Red-necked Phalarope (*Phalaropus lobatus*)

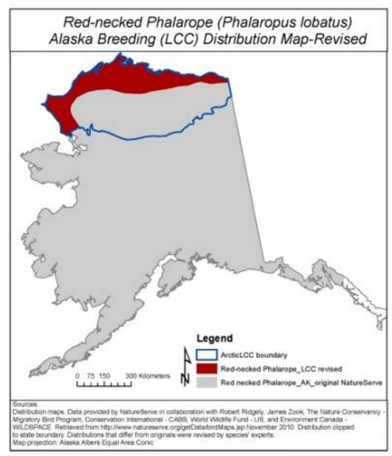
Vulnerability: Presumed Stable Confidence: Moderate

The Red-necked Phalarope commonly breeds in both the Brooks Range foothills and Arctic Coastal Plain of Alaska. In Alaska, this species typically nests in wet tundra near water's edge. It differs from the Red Phalarope in that it breeds further inland and at higher elevations (Rubega et al. 2000). Like other phalaropes, this species depends on aquatic food sources for much of its diet (Rubega et al. 2000). Red-necked Phalaropes spend winter at sea in tropical waters in large numbers off the west coast of South America (Rubega et al. 2000). Current North American population estimate is 2.5 million with a declining trend (Morrison et al. 2006).

Range: We modified the NatureServe range map for the assessment to more closely match that of the Birds of North America (Rubega et al. 2000) and other habitat descriptions (Bart et al. 2012). It should be noted that this species occurs more abundantly at inland wet tundra sites more than along the immediate coast (Johnson et al. 2007).

Physiologic Hydro Niche: Among the indirect exposure and sensitivity factors in the assessment (see table on next page), the greatest potential source of vulnerability for Red-necked Phalaropes was in the "physiological hydrologic niche" category. Scores for physical hydrological niche ranged from "slightly" to "greatly increased "vulnerability. This range represents uncertainty both in the direction and intensity of change in Arctic hydrology, as well as in the effect this will have on the phalarope. If substantial tundra drying occurs this species could experience a considerable negative impact as they primarily depend on wet tundra habitats for nesting and foraging in Alaska (Rubega et al. 2000). Currently it is unknown how adaptable this species would be in utilizing drier habitats for nesting. Current projections of annual potential evapotranspiration 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 (most influential on the "hydrological niche" sensitivity category), was not heavily weighted in the assessment.

Human Response to CC: Shoreline armoring by humans in response to climate change could reduce the availability of stopover or staging habitats this species uses prior to fall migration. However, shoreline armoring would be limited to existing communities or infrastructure, which is limited in extent at present.



Physical Habitat Restrictions: During post-breeding, Red Phalaropes will often use the leeward side of barrier islands for foraging (Taylor et al. 2010). These types of habitat features are relatively uncommon and are vulnerable to disturbance. Coastal erosion and overwash, in particular, have the potential to negatively impact post-breeding phalaropes. Other disturbances, such as thermokarst-mediated changes on the landscape, could both create and destroy nesting and foraging habitats. More tundra fires could theoretically reduce nesting and foraging habitat but tundra fires are relegated to inland areas and are presently highly localized so they would likely not significantly

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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.

impact current phalarope habitats in Alaska in the near future.

Interactions with Other Species: Climate change may reduce the amplitude of lemming cycles (Ims and Fuglei 2005) and thus could expose this species to greater nest predation pressure if lemmings become less available as alternative prey.

Genetic Variation: Little is known about Red-necked Phalarope genetics although, in general, many shorebird species are believed to have low genetic variation (Baker and Stauch 1988).

Phenological Response: Although not demonstrated in phalaropes, there is evidence suggesting shorebirds are able to track phenological changes associated with a warming climate at least in terms of nest initiation (J. Liebezeit and S. Zack, unpublished data; D. Ward, pers. comm.). However, it is unknown if they can synchronize timing to other organisms changing schedules that they depend on (e.g. invertebrate prey).

In summary, although ranked as “stable” in this assessment, this species’ high dependence on wet habitats for nesting, foraging, and post-breeding activities, combined with other vulnerabilities may make it vulnerable if geomophological changes linked to permafrost ultimately lead to drier conditions.

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