

Plains Harvest Mouse

Reithrodontomys montanus

REGULATORY STATUS

USFWS: No special status
USFS R2: No special status
USFS R4: No special status
Wyoming BLM: No special status
State of Wyoming: Nongame Wildlife

CONSERVATION RANKS

USFWS: No special status
WGFD: NSS3 (Bb), Tier II
WYNDD: G5, S3S5
Wyoming Contribution: LOW
IUCN: Least Concern

STATUS AND RANK COMMENTS

The Wyoming Natural Diversity Database has assigned Plains Harvest Mouse (*Reithrodontomys montanus*) a state conservation rank ranging from S3 (Vulnerable) to S5 (Secure) because of uncertainty about the abundance, proportion of range occupied, and population trends for this species in Wyoming.

NATURAL HISTORY

Taxonomy:

There are three recognized subspecies of Plains Harvest Mouse, but only *R. m. albescens* is found in Wyoming¹⁻⁴.

Description:

It is difficult to accurately identify Plains Harvest Mouse in the field where it is sympatric with Western Harvest Mouse (*R. megalotis*)¹⁻³. Dorsally, Plains Harvest Mouse is grayish-brown and has an indistinct mid-dorsal stripe of darker hair. The venter is whitish. The tail has a dark dorsal stripe and is typically shorter (48–55 mm) than the combined length of the head and body²⁻⁴. The sexes are similar in size and appearance^{3, 4}; adults weigh between 10–13 g and have a total length of 105–143 mm². Hind foot and ear length ranges from 14–20 mm and 12–13 mm, respectively². Although numerous metrics have been suggested for distinguishing Plains Harvest Mouse from Western Harvest Mouse (e.g., body size, dorsal pelage color, tail color, tail length, skull measurements, molar characteristics), considerable uncertainty remains about the ability of these metrics to accurately differentiate the two species^{1, 3, 5, 6}. Multiple authors suggest that tail length differs between the two species, with Western Harvest Mouse generally having a longer tail (56–73 mm) that is at least as long as the head and body²⁻⁴. Plains Harvest Mouse and other *Reithrodontomys* spp. can be distinguished from *Peromyscus* spp. by their upper incisors, which each have one anterior longitudinal groove¹⁻⁴.

Distribution & Range:

A majority of the continental distribution of Plains Harvest Mouse is restricted to the Great Plains of the central United States, extending as far south as northern Mexico⁷. Wyoming is on the northwestern periphery of the core distribution of this species, where Plains Harvest Mouse is found in grasslands in the eastern third of the state. Confirmed or suspected breeding has been documented in 5 of 28 latitude/longitude degree blocks, all in far eastern Wyoming⁸.

Habitat:

Plains Harvest Mouse is found in a variety of natural, disturbed, managed, fragmented, and reclaimed grassland environments throughout its range^{3, 4, 9-24}. In Wyoming, this species inhabits short-grass, mixed-grass, and sagebrush (*Artemisia* spp.) grassland habitats^{2, 3}. Vegetation structure and soil type may be more important characteristics of Plains Harvest Mouse habitat than dominant grass species^{3, 4}. Plains Harvest Mouse is most abundant in short-grass environments (2.5–25 cm), with a high percentage of grass cover (> 60%), and loamy sand soil¹⁻⁴. Nests are small, woven spheres of grass with a single opening, which are constructed in dense vegetation, under logs, in rock crevices or discarded man-made objects, or below ground in burrows²⁻⁴.

Phenology:

The breeding habits and life history of Plains Harvest Mouse in Wyoming are not well known. This nocturnal, polyestrous species does not hibernate and may produce multiple litters a year beginning in the late winter^{2, 3}. Litters of 3–7 young are born after a 21-day gestation period. Young are altricial at birth but mature quickly; they are weaned after 2 weeks, ready to leave the nest after 3–4 weeks, and are sexually mature by the age of 2 months^{2, 3}.

Diet:

Plains Harvest Mouse primarily consumes a variety of seeds, as well as flowers, fruits, berries, green plant material, and insects¹⁻⁴. This species is known to cache food².

CONSERVATION CONCERNS

Abundance:

Continental: WIDESPREAD

Wyoming: UNCOMMON

Despite having a widespread continental distribution, capture studies often report relatively few detections of Plains Harvest Mouse compared to other sympatric small mammal species across a variety of natural and anthropogenic grassland habitats^{10, 15-20, 23, 24}. For example, only 2% of all small mammal captures in a recent study conducted in Thunder Basin National Grassland were harvest mice; Plains and Western Harvest Mouse were pooled because of low detections and difficulty with species differentiation²⁵. Likewise, *Reithrodontomys* spp. accounted for 6% of captures in statewide survey for small mammals in Wyoming's basins in 2015^{26, 27}. There are no robust estimates of abundance available for Plains Harvest Mouse in Wyoming. The species has a statewide abundance rank of UNCOMMON and appears to be rare within suitable environments in the occupied area⁸.

Population Trends:

Historic: UNKNOWN

Recent: UNKNOWN

Historic and recent population trends for Plains Harvest Mouse in Wyoming are unknown.

Intrinsic Vulnerability:

MODERATE VULNERABILITY

Plains Harvest Mouse has moderate intrinsic vulnerability in Wyoming due to low density within a narrow range of habitat types in the state. However, this species has the potential for high fecundity and a demonstrated ability to inhabit a variety of disturbed and fragmented habitats in other parts of its range, which may reduce its vulnerability to potential extrinsic stressors in Wyoming.

