White-rumped Sandpiper (*Calidris fuscicollis*)

Vulnerability: **Presumed Stable** Confidence: Moderate

The White-rumped Sandpiper is a small shorebird that is a relatively rare breeder in Arctic Alaska. They nest in coastal wetlands between Barrow and Cape Halkett on the Arctic Coastal Plain of Alaska (Bart et al. 2012). In eastern Canada this species is similarly associated with coastal wetlands (Smith et al. 2007), but may also use moist tundra or even dwarf shrub tundra for nesting (Parmelee 1992). White-rumped Sandpipers have one of the longest migrations of any bird species and winter primarily in southern South America east of the Andes (Parmelee 1992). Current estimate of the North American population is 1.12 million with a declining trend (Morrison et al. 2006).

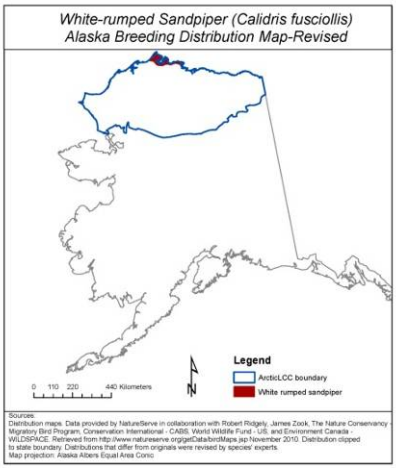
Range: We modified the NatureServe range map for this assessment, restricting this species breeding range to the region around Barrow. We based this adjustment on recent studies that suggest the Birds of North America range is no longer accurate (Johnson et al. 2007, Bart et al. 2012).

Sea Level Rise & Natural Barriers: Because of this species' restricted range along low lying coastal areas on the coastal plain they were ranked as being "slightly vulnerable" to both sea-level rise and to limitations in expansion of their range northward ("natural barriers" factor).

Human Response to CC: Conversion of ice roads to all-weather roads, a possible consequence of reduced suitability of winter snow and ice conditions, could impact hydrology at local and regional scales. Shallow tundra wetlands can be adversely affected by road construction and potentially impact availability of invertebrate prey. The extent of such activities will likely be localized.

Physiological Thermal Niche: White-rumped Sandpipers select concealed nest sites, sheltered from the wind (Smith et al. 2007) indicating they may have some sensitivity to changing thermal conditions.

Physiological Hydro Niche: Because this species depends heavily on coastal tundra habitats, hydrological niche was their greatest potential source of vulnerability. The range of scores represents uncertainty both in the direction and intensity of change in Arctic hydrology, as well as in the effect this will have on the sandpiper. Slight changes in moisture regime or active layer depth can have substantial impacts on tundra wetlands, because they are generally shallow. Current projections of annual potential evapotranspiration suggest negligible atmospheric-driven drying for the foreseeable future (TWS and SNAP). Thus atmospheric moisture, as an exposure factor (most influential on the "hydrological niche" sensitivity category), was not heavily weighted in the assessment.



Disturbance Regime: Disturbances, specifically coastal erosion and increased coastal flooding from increased storms (Jones et al. 2009) may negatively impact both breeding and post-breeding White-rumped Sandpipers. However, such coastal disturbance events, as well as thermokarst-mediated changes on the landscape, could create new nesting and foraging habitat.

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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.

Interactions with Other Species: In terms of dependence on interspecific interactions, this species will communally feed and flock with other shorebirds during post-breeding staging (Taylor et al. 2010) but it is unknown if these behaviors increase species persistence. Climate change may reduce the amplitude of lemming cycles (Post et al. 2009) and thus could expose this species to greater nest predation pressure if lemmings become less available as alternative prey.

In summary, White-rumped Sandpipers will likely experience some negative impacts from climate change, however they appear to have enough versatility in their life history traits and behaviors to remain "stable" with regard to climate change at least during the timeframe of this assessment (to 2050).

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