

Tundra shrew

Sorex tundrensis

Class: Mammalia
Order: Eulipotyphla

Review Status: Peer-reviewed

Version Date: 20 November 2018

Conservation Status

NatureServe:

Agency:

G Rank: G5

ADF&G: Species of Greatest Conservation Need

IUCN: Least Concern

Audubon AK:

S Rank: S5

USFWS:

BLM:

Final Rank		
Conservation category: V. Orange		
unknown status and either high biological vulnerability or high action need		
<u>Category</u>	<u>Range</u>	<u>Score</u>
Status	-20 to 20	0
Biological	-50 to 50	-38
Action	-40 to 40	32
Higher numerical scores denote greater concern		

Status - variables measure the trend in a taxon's population status or distribution. Higher status scores denote taxa with known declining trends. Status scores range from -20 (increasing) to 20 (decreasing).

Score

Population Trend in Alaska (-10 to 10)

0

Unknown.

Distribution Trend in Alaska (-10 to 10)

0

Trends over the past 50 years are unknown. Models estimate that the distribution of *S. tundrensis* in Alaska has increased since the Last Glacial Maximum (~21,500 years ago; Hope et al. 2015), but disagree as to whether habitat will increase (Hope et al. 2015) or decrease (Baltensperger and Huettmann 2015a; Marcot et al. 2015) in the future.

Status Total: 0

Biological - variables measure aspects of a taxon's distribution, abundance and life history. Higher biological scores suggest greater vulnerability to extirpation. Biological scores range from -50 (least vulnerable) to 50 (most vulnerable).

Score

Population Size in Alaska (-10 to 10)

-6

Unknown, but given widespread distribution, population is suspected to be large. Small mammal surveys suggest that this species is locally abundant, but scarce elsewhere (Cook and MacDonald 2006).

Range Size in Alaska (-10 to 10)

-10

Widely distributed in Alaska. Although the southern limits of its range are uncertain, it has been documented across central Alaska from the Canadian border west to the Alaska Peninsula and the

Seward Peninsula, and north to the North Slope (MacDonald and Cook 2009; ARCTOS 2016).
Estimated range size is >400,000 sq. km.

Population Concentration in Alaska (-10 to 10) -10

Does not concentrate.

Reproductive Potential in Alaska

Age of First Reproduction (-5 to 5) -5

< 2 years (Dokuchaev 2005).

Number of Young (-5 to 5) -3

Little is known about the reproductive ecology of this species in Alaska. Research from Russia suggests litter size average 7 to 10 young, with females giving birth to two to four litters per year (Dokuchaev 2005; Dokuchaev et al. 2015; Tsytulina et al. 2016).

Ecological Specialization in Alaska

Dietary (-5 to 5) 1

Like other shrews, *S. tundrensis* is an insectivore, though little information is available about its diet. Analyses from Alaska (Quay 1951) and eastern Russia (Churchfield et al. 1997; Dokuchaev et al. 2015) reveal a diet that consists of earthworms, spiders, beetles, and insect larvae. Because invertebrates are an ephemeral and potentially unpredictable food source, we rank this question as B- Moderately adaptable with key requirements common.

Habitat (-5 to 5) -5

Found in tundra and boreal forest biomes. It has been documented in a variety of habitats and moisture regimes including mesic and wet herbaceous tundra, shrublands, riparian, and coniferous forests (Churchfield et al. 1997; Cook and MacDonald 2006; Hope 2012; Marcot et al. 2015).

Biological Total: -38

Action - variables measure current state of knowledge or extent of conservation efforts directed toward a given taxon. Higher action scores denote greater information needs due of lack of knowledge or conservation action. Action scores range from -40 (lower needs) to 40 (greater needs).

Score

Management Plans and Regulations in Alaska (-10 to 10) 10

Listed as unclassified game in Alaska with no bag limit and no closed season (ADFG 2018c).

Knowledge of Distribution and Habitat in Alaska (-10 to 10) 2

Distribution and habitat associations are somewhat known, but northern and southern range limits remain uncertain (MacDonald and Cook 2009). Few records exist from northern Alaska and *S. tundrensis* remains undocumented in southeast Alaska even though it has been found in the extreme northwest of British Columbia (MacDonald and Cook 2009). Species distribution models have been constructed for both historic and future time periods (e.g. Baltensperger and Huettmann 2015a; Hope et al. 2015; Marcot et al. 2015).

Knowledge of Population Trends in Alaska (-10 to 10) 10

Not currently monitored.

Knowledge of Factors Limiting Populations in Alaska (-10 to 10) 10

Little is known about the ecology of *S. tundrensis* in Alaska. In eastern Russia, Dokuchaev et al. (2015) noted a consistent, skewed female sex-ratio and strong inter-annual variation in the proportion of individuals that overwintered successfully. It is unknown whether these factors are important to population dynamics, and whether they apply to Alaskan populations. Although parasites have been

collected from individuals (Murrell et al. 2003; Lynch and Duszynski 2008; Dokuchaev et al. 2015), their effect on population dynamics is unknown. Climate change may have important implications on the distribution of the tundra shrew, but models disagree as to whether its range in Alaska will contract (Baltensperger and Huettmann 2015a; Marcot et al. 2015) or expand (Hope et al. 2015) by the end of this century. During previous periods of extreme climatic change, floodplain corridors may have been important refuges that allowed this species to persist in otherwise unsuitable habitat (Hope et al. 2011). Phylogenetic analyses have revealed that the genetic lineage of the Alaskan population is distinct from Eurasian lineages (Bannikova et al. 2010; Hope et al. 2011; Hope et al. 2013b).

Action Total: 32

Supplemental Information - variables do not receive numerical scores. Instead, they are used to sort taxa to answer specific biological or management questions.

Harvest:	Not substantial
Seasonal Occurrence:	Year-round
Taxonomic Significance:	Monotypic species
% Global Range in Alaska:	>10%
% Global Population in Alaska:	<25%
Peripheral:	No

References

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Alaska Center for Conservation Science
Alaska Natural Heritage Program
University of Alaska Anchorage
Anchorage, AK