wildlife Manager; Tonto National Forest; David Paetkau with Wildlife Genetics International Inc.;	Date: 2006
Applicant's signature: Jon Hanna	Date: 12-14-2007

SEND COMPLETED APPLICATIONS TO:

**Game Branch
2221 W. Greenway Rd.
Phoenix, AZ 85023
mdisney@azgfd.gov**

WAS PROJECT PRESENTED TO THE LOCAL HPC? YES X NO

This idea was discussed.

HAS PROJECT BEEN SUBMITTED IN PREVIOUS YEARS? IF SO WAS IT FUNDED?

No

NEED STATEMENT/PROBLEM ANALYSIS:

Arizona currently estimates bear populations through density estimates based on high, medium, and low habitat quality. This population estimate is then used to determine a sow harvest objective to maintain the viability of a population by managing for a sow harvest below 40% annually. In Arizona the sow harvest objective by Game Management Unit can range from one to seventeen. Tooth age data from harvested bears is also evaluated to determine the status of a bear population. Although the age class of harvested bears has provided wildlife managers with valuable information to monitor population trends, data to determine a quantitative population estimate is not currently available.

PROJECT OBJECTIVES:

This pilot project was initiated in 2006 in Unit 24A to determine the logistics of estimating a bear population using DNA analysis of collected bear hair samples. Bear hair samples were collected to determine bear density within three mountain ranges. Thirty-seven individual bear hair samples were collected during this project however they have yet to be analyzed. Also, about a dozen bear hair samples have been collected from harvested bears from this unit. Funding is needed before DNA analysis can be completed and a population estimate established. David Paetkau with Wildlife Genetics International Inc., is the best contact I could find for analyzing DNA samples. Cost would be approximately \$60.00 per sample for extraction and individual ID. Mr. Paetkau is also interested in acquiring reference data from Arizona bears.

PROJECT STRATEGIES:

Within each mountain range three sites were selected for establishing hair collection. Sample plots were numbered one through nine. These sites were evenly distributed along each mountain range. Sample sites were selected based on accessibility by vehicle and probably of being along a bear travel route based on topography. At each site a single strand of 80 foot two pronged bared wire was used to make a square perimeter sample plot and placed 16 inches above ground level. Trees and shrubs were used as corners to attach the barbed wire using U shaped nails. Commercially prepared bear lure, oil of anise, and fish emulsion was used as an attractant and poured

around the center of the plot. This lure combination was replenished during each sampling period. However, only fish emulsion was replenished during the last two sampling periods. No food reward attractants were used.

Sample plots were established on June 16th. Five two week sampling periods were then scheduled: June 30, July 14, July 28, August 11, and August 25. During the August 25th sampling period all sample plots were removed.

For checking prongs on wire for hair samples a 3X5 white index card was placed behind each prong to facilitate detecting even a single hair. Hair samples from each prong were collected and placed in an individual envelope (tooth envelope) with the date and sample site information; therefore it is possible to have several sample envelopes per plot.

PROJECT LOCATION:

Study Area:

A pilot project was initiated in 2006 in Unit 24A to determine the logistics of estimating a bear population using DNA analysis of collected bear hair samples. Unit 24A contains three distinct mountain ranges evenly distributed throughout the unit. They are the Pinal, Apache, and Timber Camp mountain ranges and were chosen to represent the high to medium habitat types for the bear population in the unit.

LAND OWNERSHIP AT PROJECT SITE (Please state specifically if PRIVATE PROPERTY and provide landowner's name):

Tonto National Forest

IF PRIVATE PROPERTY, IS THERE A STEWARDSHIP AGREEMENT BETWEEN THE LANDOWNER AND THE DEPARTMENT?

None

HABITAT DESCRIPTION:

Upper Sonoran Desert to Ponderosa Pine Habitat

ITEMIZED USE OF FUNDS:

Cost is \$60 – 70 dollars per sample and forty-seven samples are available for analysis. Including mailing cost requested would be \$3,500.

LIST COOPERATORS AND DESCRIBE POTENTIAL PARTICIPATION:

Todd Atwood, Research Branch is also collecting bear hair samples for his research work and we could coordinate shipments or compare labs for analysis.

