Collared pika

Ochotona collaris

Class: Mammalia
Order: Lagomorpha

Review Status: Peer-reviewed **Version Date:** 18 December 2018

Conservation Status

NatureServe:	*Agency:*		
G Rank: G5	ADF&G: Species of Greatest Conservation Need	IUCN: Least Concern	Audubon AK:
S Rank: S3S4	USFWS:	BLM:	

Final Rank

Conservation category: **V. Orange**

unknown status and either high biological vulnerability or high action need

Category	Range	Score
Status	-20 to 20	0
Biological	-50 to 50	-27
Action	-40 to 40	4

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

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). **Score**

Population Size in Alaska (-10 to 10) 0

The population of collared pikas in Canada is estimated to be >10,000 individuals (COSEWIC 2011a), but population size in Alaska is unknown.

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

Found at high elevations in the mountains of southcentral and interior Alaska, including the Alaska Range, Wrangell, Chugach, and Talkeetna Mountains, north to the Yukon River and east to Canada (MacDonald and Cook 2009). Its distribution in southwest, southcoastal, and southeast Alaska is uncertain (MacDonald and Cook 2009; H. Lanier, pers. comm.). It has not been reported on the Kenai Peninsula, despite extensive search effort (MacDonald and Cook 2009). Estimated range size in Alaska is >400,000 sq. km. (Table 1 in COSEWIC 2011a).

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

Does not aggregate.

Reproductive Potential in Alaska

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

Reproduces at 1 year (Franken and Hik 2004a).

Number of Young (-5 to 5) 2

In southwest Yukon, females had a single litter per year (Franken and Hik 2004a). Litter size ranges from one to six (MacDonald and Jones 1987; Franken and Hik 2004a), though on average only one to two young are successfully raised (Franken and Hik 2004a). In keeping with the scope of this question, we rank it as 0.5 * B + 0.5 * C.

Ecological Specialization in Alaska

Dietary (-5 to 5) -5

Herbivorous. Feeds on graminoids, club mosses, deciduous shrubs, and alpine forbs (Rausch 1961; MacDonald and Jones 1987; Morrison et al. 2004; Morrison and Hik 2008). While collared pikas do exhibit preferences for certain plant groups or species, they have a flexible diet and selected food items vary in response to changes in availability, predation risk, or competition (Morisson et al. 2004; Hudson et al. 2008; Morrison and Hik 2008).

Habitat (-5 to 5) 1

Patchily distributed in talus slopes and adjacent alpine meadows (Broadbooks 1965; Franken and Hik 2004b; COSEWIC 2011a; Dial et al. 2014). These habitats are threatened by climate change and shrub expansion (Sturm et al. 2001; COSEWIC 2011a), but at present these habitats are fairly common within the species' range. Areas with persistent snow cover likely limit foraging opportunities and are unlikely to be inhabited (Franken and Hik 2004a; Franken and Hik 2004b).

Biological Total: -27

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

Subsistence and sport hunting is allowed with no bag limits and no closed season (ADFG 2018c). However, hunting is restricted to two small Game Management Units that encompass only a small portion of this species' range in Alaska.

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

Distribution and habitat associations are known from localized surveys (e.g. Broadbooks 1965; Holmes 1991; Cook and MacDonald 2003; 2005; Dial et al. 2014). Information on habitat associations can also be gleaned from studies in southwestern Yukon (e.g. Franken and Hik 2004b; Horn 2013; reviewed in COSEWIC 2011a) and from statewide habitat models (e.g. Lanier and Olson 2013; Knowles et al. 2016). Its distribution in southwest, southcoastal, and southeast Alaska is unclear (Cook and MacDonald 2005; MacDonald and Cook 2009). Moreover, because the collared pika has a patchy distribution even within suitable talus habitat, our knowledge of its distribution within areas of known occurrences is incomplete (H. Lanier, pers. comm.). Recent absences compared to historical records can be difficult to confirm given the potential for population cycling and dynamics of extinction and colonization (COSEWIC 2011a; H. Lanier, pers. comm.).

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

Not currently monitored.

Knowledge of Factors Limiting Populations in Alaska (-10 to 10) 2

Little is known about the population dynamics of collared pikas in Alaska. Studies in southwestern Yukon suggest that low overwinter survival was an important contributor to population dynamics and was correlated to the Pacific Decadal Oscillation, a broad-scale climate pattern which influences winter temperature and precipitation (Franken 2002; Morrison and Hik 2007). A low snowpack or freezing rain events may increase overwinter mortality from cold exposure (Morrison and Hik 2007; COSEWIC 2011a; but see Horn 2013). Meanwhile, the timing of snowmelt influences the length of the growing season and the phenology and quality of of alpine plants (Wipf et al. 2009; Wipf and Rixen 2010), with potential effects for food resources and pika's ability to meet their energetic requirements (Morrison and Hik 2007; Morrison et al. 2009). Similarly, warm, dry summers may promote juvenile survival (Horn 2013). Climate may also have lagged effects and may influence sexes and life stages differently (Horn 2013). Additional research is needed to elucidate the role of intra- and interspecific competition, dispersal and population connectivity (Zgurski and Hik 2012; Lanier et al 2015b), predation (Rausch 1961; Holmes 1991; Morrison et al. 2004), and disease (Cook et al. 2017). Moreover, although this species has been extensively studied in southwestern Yukon, it is unknown whether these findings apply to populations in Alaska. Indeed, studies in southwestern Yukon suggest that the importance of demographic parameters (e.g. fecundity versus adult survival) varies across subpopulations (Morrison and Hik 2007), suggesting that factors limiting population dynamics may be variable across time and space. We encourage interested readers to consult the COSEWIC Assessment and Status Report on the Collared Pika (COSEWIC 2011a) for an in-depth review of pika ecology and research needs.

Collared pikas are thought to be vulnerable to the effects of a warming climate because of their specialized habitat and physiological requirements (Morrison and Hik 2007; COSEWIC 2011). Modeling of previous glacial periods suggest that the distribution of collared pika has decreased in response to warming after the Last Glacial Maximum (COSEWIC 2011; Hope et al. 2015), but expectations of future distributional change are equivocal (COSEWIC 2011; Hope et al. 2015; Leach et al. 2015 and references therein). Low dispersal ability and low genetic and phenotypic variation may further limit their ability to adapt to climate change (COSEWIC 2011; Lanier and Olson 2013; Lanier et al. 2015a; 2015b). Additional research is needed to understand how current and predicted climates affect the population and distribution of pika.

Action Total: 4

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:	25-74%
Peripheral:	No

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