

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

G Rank: G5

ADF&amp;G: Species of Greatest Conservation Need

IUCN: Least Concern

Audubon AK:

S Rank: S4

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    | -30          |
| Action          | -40 to 40    | 40           |

**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. navigator* in Alaska has increased since the Last Glacial Maximum (~21,500 years ago; Hope et al. 2015) and suitable habitat is expected to increase until at least the end of this century (Baltensperger and Huettmann 2015a; Hope 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)*

-6

Unknown, but suspected large.

*Range Size in Alaska (-10 to 10)*

-8

Occurs from southeast Alaska north to Birch Creek (160 km NE of Fairbanks) and from Anchorage east to the Canadian border (MacDonald and Cook 2009; Nagorsen et al. 2017). Estimated range size is between 100,000 and 400,000 sq. km., calculated in GIS.

|                                                                                                                                                                                                                                                                                                                                                                                                              |     |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| <i>Population Concentration in Alaska (-10 to 10)</i>                                                                                                                                                                                                                                                                                                                                                        | -10 |
| Populations are highly concentrated along waterways. However, number of sites is likely >250.                                                                                                                                                                                                                                                                                                                |     |
| <i>Reproductive Potential in Alaska</i>                                                                                                                                                                                                                                                                                                                                                                      |     |
| <u>Age of First Reproduction (-5 to 5)</u>                                                                                                                                                                                                                                                                                                                                                                   | -5  |
| <2 years (Beneski and Stinson 1987; Gusztak and Campbell 2004).                                                                                                                                                                                                                                                                                                                                              |     |
| <u>Number of Young (-5 to 5)</u>                                                                                                                                                                                                                                                                                                                                                                             | -3  |
| Litter size ranges from three to ten and females can have two to three litters per year (Conaway 1952; Beneski and Stinson 1987; Gusztak and Campbell 2004).                                                                                                                                                                                                                                                 |     |
| <i>Ecological Specialization in Alaska</i>                                                                                                                                                                                                                                                                                                                                                                   |     |
| <u>Dietary (-5 to 5)</u>                                                                                                                                                                                                                                                                                                                                                                                     | 1   |
| Feeds primarily on aquatic insect larvae including stoneflies, caddisflies, mayflies, and chironomids (Conaway 1952; Beneski and Stinson 1987). 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>                                                                                                                                                                                                                                                                                                                                                                                     | 1   |
| Amphibious. Restricted to the banks of streams, rivers, lakes, ponds, and other waterbodies (Conaway 1952; Lehmkuhl et al. 2008; MacDonald and Cook 2009). Rarely captured more than a few meters from the water's edge (Conaway 1952; Lehmkuhl et al. 2008). Prefers banks with adequate cover such as rock crevices or thick vegetation (Conaway 1952; Beneski and Stinson 1987; MacDonald and Cook 2009). |     |
| <b>Biological Total:</b>                                                                                                                                                                                                                                                                                                                                                                                     | -30 |

**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 2018c).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |    |
| <i>Knowledge of Distribution and Habitat in Alaska (-10 to 10)</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 10 |
| Range limits are not known (Cook et al. 1997; MacDonald and Cook 2009) and very few specimens have been collected in Alaska (ARCTOS 2016). Surveys in Wrangell-St. Elias extended the known distribution of this species (Cook and MacDonald 2003), but other multi-species surveys in northern, interior, and southwest Alaska have not captured any individuals (e.g. Cook and MacDonald 2005; 2006; Hope 2012; Baltensperger and Huettmann 2015b).                                                                                                                                                                                                                                                                                                                                              |    |
| <i>Knowledge of Population Trends in Alaska (-10 to 10)</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 10 |
| Not currently monitored.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |    |
| <i>Knowledge of Factors Limiting Populations in Alaska (-10 to 10)</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 10 |
| Little is known about the ecology of the western water shrew. Parasites have been collected from individuals (Conaway 1952), but their effects on population dynamics are unknown. Additional research is also needed to determine the effects of climate change. Species distribution models for Alaska predict that suitable habitat will increase by the end of this century (Baltensperger and Huettmann 2015a; Hope et al. 2015), but little is known about this species' current distribution and habitat requirements (MacDonald and Cook 2009). The taxonomy of North American water shrews has been an area of active research in recent years, but few specimens from Alaska are available for study (O'Neill et al. 2005; Mycroft et al. 2011; Hope et al. 2014; Nagorsen et al. 2017). |    |

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

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

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