PROJECT MONITORING PLAN:

Finished

PROJECT MAINTENANCE:

Finished

PROJECT COMPLETION REPORT TO BE FILED BY:

Jon Hanna, Game Specialist Region VI

WATER DEVELOPMENT PROJECTS (see attached worksheet):

TREE SHEARING (AGRA-AXE, PUSH) PROJECTS (see attached worksheet):

ARIZONA GAME AND FISH DEPARTMENT **WATER DEVELOPMENT WORKSHEET**

PROJECT NAME: _____

- 1) **Is the water development listed as a priority in the most recent “Wildlife Water Development Annual Implementation Schedule?”**
- 2) **Please list the Development Branch personnel and date coordinated with for this project.**
- 3) **What is the estimated annual inches of precipitation for the area? (mark one)**
___2-4 ___4-6 ___6-8 ___8-10 ___10-12 ___12-14 ___14-16 ___>16
- 4) **Is there a perennial water source available to big game within four miles of this project?**
___YES (please complete #5 below) ___NO (skip #5 below)
- 5) **For the accessible, perennial water source nearest this project:**
Name of water source:
Type of water source (catchment, spring, dirt tank, etc.):
Ownership of water source:
Distance in miles from project:
- 6) **Is the target wildlife species a result of transplant efforts? ___YES ___NO**
- 7) **Please list any special land management status for the project site (i.e. Wilderness, National Park, National Monument, etc). If private land, list landowner.**
- 8) **Please provide the following information about access to the proposed site:**
Type of access (mark one): ___2x4 vehicles ___4x4 only ___foot only**
**If foot access only: Distance in miles: Approx. hiking time:

-- Does access to this site require crossing private or tribal lands? ___YES ___NO

-- Please describe any restrictions to public access:
- 9) **Please list below (or on a separate sheet) the material type and dimensions of each component proposed to be added, modified, or repaired.**
- 10) **Was a site visit completed? ___ Yes ___No**
If Yes, please list personnel that attended and date.

ARIZONA GAME AND FISH DEPARTMENT
TREE SHEARING WORKSHEET

PROJECT NAME: _____

- 1) **What is the estimated acreage of the project?**

- 2) **How are the trees going to be cleared? (agra axe, chain saw, push):**

- 3) **What is the estimated number of trees per acre?**

- 4) **Describe trees to be cleared (species, estimated diameter, single stem, multi-stem):**

- 5) **Describe terrain (slope, soil type, rocks, etc.)**

- 6) **Please list any special land management status for the project site (i.e. Wilderness, National Park, National Monument, etc). If private land, list landowner.**

- 7) **Please provide the following information about access to the proposed site:**
Type of access (mark one): 2x4 vehicles 4x4 only foot only**
**If foot access only: Distance in miles: _____ Approx. hiking time: _____

Does access to this site require crossing private or tribal lands? YES NO

Is the site relatively accessible for tree shearing equipment? YES NO

Please describe any restrictions to public access:

PROJECT COMPLETION REPORT

(Please complete the report and forward to Game Branch
within 30 days of the completion of the project. THANK YOU!)

Project Title: _____

Project number: _____

GMU: _____

Project Coordinator (IF NOT APPLICANT): _____

Agency: _____

Address: _____

Phone: _____

Email: _____

Project Completion Date _____

COOPERATING AGENCIES AND/OR CONSERVATION GROUPS, LANDOWNERS, ETC.:

PROJECT ACCOMPLISHMENTS:

PROJECT RESULT ACTIONS:

(List practices implemented as a result of project, i.e. area rested from grazing for 2 yrs., season recommendations revised based on new distributions, data received from project, etc.)

COMMENTS ABOUT THE PROJECT:

(Please list updates, reports, concerns, suggestions)

MAINTENANCE/MONITORING SCHEDULE (from this point on): WHO and WHEN?

PHOTO: (Please attach)

MAIL COMPLETED PROJECT COMPLETION FORM TO:

**Game Branch
Arizona Game and Fish Department
2221 W. Greenway Road
Phoenix, AZ 85023
mdisney@azgfd.gov**