Collared lemming, Unalaska
Dicrostonyx groenlandicus unalascensis

Conservation Status

<table>
<thead>
<tr>
<th>Heritage</th>
<th>Agency</th>
</tr>
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<tr>
<td>G Rank: G5T3</td>
<td>USFWS/NOAA:</td>
</tr>
<tr>
<td>S Rank: S3</td>
<td>SOA: Species of Greatest Conservation Need</td>
</tr>
</tbody>
</table>

Class: Mammalia
Order: Rodentia

Conservation Status

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<tr>
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<tr>
<td>Biological</td>
<td>-50 to 50</td>
<td>8</td>
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<tr>
<td>Action</td>
<td>-40 to 40</td>
<td>36</td>
<td></td>
</tr>
</tbody>
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Final Rank

Conservation category: IV. Orange
IV = unknown status and high biological vulnerability and action need

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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).

Population Trend (-10 to 10)
Populations probably cycle in booms and busts over several years (Marsden 1964, Nowak 1999), but trends in periodicity are difficult to determine; other studies suggest random, not cyclic, fluctuations (Predavec et al. 2001). Fay and Sease (1985) and Murie (1959) did not believe that collared lemming populations on nearby Umnak Island were cyclic (Murie 1959 in Fay and Sease 1985), they noted that populations fluctuated widely from scarce to abundant. No information has suggested a positive or negative population trend for the species.

Distribution Trend (-10 to 10)
Unknown.

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).

Population Size (-10 to 10)
No population estimate is available for Unalaska Island population (Jarrell, UAM, personal communication). Unalaska Island is approximately 137,849 hectares; sampling on the island in 1931 (Gilmore 1933) and 1964 (Peterson 1967) resulted in the capture of only four specimens. Populations of collared lemmings can be scarce to abundant, with population size varying considerably between years.

Range Size (-10 to 10)
Known only from Unalaska Island in the Aleutian Archipelago. Unalaska Island is approximately 340,630 acres/1400 km sq.

Population Concentration (-10 to 10)
Does not concentrate, but only occurs on one island.

Reproductive Potential

Age of First Reproduction (-5 to 5)
Lemmings of both sexes are able to reproduce within weeks of their birth. Female estrus cycle lasts 9-10 days, occurring
several times during the breeding season, January through September. Gestation lasts 19-21 days; litter size up to 11; 2-3 litters per year. Average weight of young is 3.8 g at birth; weaning occurs at 15-20 days (Marsden 1964, Nowak 1999).

**Number of Young (-5 to 5)**

Litter size up to 11; 2-3 litters per year.

**Ecological Specialization**

**Dietary (-5 to 5)**

Herbivore. Diet includes grasses, sedges, bearberry, and cottongrass in summer, twigs and buds of willow in winter (Whitaker 1980). Dicotyledons, particularly willows, may be locally important (Batzli and Pitelka 1983). Salix lanata has been identified as an important food item during winter months when collared lemmings live under snow (Predavec et al. 2001).

**Habitat (-5 to 5)**

Well adapted to the extremes of cold, snow, and ice of arctic conditions. They are generally found in Arctic tundra; often found in relatively dry habitats such as ridges and hummocks and habitats with an abundance of willow (Salix spp.) shrubs. Occupies runways beneath snow; also tunnels down to permafrost level. In a study of microhabitat use in northern Canada, collared lemmings preferred tundra with high hummocks, high percent cover of plants (especially Salix lanata) and numerous burrows; this pattern of habitat use is likely related to reducing detection and capture by predators (Predavec and Krebs 2000).

**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 to lack of knowledge or conservation action. Action scores range from -40 (lower needs) to 40 (greater needs).

<table>
<thead>
<tr>
<th>Management Needs (-10 to 10)</th>
<th>Score</th>
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<tr>
<td>No occurrences protected and managed. No known protection measures are in place. Lemmings (&quot;mice&quot;) are listed as unclassified game by the Alaska Department of Fish and Game with no closed season and bag limit. No protection measures currently are needed; however, population should be monitored to ensure protection needs don’t change.</td>
<td>10</td>
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<th>Monitoring Needs (-10 to 10)</th>
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<td>Limits of species’ and subspecies’ distributions should be determined. Monitor populations to determine abundance and trends. Sampling on the island in 1931 (Gilmore 1933) and 1964 (Peterson 1967) resulted in the capture of only four specimens. No other documented studies on this species.</td>
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<th>Research Needs (-10 to 10)</th>
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<td>A study of mammal diversity patterns in Canada suggests that climate change could alter and effectively remove approximately 60% of D. groenlandicus habitat with unpredictable, but likely detrimental consequences for this species in the future (Kerr and Packer 1998). Extreme population fluctuations and restricted range of this species increases its vulnerability to outside threats (e.g., a rat introduction could be devastating to island populations). An important prey for red fox and predatory birds on Unalaska islands (Fay and Sease 1985, Peterson 1967); however, red fox is native to this island so Dicrostonyx populations may be able to tolerate fox predation. The effects of Norway rat, house mouse, and ground squirrel introductions on Unalaska Island are unknown. Arctic fox was introduced on Unalaska Island in 1922, but has since disappeared (Bailey 1993).</td>
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**Supplemental Information** - variables do not receive numerical scores. Instead, they that are used to sort taxa to answer specific biological or managerial questions.
Harvest: Not substantial
Seasonal Occurrence: Year-round
Taxonomic Significance: Subspecies
% Global Range in Alaska: >10%
% Global Population in Alaska: >25%
Peripheral: No

**Range Map**

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### References

Alaska Department of Fish and Game (ADFG). 2007a. 2007-2008 Alaska hunting regulations: fur animals, small game, unclassified game and deleterious exotic wildlife.


Jarrell, UAM, personal communication


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