

Common Raven (*Corvus corax*)

Vulnerability: Presumed Stable

Confidence: Moderate

The Common Raven is wide-ranging throughout much of North America utilizing a variety of habitats from deserts in the southwestern U.S. to tundra habitats in Arctic Alaska (Boarman and Heinrich 2000). Historically, this species did not nest in the northern portion of the Arctic Coastal Plain of Alaska but with the growing human presence in the region, particularly from oil development activities, they have been able to utilize human structures for nesting (Johnson and Herter 1989, Day 1998). Ravens are a generalist species and take advantage of a wide variety of prey and are a noted nest predator. Although some individuals may move south in the winter, many remain on the coastal plain (Johnson and Herter 1989). The global population is estimated at 16 million (Rich et al. 2004).



J. Liebezeit @ WCS

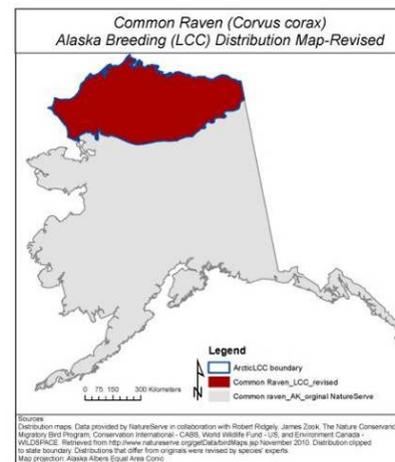
Range: We adjusted the NatureServe map to match the Birds of North America range map for this assessment as it more accurately represented this species' range based on other accounts and personal observations (Johnson and Herter 1989, S. Backensto, J. Liebezeit, pers. obs.) The Nature Serve map did not include the raven range extending to the Arctic Ocean coastline.

Based on the assessment ravens are likely to be slightly less vulnerable in five categories and slightly more vulnerable in two, but overall climate change impacts will have little impact ("neutral") on this species (see table on next page).

Human Response to CC: Increased human activity and infrastructure associated with climate change mitigation could benefit ravens as witnessed by the influence of current human developments in the region on raven populations. However, in the next 50 years, there likely will be no significant development of this type in Arctic Alaska so it would only have nominal influence on ravens.

Physiological Thermal Niche: Ravens use warm thermal environments created by oil

processing facilities to roost and some breeding pairs in the oil fields place their nests on heated structures. On the Colville river, nests oriented to southerly aspects are common (S. Backensto, pers. comm.). No studies have indicated if these behaviors actually benefit ravens (e.g. increase nest survivorship). Despite this, these behaviors suggest they may benefit from a warming climate by reducing the physiological stress of cold temperatures during key parts of their lifecycle.



Physiological Hydro Niche: Ravens can withstand dramatic extremes in moisture regime tolerances as is exhibited by the fact that they are equally at home in the Mojave Desert as they are in the wet Pacific Northwest. Therefore, a drier or wetter arctic will unlikely have a negative impact on this species.

Dietary Versatility: The ravens' varied diet and ability to exploit human food subsidies could

Common Raven (*Corvus corax*)

Vulnerability: Presumed Stable

Confidence: Moderate

Vulnerability Factors	D	SD	N	SI	I	GI	Unknown or N/A
B1. Sea level rise			*				
B2a. Natural barriers			*				
B2b. Anthropogenic barriers			*				
B3. Human response to CC		*	*				
C1. Dispersal/Movement			*				
C2ai. Historical thermal niche (GIS)			*				
C2aii. Physiological thermal niche		*	*				
C2bi. Historical hydro niche (GIS)			*				
C2bii. Physiological hydro niche		*	*				
C2c. Disturbance regime			*				
C2d. Ice & Snow habitats			*				
C3. Physical habitat restrictions			*	*			
C4a. Biotic habitat dependence			*				
C4b. Dietary versatility		*					
C4d. Biotic dispersal dependence			*				
C4e. Interactions with other species			*				
C5a. Genetic variation							*
C5b. Genetic bottlenecks							*
C6. Phenological response		*	*	*			*
D1. CC-related distribution response			*				

D=Decrease vulnerability, SD=Somewhat decrease vulnerability, N=Neutral effect, SI=Slightly increase vulnerability, I=Increase vulnerability, GI=Greatly increase vulnerability.

benefit this species as the climate warms, human activity in the region increases, and the food base changes.

Physical Habitat Restrictions: Despite raven use of human structures for nesting on the coastal plain, overall, nesting sites are still quite limited since they depend on relatively uncommon geologic features (e.g. cliffs, river banks). This paucity of adequate breeding sites will still be a key limiting factor for this species.

Genetic Variation: Although genetic studies on Alaskan raven populations have not been completed, they do tend to have high genetic variation (Webb et al. 2011) and thus would be less susceptible to disease and other disturbance events.

Phenological Response: Currently, there are no long term data sets to provide sufficient information on raven phenological response to climate change in the Arctic and so it is unknown how they will respond to changing biotic schedules.

In summary, the generalist nature of this species, combined with their high adaptability and expansive range suggests ravens will remain stable in the region with regard to climate change impacts during the 50 year timeline of this assessment.

Literature Cited

- Boarman, W.I. and Heinrich, B. 1999. Common raven (*Corvus corax*). In: The Birds of North America No. 476 (Poole, A. and Gill, F. eds.), Philadelphia, and American Ornithologists' Union, Washington D.C.: Academy of Natural Sciences.
- Day, R.H. 1998. Predator populations and predation intensity on tundra-nesting birds in relation to human development. Fairbanks: Unpublished report by ABR, Inc. for U.S. Fish and Wildlife Service.
- Johnson, S.R. and D.R. Herter. 1989. The birds of the Beaufort Sea, Anchorage: British Petroleum Exploration (Alaska), Inc.
- Rich, T.D., C.J. Beardmore, H. Berlanga, P.J. Blancher, M. S.W. Bradstreet, G. S. Butcher, D.W. Demarest, E.H. Dunn, W.C. Hunter, E.E. Iñigo-Elias, J.A. Kennedy, A.M. Martell, A.O. Panjabi, D.N. Pashley, K.V. Rosenberg, C. M. Rustay, J.S. Wendt, and T.C. Will. 2004. Partners in Flight North American Landbird Conservation Plan. Cornell Lab of Ornithology. Ithaca, New York. http://www.partnersinflight.org/cont_plan/default.htm
- Webb, W., J.M. Marzluff, and K.E. Omland. 2011. Random interbreeding between cryptic lineages of the Common Raven: evidence for speciation in reverse. *Molecular Ecology* (1-13). DOI: 10.1111/j.1365-294X.2011.05095.x