

Cinereus shrew*Sorex cinereus*Class: Mammalia
Order: Eulipotyphla**Review Status:** Peer-reviewed**Version Date:** 20 November 2018**Conservation Status***NatureServe:* *Agency:*

G Rank: G5

ADF&G:

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	-42
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

Appears to have expanded its distribution northward into tundra habitats (Hope et al. 2013a), but its distribution at the southern end of its range is unknown. While this northward shift is expected to continue, models disagree whether its overall distribution in Alaska will expand (Hope et al. 2013a; 2015) or contract (Baltensperger and Huettmann 2015a; Marcot et al. 2015).

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)*

-10

Common and abundant throughout the state (Cook and MacDonald 2006; Baltensperger and Huettmann 2015b). Extensive field surveys across Alaska consistently recorded *S. cinereus* as the dominant small mammal species (Cook and MacDonald 2006; Baltensperger and Huettmann 2015b), and more than 13,500 specimens have been collected in Alaska in the past 120 years (ARCTOS 2016). We therefore assume that population size is >25,000 individuals.

<i>Range Size in Alaska (-10 to 10)</i>	-10
Found throughout Alaska from the Arctic tundra to southeast Alaska, and from the Canadian border west to the Alaska Peninsula (MaDonald and Cook 2009; Baltensperger and Huettmann 2015b; ACCS 2017a). Present-day species distribution models estimated a range size >2,000,000 sq. km. (Hope et al. 2013).	
<i>Population Concentration in Alaska (-10 to 10)</i>	-10
Does not concentrate.	
<i>Reproductive Potential in Alaska</i>	
<u>Age of First Reproduction (-5 to 5)</u>	-5
Unknown for Alaska. Elsewhere in North America, <i>S. cinereus</i> reproduces at <2 years (Whitaker 2004).	
<u>Number of Young (-5 to 5)</u>	-3
Unknown for Alaska. Elsewhere in North America, females have an average litter size of 7 young and have two or three litters per year (Whitaker 2004; Osborne 2008).	
<i>Ecological Specialization in Alaska</i>	
<u>Dietary (-5 to 5)</u>	1
Like other shrews, <i>S. cinereus</i> is an insectivore with a varied, yet largely carnivorous diet (Aitchinson 1987; Whitaker 2004; O'Brien et al. 2018). Because invertebrates are an ephemeral and potentially unpredictable food source, we rank this question as B- Moderately adaptable with key requirements common.	
<u>Habitat (-5 to 5)</u>	-5
Although <i>S. cinereus</i> is often characterized as living in moist boreal habitats (Demboski and Cook 2003; Hope et al. 2015), it has been reported from a variety of habitats including deciduous forests, open and closed shrub, meadows, wetlands, and tundra (Aitchinson 1987; Whitaker 2004; Cook and MacDonald 2006; Hope 2012; Hope et al. 2013a; Baltensperger and Huettmann 2015b).	
Biological Total:	-42

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

<i>Management Plans and Regulations in Alaska (-10 to 10)</i>	10
Listed as unclassified game in Alaska with no bag limit and no closed season (ADFG 2020a).	
<i>Knowledge of Distribution and Habitat in Alaska (-10 to 10)</i>	2
General distribution and habitat associations are known from multi-species small mammal surveys that have been conducted across the state (e.g. Tegeler and Savage 2003; Cook and MacDonald 2006; Hope 2012; Baltensperger and Huettmann 2015b; ARCTOS 2016). Surveys are needed to determine whether <i>S. cinereus</i> occurs on the Aleutian Islands west of Unimak Pass (MacDonald and Cook 2009). Moreover, <i>S. cinereus</i> has been expanding its range northward into tundra habitats in recent decades; the northernmost extent of its range therefore warrants further investigation (MacDonald and Cook 2009; Hope et al. 2013a). Additional surveys and specimen collections are needed to study the genetic diversity of insular populations and subspecies <i>S. c. streator</i> and <i>S. c. hollisteri</i> .	
<i>Knowledge of Population Trends in Alaska (-10 to 10)</i>	10
Not currently monitored.	

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

Little is known about the factors that limit *S. cinereus* populations in Alaska. Climate change is expected to expand the range of the cinereus shrew northward (Hope et al. 2013a; Baltensperger and Huettmann 2015a; Hope et al. 2015), but models disagree as to whether its overall range in Alaska will increase (Hope et al. 2013a; Hope et al. 2015) or decrease (Baltensperger and Huettmann 2015a). In addition to distributional changes, climate change may increase food availability. A correlative study suggests that observed increases in body size may result from increased winter food availability caused by warming temperatures (Yom-Tov and Yom-Tov 2005); however, this idea has not been explicitly tested. In addition, while strong dietary overlap between *S. cinereus* and *S. monticolus* indicates the potential for competition (O'Brien et al. 2018), it is unknown whether food is limiting and whether competition actually takes place between these two species. It is unknown whether *S. cinereus* undergoes population fluctuations in Alaska, as is common in other small mammals. A long-term monitoring project on the Alaska Peninsula observed a two-year cycle from 1996 to 2000, but subsequent data contradicted this pattern (Savage 2003). Dramatic population fluctuations have been observed elsewhere in this species' range, though the causal mechanisms are unknown (Buckner 1966). Endo- and ectoparasites have been documented (e.g. Murrell et al. 2003; Cook et al. 2016), but their role on population dynamics has not been investigated. Several studies have investigated the relationship between *S. cinereus* and other shrew species (van Zyll de Jong 1982; Demboski and Cook 2003; Hope et al. 2012), but additional studies are needed on subspecies designations, of which two are recognized in Alaska (MacDonald and Cook 2009). Specimens collected across Alaska (Demboski and Cook 2003) and across their western range (Hope et al. 2012) appear weakly differentiated from each other.

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

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