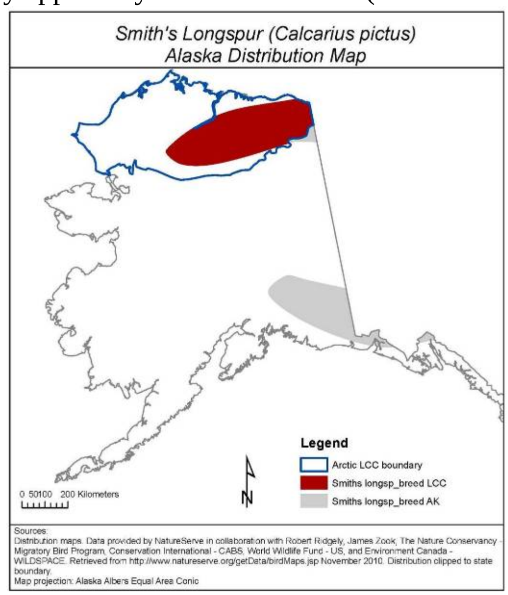
Smith's Longspur (*Calcarius pictus*)

Vulnerability: **Presumed Stable** Confidence: Very High

The Smith's Longspur is a relatively understudied passerine breeder on the North Slope of Alaska. In this region, they are most commonly associated with the Brooks Range foothills where they are found in broad valleys and low passes (S. Kendall, pers. comm.). Smith's Longspurs are known for their polygynandrous mating system which is unusual in passerines. In arctic Alaska, this species nests on open tundra, from upland hummocky terrain (Briskie 2009) to wet meadow habitats (Johnson and Herter 1989). During the breeding season they forage on a variety of invertebrates but also consume seeds and other vegetation (Briskie 2009). Smith's Longspurs are short-distance migrants and winter in the U.S. Midwest. Current population estimate is unknown but the trend is believed to be stable (BirdLife International 2012).

Range: We used the extant NatureServe range map for the assessment as it closely matched that described in the Birds of North America (Briskie 2009) and other range descriptions (Johnson and Herter 1989).

Physiological Hydro Niche: Smith's Longspurs were ranked as potentially most vulnerable to climate change in the physiological hydrological niche although the range from "neutral" to "increased" vulnerability selected in these categories reflects uncertainty in the severity of impact (see table on next page). This species relies to some degree on wet tundra habitats for foraging and nesting. They also tend to nest in association with rivers and streams and may utilize riparian areas for foraging more than is currently documented (S. Kendall, pers. comm.). Reduction in invertebrate communities and habitat loss from a net drying affect could negatively impact foraging success and nest site availability during the breeding season. But current projections of annual potential evapo-transpiration suggest negligible atmospheric-driven drying for the foreseeable future (TWS and SNAP). Also, this species could switch to less aquatic-dependent prey as they apparently have a broad diet (Briskie 2009).



Disturbance Regime: An increase in fires (Racine and Jandt 2008) would likely degrade Smith's Longspur breeding habitat, but impacts are mostly unknown and likely would be localized (S. Kendall, pers. comm.). The current regime of infrequent fires in tundra habitat allows for the growth of dwarf and tall/low shrubs which are habitats utilized by this species. Increased flooding in streams and rivers could affect riparian habitat but it is unknown how these events might impact Smith's Longspur use of these habitats.

Genetic Variation: There is little information in the literature regarding genetic variation or recent evolutionary bottlenecks for this species.

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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.

Phenological Response: Although some evidence indicates that their relative, the Lapland Longspur, is able to track phenological changes associated with a warming climate at least in terms of nest initiation (J. Liebezeit and S. Zack unpublished data) this has not been documented for Smith's Longspurs. Their ability to cope with decoupling of nest initiation and other phenological events (Tulp and Schekkerman 2008), on which they are dependent, is also unknown.

In summary, this assessment suggests that Smith's Longspurs have enough flexibility to remain stable under the current predictions of climate change within the 50 year timeframe of this assessment.

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