

## Dwarf Shrew

*Sorex nanus*

### **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: G4, S4S5  
Wyoming Contribution: HIGH  
IUCN: Least Concern

### **STATUS AND RANK COMMENTS**

The Wyoming Natural Diversity Database has assigned Dwarf Shrew (*Sorex nanus*) a state conservation rank ranging from S4 (Apparently Secure) to S5 (Secure) because of uncertainty over extent of range and actual abundance of the species in Wyoming.

### **NATURAL HISTORY**

#### **Taxonomy:**

Dwarf Shrew may have only recently diverged from Inyo Shrew (*S. tenellus*). Current ranges of the two taxa do not overlap (the latter occupies a small portion of the far western Great Basin), and most investigators consider them each as distinct and valid species<sup>1-3</sup>. Dwarf Shrew has no recognized subspecies<sup>1</sup>.

#### **Description:**

Dwarf Shrew is an extremely small mammal – it is likely the smallest mammal species in Wyoming - and is very similar in appearance to other Wyoming shrew species. Adult dimensions include total length 83–105 mm; tail length 27–40 mm; and weight 1.8–3.2 g. Like other *Sorex* species, Dwarf 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<sup>1,4</sup>, which typically requires the individual shrew to be sacrificed. Figure 5 illustrates important differences in shrew dentition, and a technical key such as in Clark and Stromberg (1987) is an important aid in identifying Wyoming shrews to species<sup>4</sup>.

#### **Distribution & Range:**

Dwarf Shrew occurs along and near the Rocky Mountain cordillera from Canada to Mexico. Until recently, the species' range was assumed to be rather fragmented across this region<sup>1</sup>, but subsequent captures have resulted in a more continuous and widespread range estimate<sup>3,5</sup>. Mapping the species' distribution at finer scales is complicated by the lack of sampling effort

(thus a paucity of documented Dwarf Shrew locations) and a superficial knowledge of habitat associations. The species has been captured in and near all major mountain ranges in Wyoming<sup>3, 6</sup>.

**Habitat:**

Habitat associations of Dwarf Shrew have not been extensively studied. Recent summaries of available information indicate an apparent preference for the foothills-to-alpine environment, with occasional use of adjacent lower regions. Dwarf Shrew has been documented in especially rocky terrain (e.g., talus fields, rubble slopes), and may have a greater tolerance for xeric conditions relative to other shrews<sup>1, 3</sup>. Results of Brown (1967) emphasize the association of Dwarf Shrew with alpine talus fields in southern Wyoming<sup>7</sup>. A 2010–2012 study documented six Dwarf Shrews in spruce-fir forests of southern Wyoming<sup>8</sup>. 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<sup>3, 9</sup>.

**Phenology:**

Dwarf Shrew is active year-round. Breeding phenology is not well known, but it is assumed that mating occurs in early-mid summer and first litters (consisting of 6–7 young) are produced in mid-late summer. Dwarf Shrews at lower elevations may reproduce over a longer period, and have a higher likelihood of second litters, than those at higher elevations<sup>1, 3, 4</sup>.

**Diet:**

Dwarf Shrew diet is likely similar to that of other *Sorex* shrews, with small invertebrates forming the bulk of consumed items<sup>1, 3, 4</sup>. Specific prey preferences and seasonal diet shifts are unknown.

**CONSERVATION CONCERNS**

**Abundance:**

**Continental:** WIDESPREAD

**Wyoming:** UNCOMMON

There are no population estimates of Dwarf Shrew at continental, national, or state scales. The UNCOMMON abundance in Wyoming is inferred from the moderate portion of the state known to be occupied and an apparent rarity within that range<sup>10</sup>. However, dedicated 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 Dwarf Shrew are unknown.

**Intrinsic Vulnerability:**

**MODERATE VULNERABILITY**

Though relatively little is known about Dwarf 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 populations<sup>4</sup>. These characteristics may predispose *Sorex* populations to fragmentation and local extirpation if breeding is disrupted for even a single season<sup>9</sup>. If Dwarf Shrew is found to be more strongly specialized to particular

habitats (e.g., talus and rubble fields at high elevations) than is currently assumed, the species' intrinsic vulnerability would need to be increased to "high".

