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Preble's meadow jumping mouse

Bulletin No.1



Biology and Threats

The Preble's meadow jumping mouse (Preble's) is a small rodent in the family Zapodidae and is currently 1 of 12 recognized subspecies of the species *Z. hudsonius*, the meadow jumping mouse. Preble's is native only to the Rocky Mountains-Great Plains interface of eastern Colorado and southeastern Wyoming. This shy, largely nocturnal mouse lives in moist lowlands with dense vegetation. It is 8 to 9 inches long (its tail accounts for 60 percent of its length) with hind feet adapted for jumping. Preble's hibernates underground from September to May.

Records for Preble's meadow jumping mouse define a range including Adams, Arapahoe, Boulder, Denver, Douglas, El Paso, Elbert, Jefferson, Larimer, and Weld counties in Colorado; and Albany, Laramie, Platte, Goshen, and Converse counties in Wyoming (Kruttsch 1954, Compton and Hugie 1993). Armstrong et al. (1997, p. 77) described typical Preble's meadow jumping mouse habitat as "well-developed plains riparian vegetation with relatively undisturbed grassland and a water source in close proximity." Also noted was a preference for "dense herbaceous vegetation consisting of a variety of grasses, forbs and thick shrubs." Shenk (2000) conducted radio tracking studies at three sites and document greater use of upland habitats than previously assumed.

Preble's has undergone a decline in range; populations within its remaining range have been lost. Habitat loss and fragmentation resulting from human land uses have adversely impacted Preble's populations. David Armstrong (University of Colorado, pers. com. 1998) concluded that the meadow jumping mouse, in this region as elsewhere, is a habitat specialist, and that the specific habitat on which it depends is declining.

Compton and Hugie (1993, 1994) cited human activities that have adversely impacted Preble's meadow jumping mouse including: conversion of grasslands to farms; livestock grazing; water development and management practices; and, residential and commercial development. Shenk (1998) linked potential threats to ecological requirements of Preble's meadow jumping mouse and suggested that factors which impacted vegetation composition and structure, riparian hydrology, habitat structure, distribution, geomorphology, and animal community composition must be addressed in any conservation strategy.

Residential and commercial development, accompanied by highway and bridge construction, and instream alterations to implement flood control, directly removes Preble's habitat, or reduces, alters, fragments, and isolates habitat to the point where Preble's meadow jumping mouse can no longer persist. Corn et al. (1995) proposed that a 100 meter (328 foot) buffer of unaltered habitat be established to protect the floodplain of Monument Creek from a range of human activities that might adversely affect Preble's or its habitat. Roads, trails, or other linear development through Preble's habitat may act as barriers to movement. Shenk (1998) suggested that on a landscape scale, maintenance of acceptable dispersal corridors linking patches of Preble's habitat may be critical to its conservation.

What Happened

In 1954, Dr. Philip Krutzsch of the University of Arizona did the original biological work on Preble's and announced that Preble's was a distinct subspecies based upon morphological measurements. In 1999, the U.S. Fish and Wildlife Service listed the mouse as threatened under the Endangered Species Act of 1973 (ESA) based on Dr. Krutzsch's work and the threat Prebles faced due to habitat loss on the Front Range. It is worth noting that Dr. Krutzsch's study was the best scientific information available at that time, and the rigorous listing protocol used by the Service was followed. There was no leaping to conclusions as often portrayed in the media.

On December 18, 2003 Dr. Roy Ramey II of the Denver Museum of Nature and Science completed a study that tested the taxonomic validity of Preble's using mtDNA, morphometric skull measurements and a critical review of Dr. Krutzsch's original description. It was determined by Dr. Ramey that there was a lack of genetic, morphological or ecological evidence to separate Preble's from another subspecies, the Bear Lodge jumping mouse (*Zapus hudsonius campestris*). While Dr. Ramey's report does offer a compelling argument, genetics is not a black and white science and there remains some room for interpretation. Together with a lack of peer review of Dr. Ramey's work, the exact validity of Preble's taxonomy is still not completely without question.

On December 17, 2003 (that is the correct date) the US Fish and Wildlife Service received two petitions to de-list the mouse based on the availability of new data and the possibility of original data error. One petition was from the Coloradoans for Water Conservation and Development and the other from the State of Wyoming's Office of the Governor.

In response to these petitions, the Service decided to issue a 12-month finding combined with a 5-year review that will determine whether there is enough valid data to de-list or re-classify the mouse. They are currently soliciting for public comment. The review will be complete by December 31, 2004

What Could Happen

Based upon the findings of the 12-month and 5-year review, several scenarios could occur. If the Service proposes to de-list the mouse, there will be another 1-year time period to allow for

more public comments, and for the Service's finding to be examined by other wildlife experts. If, after that year, it is still determined that the mouse should be de-listed, a notice will be published in the Federal Register and the mouse will be officially de-listed.

Another scenario would be that the Service determines that Preble's should not be de-listed, in which case the mouse enjoys the same protection as it currently possesses.

The third scenario would be a case where the Preble's mouse is determined to be synonymous with another subspecies, but because the population on the Front Range is distinct and separated from the rest of the population, the mouse could still be listed, but under a different name.

What Does This Mean To CDOT

It was, and still is, the Colorado Department of Transportation's (CDOTs) legal responsibility to address, avoid, minimize and mitigate for any losses to any federally or state listed species. Preble's is no exception. Since the listing of the mouse, CDOT has willingly mitigated for losses to Preble's habitat from their activities and has successfully created a 25-acre mitigation bank to address future losses. None of this has been cheap or easy, however, CDOT's efforts have not been in vain. While protecting Preble's CDOT has also protected the wetlands that the mouse depends on. Wetlands only comprise 1.5% of Colorado's landmass (1997 www.uswaternews.com), but the majority of wildlife depends on the waters in these wetlands for their survival. Colorado has long been known for its wildlife and by protecting these wetlands CDOT has the opportunity to contribute to this heritage.



Kettle Creek Bridge in El Paso County. Build to minimize impacts to the Preble's meadow jumping mouse

On a more practical level, even if Preble's does eventually get de-listed, the wetlands that were impacted in Preble's habitat would still need to be mitigated for. This has often been accomplished in conjunction with the Preble's mitigation and would be still be a violation of federal requirements not to mitigate for impacts on wetlands on at least a 1:1 acre ratio.

If an area has been set aside solely for the benefit of the mouse, a bank for example, then these cases will have to be consulted on on a case-by-case basis with the Service. Similarly, any project that has Preble's mitigation associated with it will also have to be consulted on on a case-by-case basis. Do not expect a blanket withdrawal of Service requirements that CDOT has committed to for the benefit of the mouse. There are many other factors that will have to be looked at; impacts to wetlands, other listed species, and water quality to mention a few.

The bottom line is this:

- The Preble's mouse is still federally listed and will be until it is de-listed
- Preble's may not be de-listed
- The de-listing process is quite long, so don't put off that project hoping for the mouse to be de-listed
- If the mouse is de-listed, CDOT's obligations for the mouse may not disappear

-Preble's habitat will quite possibly have to be mitigated for even if the mouse is de-listed due to its wetland status

If you have questions about this bulletin please contact CDOT biologist Jeff Peterson at jeff.peterson@dot.state.co.us

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