Extrinsic Stressors:

SLIGHTLY STRESSED

Primary potential extrinsic stressors to Plains Harvest Mouse in Wyoming are loss or degradation of habitat from natural or anthropogenic disturbances. Grassland environments in the state are vulnerable to development for energy, infrastructure, and agriculture; invasive plant species such as Cheatgrass (*Bromus tectorum*) and Canada Thistle (*Cirsium arvense*); anthropogenic disturbance from off-road recreational activities; altered fire and grazing regimes; and drought and climate change⁸. Harvest mouse occupancy was positively correlated with Cheatgrass cover in Thunder Basin National Grassland, potentially due to their omnivorous diet and preference for closed habitats²⁵. In other parts of its continental distribution Plains Harvest Mouse has been detected in or adjacent to environments altered or fragmented by various types of agriculture^{9, 10, 15-18, 20, 21}, prescribed burning^{11, 19}, mining^{12, 23}, energy development²⁴, and roads^{13, 14, 21}. Although this species appears to tolerate some habitat disturbance, it is not currently known how potential extrinsic stressors could impact Plains Harvest Mouse in Wyoming.

KEY ACTIVITIES IN WYOMING

Plains Harvest Mouse is classified as a Species of Greatest Conservation Need by the Wyoming Game and Fish Department (WGFD). A number of projects have recently been funded to evaluate the impact of extrinsic stressors on small mammals, including Plains Harvest Mouse. From 2013–2015, the WGFD funded a project at the Wyoming Cooperative Fish and Wildlife Research Unit to evaluate the impact of Cheatgrass on small mammal communities in Thunder Basin National Grassland²⁵. In 2015, the University of Wyoming initiated a two-year graduate research project to better understand the distribution, occupancy, habitat, and diet partitioning of small mammals in the state, including Plains Harvest Mouse, through statewide surveys of pocket mice and other small mammals. Plains Harvest Mouse was detected at a number of sites during the first season of trapping in 2015, and this project is already providing valuable information on the distribution and habitat associations of this species in Wyoming^{26, 27}.

ECOLOGICAL INFORMATION NEEDS

Little is known about the natural history or reproductive habits of Plains Harvest Mouse in Wyoming. This species will benefit from current ongoing research to determine its abundance and distribution in the state. Further research is needed to evaluate how this species may respond to natural and anthropogenic disturbances in Wyoming.

MANAGEMENT IN WYOMING

This section authored solely by WGFD; Nichole L. Bjornlie. Recent management activities have focused on funding research projects to improve understanding of distribution, habitat, and impact of extrinsic stressors on small mammals, including Plains Harvest Mouse, and on-going

projects will continue to investigate these management questions. Of particular importance are data on distribution, presence and abundance, population status and trends, and the impact of potential threats, including the degree and impact of loss and degradation of habitat, all of which will ultimately be used to develop management and conservation recommendations.

CONTRIBUTORS

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Figure 1: A harvest mouse (*Reithrodontomys* spp.) captured in Goshen County, Wyoming. (Photo courtesy of Maddy Pfaff)



Figure 2: North American range of *Reithrodontomys montanus*. (Map from: Patterson, B. D., et al. (2007) Digital Distribution Maps of the Mammals of the Western Hemisphere, version 3.0, NatureServe, Arlington, Virginia.)



Figure 3: Plains Harvest Mouse habitat in Campbell County, Wyoming. (Photo courtesy of Kristina M. Harkins)

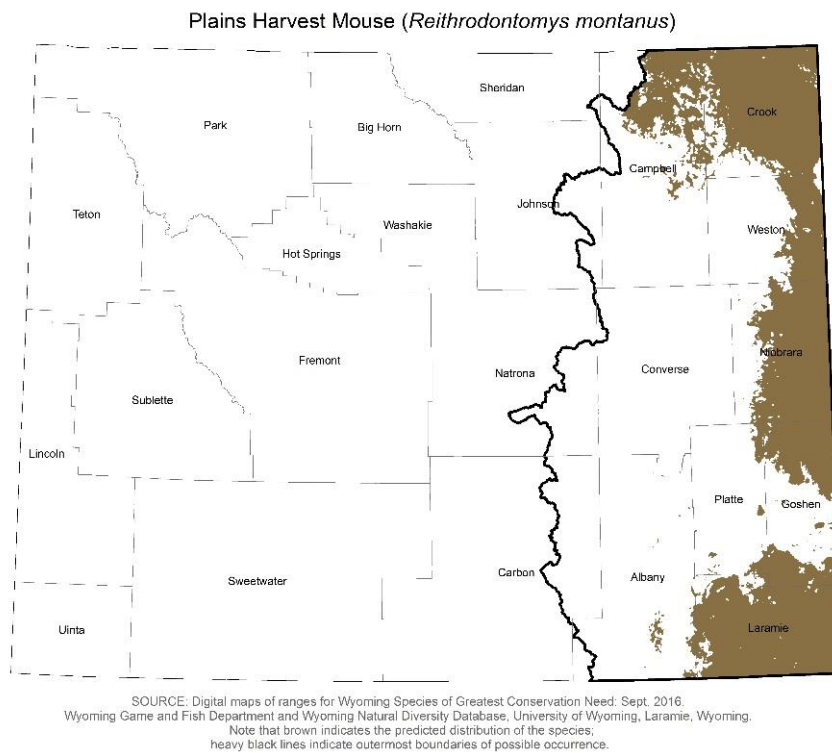


Figure 4: Range and predicted distribution of *Reithrodontomys montanus* in Wyoming.