11/25/01 Email

Genetic Parameters of Bison
at Fort Niobrara National Wildlife Refuge and Sully Hills Game Range

FWS RESEARCH COORDINATOR: Wayne King, Regional Refuge Biologist, 303-236-8145, FAX 303-236-8163, wayne_king@fws.gov

FWS PROJECT OFFICER: Kathy McPeak, Wildlife Biologist, Niobrara National Wildlife Refuge, HC-14, Box 67, Valentine, NB 69201,402-376-3789 xt 227, FAX 402-376-3217, kathy_mcpeak@fws.gov

SUGGESTED PRINICIPAL INVESTIGATOR: Professor James N. Derr, Genetics and Veterinary Pathology, College of Veterinary Medicine, Texas A&M University, College Station, TX 77843-4467, 970-862-4775, FAX 970-845-9972, jderr@cvm.tamu.edu

PROBLEM STATEMENT AND IMPLICATIONS: Bison are a unique and charismatic component of the fauna of several western national wildlife refuges. Existing public herds have maintained much of the remaining genetic diversity in this historically widespread species. Knowledge of the genetic status of each refuge herd is needed to develop a genetic conservation management plan at the refuge and at an Interior-wide metapopulation level. Basic information on the genetic integrity of each herd relative to the possibility of introgression of domestic livestock genes and the overall genetic variability within each herd will form the basis of the genetic conservation plan.

PRIORITY: This project relates to a Service-wide priority for the management and conservation of bison herds (Regions 6, 2, & 3) that require genetic resource information (701FW8). The information will be used to determine whether refuge bison herds will be managed at the herd or metapopulation levels. The DoI Bison Management Working Group has identified an integrated Interior-wide bison genetics conservation strategy as a key component of successful future management of federal bison herds. Timely completion of this work will permit immediate and complete integration with a concurrent study of the genetics of bison in 5 National Park Service units.

DESIRED PRODUCTS: The results of this study will be presented to the FWS in a written and electronic final report and published in a scientific journal as a stand-alone paper or as part of an analysis of the genetics DoI bison herds at the metapopulation level. A verbal report will be made to the DoI Bison Management Working Group. The original data and metadata will be provided to the FWS and USGS at the end of the study.

GEOGRAPHIC AREAS FOR WORK TO BE CONDUCTED: This study will be conducted within Region 6 at Fort Niobrara National Wildlife Refuge, Nebraska, and Sully Hills Game Range, North Dakota.

PARTNERSHIPS AND ROLES: This study parallels an ongoing study of the genetics status of bison in 5 national park units and the National Bison Range being undertaken by Dr. Derr. The data from this study will be incorporated with findings from all studies in developing a genetics conservation plan for DoI Bison herds.

ESTIMATED TIMELINE: The written final report is needed no later than May 2003

APPROVAL:

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Regional Director

IDENTIFICATION NUMBER: (assigned to the Problem Statement by FWS).

TITLE: Genetic Parameters of Bison at Fort Niobrara National Wildlife Refuge and Sully Hills Game Range

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METHODOLOGY: Researchers will collect blood and hair samples from all bison in both herds (Ft. Niobrara 350; Sully Hills 25) during annual agency round-ups. Mitochondrial and nucleic DNA all bison will be examined fro the presence of domestic cattle DNA. The nuclear genome of approximately 20% of the Ft. Niobrara Herd and the entire Sully Hills herd will be examined for microsatellite markers to determine the level of inbreeding, overall genetic variation and any unique genetic characters present in each herd.

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PARTNERSHIPS AND ROLES: This study parallels an ongoing study of the genetics status of bison in 5 national park units and the National Bison Range being undertaken by Dr. Derr. The data from this study will be incorporated with findings from all studies in developing a genetics conservation plan for DoI Bison herds. Simultaneous funding of both NPS and FWS enhances the researcher's efficiency and thereby reduces costs.

PROJECT DURATION: The study will begin in the summer of 2002. Samples will be obtained from both herds in the fall of 2002. A final report will be submitted to the FWS and USGS by May 2003.

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BUDGET:

Operating Expenses	
Collection materials for DNA and tissue collection in the field	$ 500
Travel to collect samples	$2,500
DNA and genotyping services 375 animals (375 animals x $35 each)	$13,125
Supplies and Equipment	
Laboratory reagents and chemicals	$ 1,000
Disposable labware and glassware	$ 500
Hand held equipment (pipettes, etc)	$ 500
Salaries	
Student workers and or technicians	$ 3,125
Texas A&M University/ Texas Agricultural Experiment Station Indirect Costs	$ 3,750
TOTAL	$25,000

APPROVALS AND SUBMITTAL:

James N. Derr	Peter J. P. Gogan	Kathy McPeak
Principal Investigator	USGS Research Manager	FWS Project Officer