

American Pygmy Shrew

Sorex hoyi

REGULATORY STATUS

USFWS: No special status
USFS R2: Sensitive
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, S1
Wyoming Contribution: LOW
IUCN: Least Concern

STATUS AND RANK COMMENTS

The full species American Pygmy Shrew (*Sorex hoyi*) has no additional regulatory status or conservation rank considerations beyond those listed above. However, the only Wyoming representative of American Pygmy Shrew is the isolated glacial relict subspecies Southern Rocky Mountain Pygmy Shrew (*S. h. montanus*; see Taxonomy, below), whose entire global range covers only a small portion of southern Wyoming and northern Colorado. At the subspecies level *S. h. montanus* is considered imperiled/vulnerable by NatureServe (Arlington, Virginia), and Wyoming supports a significant amount of its entire range.

NATURAL HISTORY

Taxonomy:

There are currently 5–6 recognized subspecies of American Pygmy Shrew. Only one subspecies is found in Wyoming, the Southern Rocky Mountain Pygmy Shrew. This subspecies appears to be a glacial relict that is completely separated from other subspecies. There is some uncertainty over subspecies taxonomy in *S. hoyi*, but most pertains to subspecies in more northern (i.e., outside of Wyoming) portions of the species range^{1, 2}.

Description:

American Pygmy Shrew is an extremely small mammal, and is very similar in appearance to other Wyoming shrew species. Adult total length is 60–110 mm, and adult mass is 3–8 g. Like other *Sorex* species, American Pygmy 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 characteristics³, which typically requires the individual shrew to be sacrificed. Critically, the third and fifth upper unicuspid are much smaller in Pygmy Shrew than in other Wyoming *Sorex*. 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 species⁴.

Distribution & Range:

American Pygmy Shrew is distributed across the boreal zone of northern North America, with southern extensions along the Appalachian and Rocky Mountains. There are two disjunct populations: one in the southern Appalachian Mountains and one in the Southern Rocky Mountains. The latter, recognized as *S. h. montanus*, occupies the mountains of southern Wyoming and northern Colorado, and is isolated by several hundred miles from the main body of the species' range. In Wyoming, American Pygmy Shrew is restricted to forests in the Medicine Bow and Sierra Madre ranges^{1,3}.

Habitat:

Across its range American Pygmy Shrew is associated with a broad array of habitat types, with an apparent preference for moist environments such as fens, bogs, and riparian zones. In Wyoming the species has generally been found in moist, mature stands of Engelmann Spruce (*Picea engelmannii*) and Subalpine Fir (*Abies lasiocarpa*)^{1,5,6}. Recent work in Colorado found the species in Lodgepole Pine (*Pinus contorta*), Quaking Aspen (*Populus tremuloides*)-spruce, and spruce-fir woodlands⁷. At a landscape scale, the Southern Rocky Mountain subspecies appears to occupy boreal/ subalpine mosaics of dry upland forest mixed with wet forest and meadows. Within these landscapes the subspecies seems to be associated with streams and other wet areas¹. 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^{1,8}.

Phenology:

American Pygmy Shrew is active year round. Limited research on the species in Wyoming suggests that breeding occurs primarily in July, and young are born in late July to mid-August. In other parts of the species' range, females raise one litter consisting of 3–7 young per year. Young likely disperse at 3–5 weeks of age¹.

Diet:

American Pygmy Shrew primarily consumes small invertebrates, including but not limited to insect larva, adult insects, and spiders¹. Prey preferences and seasonal diet shifts are unknown.

CONSERVATION CONCERNS

Abundance:

Continental: WIDESPREAD BUT PATCHY

Wyoming: RARE

There are no population estimates of American Pygmy Shrew at continental, national, or state scales. Based on the species' restricted distribution in Wyoming and apparent low frequency of capture relative to other shrews, it is thought to be rare in Wyoming^{1,9}. Considered at the subspecies level, *S. h. montanus* is one of the most narrowly endemic mammals in the region, with Wyoming encompassing a significant portion of its continental range.

Population Trends:

Historic: UNKNOWN

Recent: UNKNOWN

Historic and recent population trends of American Pygmy Shrew in Wyoming are unknown.

