

Hayden's Shrew

Sorex haydeni

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: NSSU (U), Tier III
WYNDD: G5, S2S3
Wyoming Contribution: LOW
IUCN: Least Concern

STATUS AND RANK COMMENTS

The Wyoming Natural Diversity Database has assigned Hayden's Shrew (*Sorex haydeni*) a state conservation rank ranging from S2 (Imperiled) to S3 (Vulnerable) because of uncertainty about population trends and the proportion of mapped range actually occupied by the species in Wyoming.

NATURAL HISTORY

Taxonomy:

Formerly considered a subspecies of Masked Shrew (*S. cinereus*), Hayden's Shrew is now known as a full species^{1, 2}. Like many other North American shrews, it appears to have evolved relatively recently, during the Pleistocene³. There is both genetic and morphological evidence for introgression between *S. cinereus* and *S. haydeni*⁴. There are no currently accepted subspecies of Hayden's Shrew.

Description:

Hayden's Shrew is an extremely small mammal, and is very similar in appearance to other Wyoming shrew species. Adult dimensions include total length 88-99 mm, tail length 34-40 mm, hind foot 10-12 mm, and mass 3-5 g. Like other *Sorex* species, Hayden's Shrew has a relatively long and flexible snout, bicolored tail, proportionally small eyes, uniformly brownish or grayish fur on the back, and silvery-whitish fur below. Identification to species requires a combination of body measurements, skull measurements, and, especially, dental characteristics, which typically requires the individual shrew to be sacrificed. A technical key such as in Clark and Stromberg (1987) is an important aid in identifying Wyoming shrews to species⁵.

Distribution & Range:

Hayden's Shrew occupies prairie environments across the northern Great Plains, extending from southern Saskatchewan and Manitoba south to central Kansas, and from the Rocky Mountain front to the Mississippi River⁶. The species is known from the vicinity of the Bighorn Mountains

and Black Hills in Wyoming. As with many shrews, current understanding of range and distribution is based on rather few confirmed observations. Genetic analysis of specimens previously assumed to be *S. cinereus* suggest presence of *S. haydeni* in New Mexico², highlighting the incomplete nature of shrew sampling and range mapping in the region. Given the relatively low sampling effort for shrews in Wyoming, the species may occupy more of the state than is currently assumed.

Habitat:

Habitat associations of Hayden’s Shrew have not been extensively studied. The species is generally associated with grasslands, and may prefer wet patches (e.g., wetlands, pond edges, riparian zones) within grass-dominated landscapes⁵. Its known distribution in Wyoming – Bighorn Mountains and Black Hills – suggests more of a montane association, and it is possible that Hayden’s Shrew in this region favors the more mesic grasslands of montane and foothills zones over more xeric grasslands at lower elevations. In general, shrews are assumed to seek out certain microhabitats (e.g., specific litter depths, debris densities, or soil textures) that may not align well with traditional categories of wildlife habitat based on dominant overstory plants^{7,8}.

Phenology:

Hayden’s Shrew is active year round. Breeding phenology is not well known, but limited data (from Turner 1974, as cited in Clark and Stromberg 1987) suggest Hayden’s Shrews reproduce first as 2 year-olds, and females produce up to 2–3 litters of 4–10 young each per year. Litters are likely produced from mid-June through July. Young mature and leave the nest, which is typically made of plant material and placed under logs or in rock crevices, in 20–30 days⁵.

Diet:

Hayden’s Shrew diet is likely similar to that of other *Sorex* shrews, with small invertebrates forming the bulk of consumed items⁵. Specific prey preferences and seasonal diet shifts are unknown.

CONSERVATION CONCERNS

Abundance:

Continental: WIDESPREAD

Wyoming: UNCOMMON

There are no population estimates of Hayden’s Shrew at continental, national, or state scales. The UNCOMMON abundance in Wyoming is inferred from the small portion of the state known to be occupied and an apparent rarity within that range⁹. However, sampling effort for shrews in the state has been so low that the species may actually extend beyond the currently-assumed range and may be common in some localities.

Population Trends:

Historic: UNKNOWN

Recent: UNKNOWN

Historic and recent population trends of Hayden’s Shrew in Wyoming are unknown.

Intrinsic Vulnerability:

MODERATE VULNERABILITY

Though little is known about Hayden’s Shrew, the general breeding biology of *Sorex* shrews makes them moderately vulnerable. Many *Sorex* have a life expectancy of one year, and under some conditions may produce only one litter per year. Also, limited mobility restricts shrews’

ability to re-colonize suitable habitats and expand populations⁵. These characteristics may predispose *Sorex* populations to fragmentation and local extirpation if breeding is disrupted for even a single season⁸. Hayden's Shrew populations may be especially sensitive to such fragmentation if they are strongly specialized to moist patches within grassland landscapes.

Extrinsic Stressors:

UNKNOWN

So little is known about Hayden's Shrew in Wyoming that any outline of extrinsic threats is somewhat speculative. Assuming a relatively narrow habitat preference for moist areas within grassland landscapes, significant disturbances to such habitat would likely negatively affect the species. Conversely, shrews in general may rely on certain microhabitats that remain relatively unaffected by some large-scale disturbances, allowing populations to persist in otherwise disturbed areas.

KEY ACTIVITIES IN WYOMING

Hayden's Shrew is classified as a Species of Greatest Conservation Need by the Wyoming Game and Fish Department (WGFD). Currently, there is no research being conducted on Hayden's Shrew in Wyoming. In 2014 the WGFD funded and conducted an evaluation of the potential to use guard hairs to identify shrews to species, thus allowing for identification without the need to sacrifice individuals. However, only Western Water Shrew (*S. navigator*) was identifiable by guard hair, which is also the only shrew in Wyoming that is identifiable in hand¹⁰.

