Peregrine Falcon (*Falco peregrinus*)

Vulnerability: **Presumed Stable** Confidence: Moderate

The Peregrine Falcon is one of the most ubiquitous bird species with a breeding distribution ranging from tundra to the tropics. In Arctic Alaska this bird's breeding stronghold is found in major river systems where cliff ledges abound and serve as preferred nesting sites. Peregrine Falcons prey on a wide variety of bird species ranging from small passerines to medium-sized ducks and will also take small mammals (White et al. 2002). This species travels widely and Arctic-breeding Peregrine Falcons make some of the longest migrations of any bird species. The North American subspecies (*tundrius*) winters in Central and South America (White et al. 2002). The global population is estimated at ~1.2 million individuals (BirdLife International 2012).

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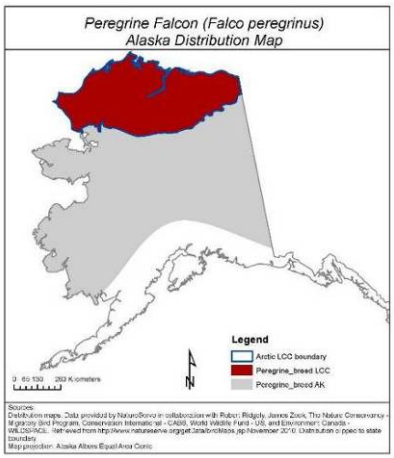
Range: We used the extant NatureServe range map for the assessment as it closely matched that of the Birds of North America (White et al. 2002) and other sources (Johnson and Herter 1989). It is important to note that breeding is most dense along rivers, especially through the Brooks Range foothills (B. Ritchie, Pers. comm.).

Human Response to CC: Power lines associated with more all-weather roads (necessitated by a warming climate and shortened ice road season) for energy extraction activities could result in more collision fatalities; although their hunting styles and flight behaviors should reduce the potential for this (B. Ritchie, pers. comm.).

Physiological Thermal Niche: Because this species has a widely distributed breeding range across a broad thermal gradient in North America and elsewhere, negative effects of warming are unlikely. This species could actually benefit from warming temperatures, reducing stress related to early season cold temperatures.

Physiological Hydro Niche: Peregrine Falcons use a range of wet to dry habitats as foraging grounds. Wetter habitats can be particularly important during key times of the breeding season and during post-breeding. A tundra drying trend could have some negative effects, but this species would likely be able to effectively utilize drier habitats. Current projections of annual potential evapo-transpiration suggest negligible atmospheric-driven drying for the foreseeable future (TWS and SNAP), and its interaction with hydrologic processes is very poorly understood (Martin et al. 2009). Thus atmospheric moisture, as an exposure factor, was not heavily weighted in the assessment.



Disturbance Regime: In terms of climate-mediated disturbance, increased fire frequency (Racine and Jandt 2008) may both create and destroy favorable hunting habitat. Similarly, thermokarst, through both ice wedge degradation and draining of thaw lakes (Martin et al. 2009) could both create and reduce nesting sites on deep lakes and wetland foraging sites.

Physical Habitat Restrictions: Although Peregrine Falcons primarily rely on relatively limited nesting sites in the Arctic LCC (e.g. cliff ledges, riparian cliffs, nests built by other species), they also exhibit flexibility using dirt bluffs, eroding banks, and recently, oil field and

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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.

other human infrastructure for nest substrates (B. Ritchie, pers. comm.).

Genetic Variation: Peregrine Falcons have average genetic variation (White and Boyce 1988), reducing susceptibility to climate-mediated impacts that stress them at the population level (e.g. disease outbreaks) compared to species with lower genetic variation.

Phenological Response: Although there has been some long-term monitoring of nesting Peregrine Falcons in Arctic Alaska (Swem and Matz 2011), effects on phenological factors in response to changing climate have not been examined.

In summary, despite some identified vulnerabilities this assessment suggests that Peregrine Falcons will likely be able to adjust to the climate changes predicted to occur in Arctic Alaska in the next 50 years.

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