Intrinsic Vulnerability:

HIGH VULNERABILITY

Though little is known about American Pygmy Shrew, the general breeding biology of *Sorex* shrews, in addition to the species' apparently narrow range of habitat use, suggests high vulnerability. Many *Sorex* have a life expectancy of one year, and high-elevation forms such as *S. h. montanus* likely produce only one litter per year. Also, limited mobility restricts shrews' ability to re-colonize suitable habitats and expand populations. These characteristics may predispose *Sorex* populations to fragmentation and local extirpation if breeding is disrupted for even a single season. Furthermore, *S. h. montanus* appears somewhat specialized to moist habitats; its small size may place it at a competitive disadvantage with other *Sorex*; and it maintains relatively large home ranges (and thus lower population densities) than would be expected from its body size^{1, 4}.

Extrinsic Stressors:

MODERATELY STRESSED

So little is known about American Pygmy Shrew in Wyoming that any outline of extrinsic threats is somewhat speculative. Based on its relatively narrow habitat preferences (i.e., wet areas within mosaics of dry and moist coniferous forest), significant disturbances to such habitat are assumed to negatively affect *S. h. montanus*. Wildfire, tree disease and insect infestation, drought, and other natural disturbances may negatively affect habitat, as may anthropogenic actions such as clear-cut timber harvesting and unrestrained motorized recreation¹. However, 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

American Pygmy 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 American Pygmy Shrew in Wyoming. A 2010–2012 study documented one American Pygmy Shrew (assumed to be *S. h. montanus*) in the Medicine Bow Mountains of southern Wyoming⁶. Recent small mammal trapping efforts near Wyoming in northwestern Colorado failed to document the presence of American Pygmy Shrew¹⁰. Recent work in the Routt National Forest in north-central Colorado has helped expand knowledge of American Pygmy Shrew distribution and habitat preferences⁷. 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 hand¹¹.

ECOLOGICAL INFORMATION NEEDS

Very little is known about American Pygmy Shrew in Wyoming. There is a paucity of confirmed observations, and, as a result, the species' 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. American Pygmy 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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SPECIES PHOTOGRAPH

Figure 1: Photo not available.

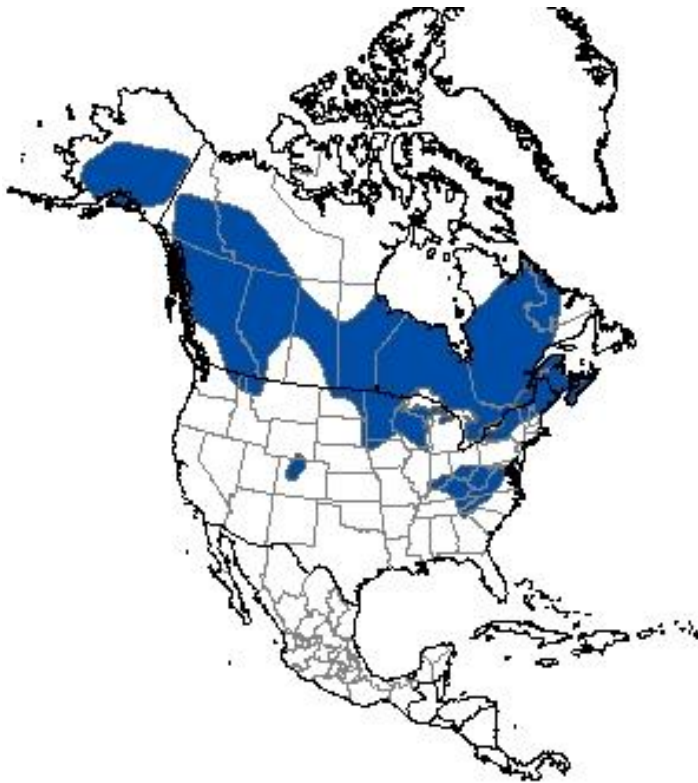


Figure 2: North American range of *Sorex hoyi*. The isolated range of the species in Wyoming and Colorado is the *montanus* subspecies. (Map from: Patterson, B. D., et al. (2007) Digital Distribution Maps of the Mammals of the Western Hemisphere, version 3.0, NatureServe, Arlington, Virginia.)