ECOLOGICAL INFORMATION NEEDS

Very little is known about Hayden's Shrew anywhere in the species' range. There are so few records of the species in Wyoming that basic distribution, habitat preferences, dietary needs, breeding phenology, and potential threats are poorly understood. A better estimate of actual distribution in the state may be the top priority information need at this time and could be efficiently generated as part of a larger field survey effort targeting multiple *Sorex* species simultaneously.

MANAGEMENT IN WYOMING

This section authored solely by WGFD; Nichole L. Bjornlie. Hayden's Shrew is assigned an NSSU rank because survey data that would provide for an assessment of population status are lacking. Consequently, management priorities for the species in the short-term will focus on addressing these data deficiencies. Of particular importance are data on presence, distribution, population status and trends, habitat needs, and the impact of potential threats. Because shrews are rarely trapped as part of other small mammal projects, addressing these needs will require systematic surveys designed to target shrews (i.e., pitfall traps). However, these species would also benefit from the development of new capture and identification techniques that would not require sacrificing individuals. Results from these efforts will ultimately be used to update status and develop management and conservation recommendations.

CONTRIBUTORS

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REFERENCES

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SPECIES PHOTOGRAPH

Figure 1: Photo not available.



Figure 2: North American range of *Sorex haydeni*. Map fails to extend far enough west to encompass known range in Wyoming (Map from: Patterson, B. D., et al. (2007) Digital Distribution Maps of the Mammals of the Western Hemisphere, version 3.0, NatureServe, Arlington, Virginia.)

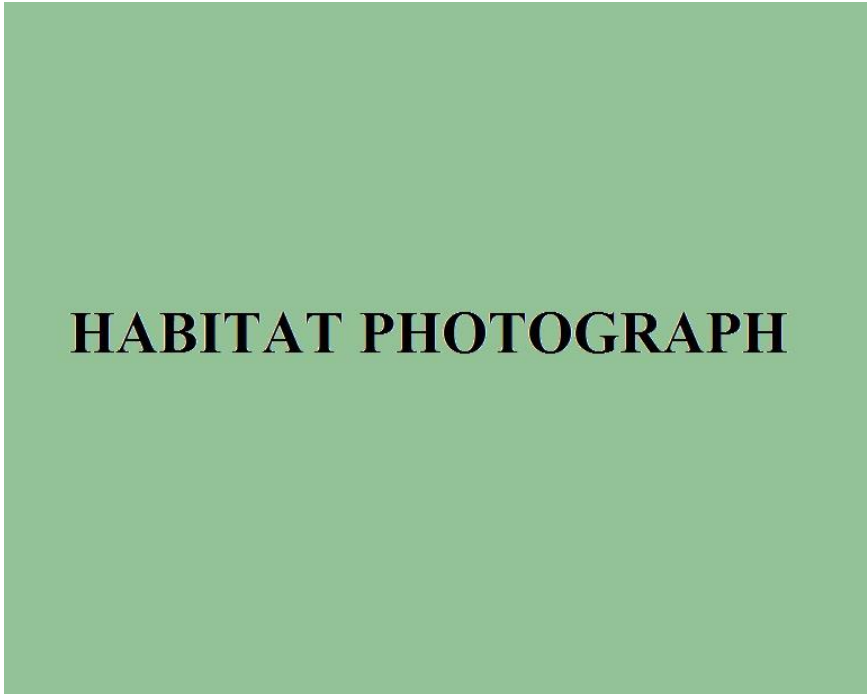


Figure 3: Photo not available.

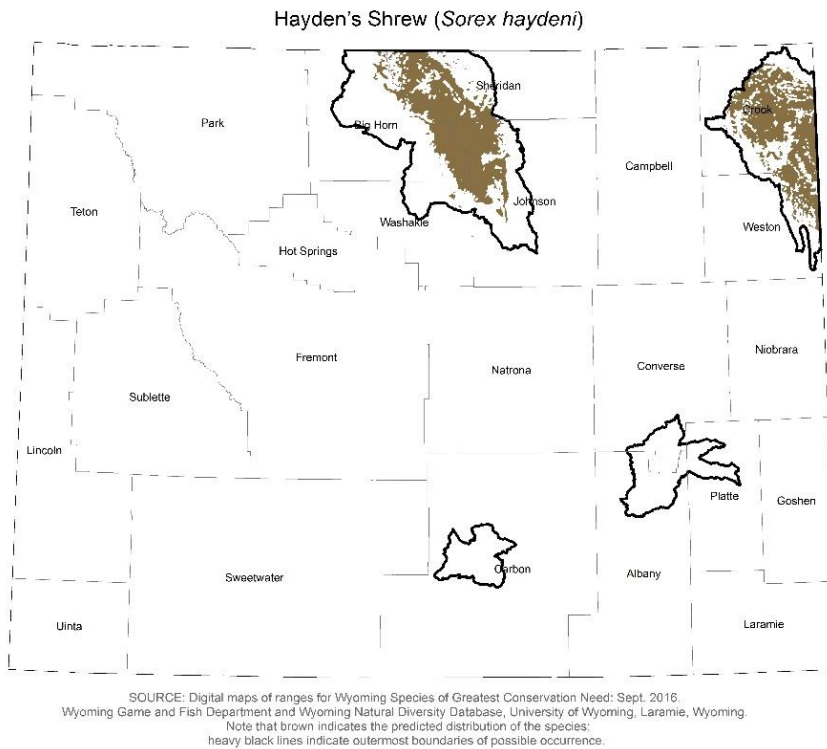


Figure 4: Range and predicted distribution of *Sorex haydeni* in Wyoming.