

USFWS' National Listing Workplan Prioritization

The five prioritization bins for pending status reviews are:

- Priority 1 (Highest Priority: Critically Imperiled): This category is not applicable for Yellowstone bison. There are about 6,000 bison in the population, which is still growing. The population is conserved in Yellowstone National Park and nearby areas of Montana and is not critically imperiled.
- Priority 2 (Strong Data Available on Species' Status): There is extensive information available on the demography, diseases (brucellosis), genetics, movements, management, and population trends of Yellowstone bison (see *References* section below).
- Priority 3 (New Science Underway to Inform Key Uncertainties): There is ongoing research regarding the genetics and grazing effects of Yellowstone bison. Park staff are collaborating with Dr. James Derr, Texas A&M University, to develop a long-term monitoring tool to track genetic diversity in Yellowstone bison and then re-sample the genetic diversity to assess how management actions could affect the conservation of genetic diversity indices. Dr. Derr and his partners have developed a Single Nucleotide Polymorphism (SNP) genotyping platform to determine the mitochondrial DNA haplotype of unknown bison, the probability of genetic introgression from the cattle genome in the past, and parentage (relatedness). Once this genotyping platform is available, geneticists will resample diversity in Yellowstone bison to investigate if allele frequencies (microsatellite markers and SNPs) show any significant changes in the distribution of genetic clusters from those reported in the population two bison generations ago (1997-2003; Halbert et al. 2012). Biologists in YNP have collected tissue samples from bison in their summer breeding areas (central, northern) and winter distribution (north boundary, west boundary). DNA extracted from each sample will be genotyped to determine the haplotype of mitochondrial DNA and a SNP genotype for nuclear DNA. Geneticists will estimate typical diversity values by sample group, along with a comparative analysis to estimate genetic distance between each of the sample groups. Assignment tests will be conducted to identify unique genetic clusters within the samples collected during summer and winter. This will enable biologists to evaluate the genetic diversity of Yellowstone bison based on their summer (breeding) distribution and determine if there are significant differences in diversity indices compared to where bison migrate in the winter months. In addition, the Metapopulation Subgroup of the DOI Bison Working Group is developing a strategy for managing genetic diversity among Department of the Interior populations. Biologists at Yellowstone provided samples from bison tested during quarantine for analyses of microsatellite DNA markers to assess diversity measures (allele frequencies) and identify genetic clusters among populations. They also will use a SNP panel to analyze the nuclear DNA.
- Priority 4 (Conservation Efforts in Development or Underway): There are ongoing efforts to prepare a new plan for how bison will be managed in Yellowstone National Park, expand the Bison Conservation and Transfer Program to relocate more live, brucellosis-free bison to tribal lands for conservation and cultural purposes, and implement the Bison Conservation Initiative by the U.S. Department of the Interior.
- Priority 5 (Limited Data Currently Available): This category is not applicable for Yellowstone bison because there is substantial information available.

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