**Extrinsic Stressors:**

UNKNOWN

So little is known about Dwarf Shrew in Wyoming that any outline of extrinsic threats is somewhat speculative. Assuming a preference for mountain environments, significant disturbances to such landscapes would likely negatively affect the species. Better information on the degree to which Dwarf Shrews prefer particular habitats would allow a more useful assessment of extrinsic threats. In general, shrews 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**

Dwarf 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 Dwarf Shrew in Wyoming. A 2010–2012 study documented six Dwarf Shrews in spruce-fir stands in the Medicine Bow National Forest of southern Wyoming<sup>8</sup>. 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 hand<sup>11</sup>.

**ECOLOGICAL INFORMATION NEEDS**

Very little is known about Dwarf 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.* Very little is known about shrews overall. Consequently, management priorities for Dwarf Shrew in the short-term will focus on addressing these data deficiencies. Of particular importance are data on presence, distribution, population 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 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 nanus*. (Map from: Patterson, B. D., et al. (2007) Digital Distribution Maps of the Mammals of the Western Hemisphere, version 3.0, NatureServe, Arlington, Virginia.)

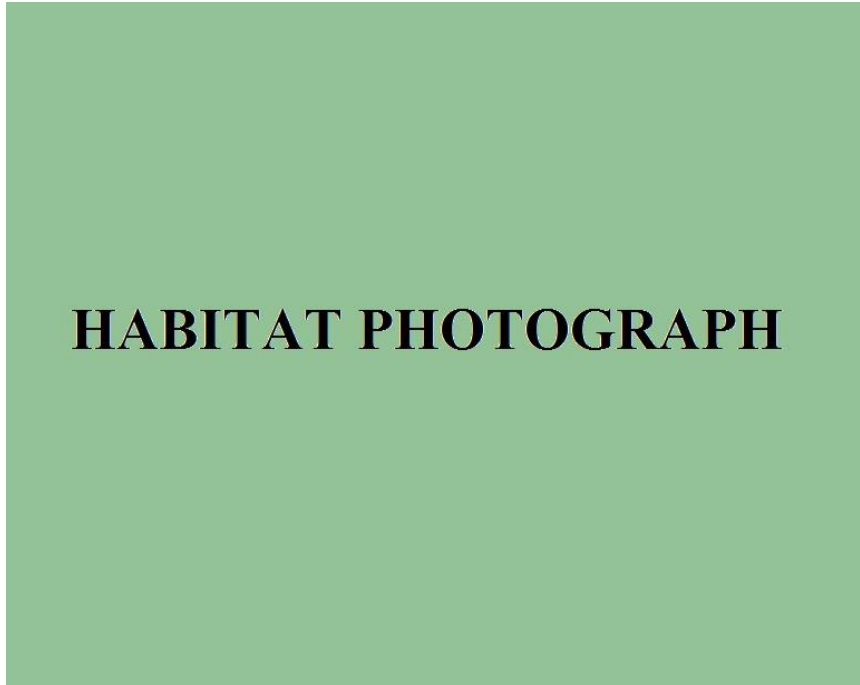


Figure 3: Photo not available.