Figure 3: Potential habitat for American Pygmy Shrew. Subalpine forest near streams and wetlands, Medicine Bow National Forest, Snowy Range. (Photo courtesy of Michael T. Wickens)

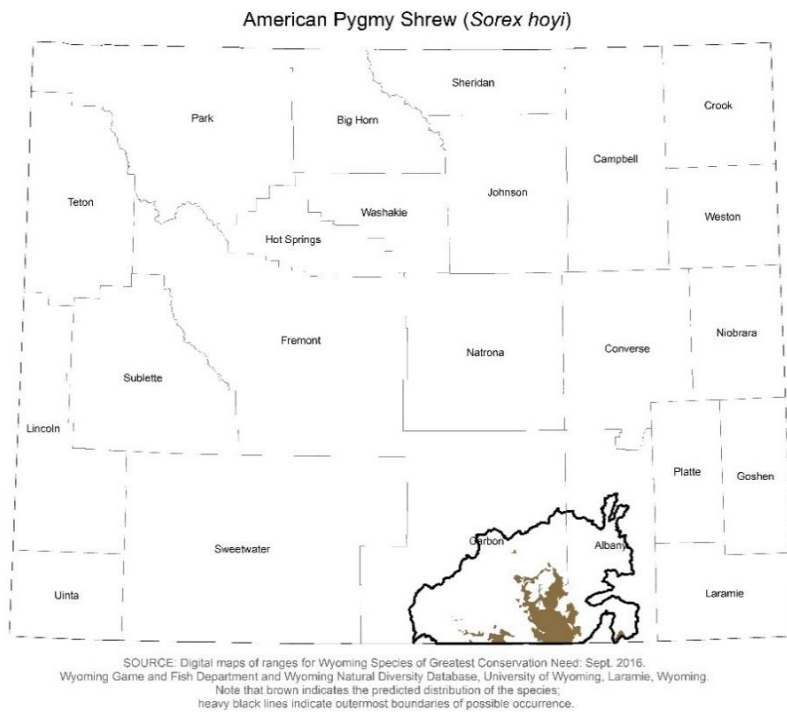


Figure 4: Range and predicted distribution of *Sorex hoyi* in Wyoming.

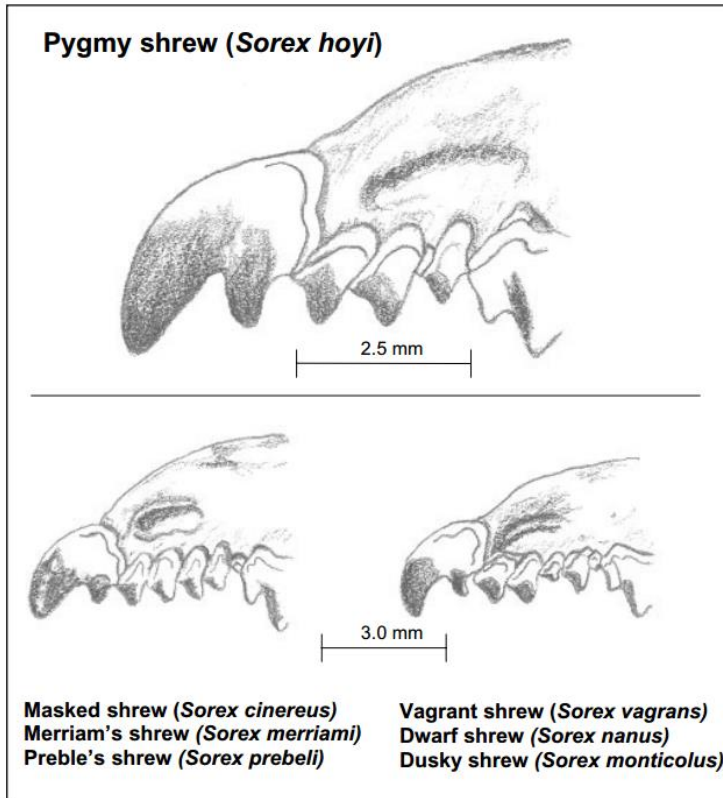


Figure 5: Lateral view of upper tooth rows of some *Sorex* spp. of shrew; American Pygmy Shrew shown at top. Top and bottom panels are not drawn to same scale – note scale bars. (Figure from: Beauvais, G. P., and McCumber, J. (2006) Pygmy Shrew (*Sorex hoyi*): a technical conservation assessment, p 34,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