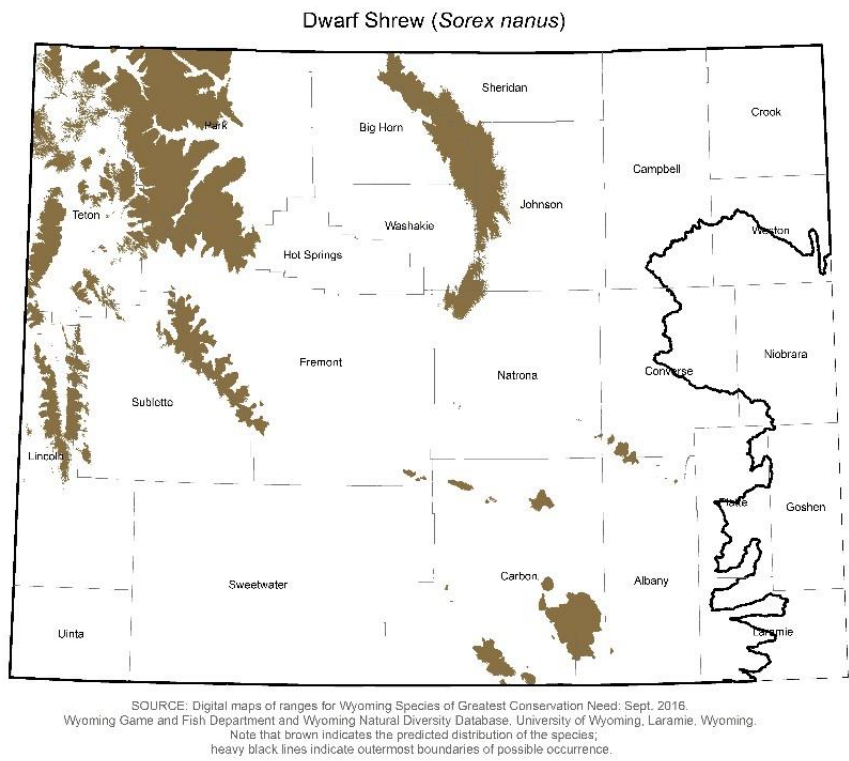


Figure 4: Range and predicted distribution of *Sorex nanus* in Wyoming.

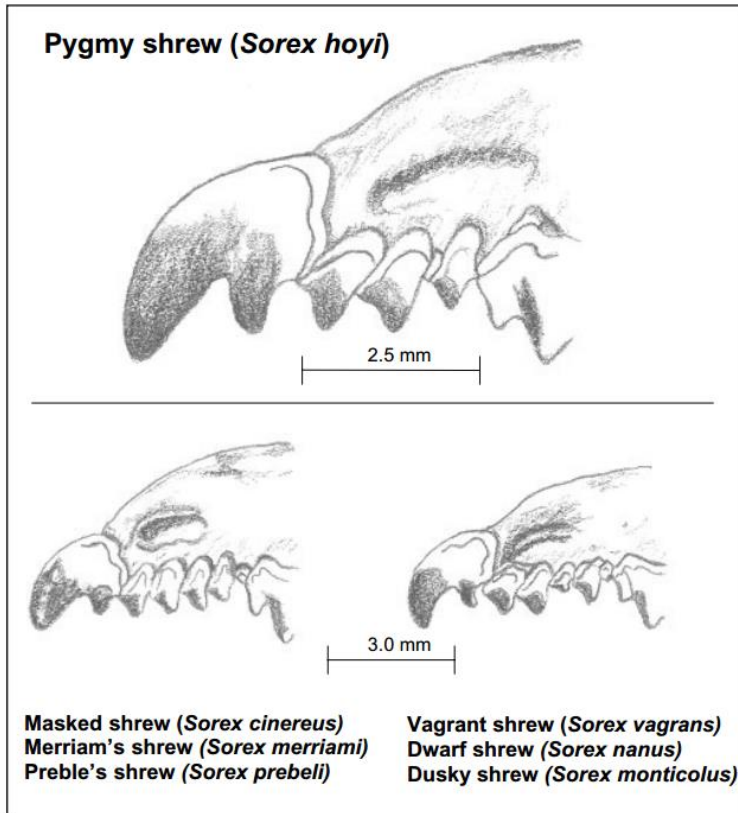


Figure 5: Lateral view of upper tooth rows of some *Sorex* spp. of shrew; Dwarf Shrew shown on lower right. Top and bottom panels are not drawn to same scale – note scale bars. (Figure from: Beauvais, G. P., and McCumber, J. (2006) Pygmy Shrew (*Sorex hoyi*): a technical conservation assessment, p 34, USDA Forest Service, Rocky Mountain Region.)