Northern Pintail (*Anas acuta*)

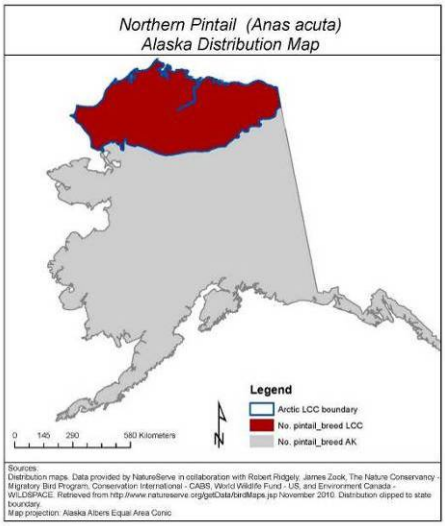
Vulnerability: **Presumed Stable** Confidence: Moderate

The Northern Pintail is the most common breeding dabbling duck in Arctic Alaska, with its core breeding area centered on the coastal plain. In Alaska this species nests on wet sedge (*Carex*) or grass meadows, sloughs, river banks, pond shores and in tidal habitats (Austin and Miller 1995). During the breeding season pintails consume mostly animal foods (aquatic invertebrates) although they switch to a largely vegetarian diet later in summer and fall (Austin and Miller 1995). Northern Pintails spend their winters primarily in the southern US and Mexico (Austin and Miller 1995). The North American pintail population is down from 6 million in the early 1970s to 2.6 million in 2005 (http://ak.audubon.org/species/norpin). However, aerial surveys suggest the pintail population on the Alaskan Arctic Coastal Plain has not shown a significant change since 1992, although there is substantial annual variation (J. Hupp, pers. comm.).

Range: We used the extant NatureServe map for the assessment as it matched other range map sources and descriptions (Johnson and Herter 1989, Austin and Miller 1995, Bart et al. 2012). However, it should be noted that this species less commonly nests in the Brooks Range and foothills (J. Hupp, pers. comm.).

Physiological Hydro Niche: Among the indirect exposure and sensitivity factors in the assessment (see table on next page), Northern Pintails ranked neutral in most categories with the exception of physiological hydrologic niche for which they were evaluated to have a "slightly to greatly increased" vulnerability. This response was driven primarily by this species close association with shallow wetland habitats on the coastal plain. Effects of climate change (and projected drying trends) on wetland availability in northern Alaska are very poorly understood and 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. This uncertainty is reflected in the range of vulnerability scores in the table below.

Physical Habitat Restrictions: Pintails expansive breeding range and ability to utilize different wetland habitat types make them less sensitive to constraints posed by dispersal/movement barriers when responding to potential shifts in habitat availability.



Physiological Thermo Niche: Because this species breeding range also occurs much further south (e.g. prairie pothole region) they would likely be able to adapt physiologically to a warmer Arctic environment and perhaps could even benefit from it.

Disturbance Regime: Disturbance (e.g. large-scale thermokarst, disease outbreaks) and human mitigation or adaptation activities related to climate could impact this species. But these types of factors will likely be localized in impact or, in the case of thermokarst, could actually

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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.

increase viable habitat (Martin et al. 2009).

Dietary Versatility: Because of the high flexibility in pintail diet they would likely be able to cope with climate-mediated changes in prey base and could benefit from increased availability of aquatic invertebrates resulting from increased productivity of warming wetlands.

Genetic Variation: Northern Pintails have high genetic variation (Flint et al. 2009) and there is no evidence of recent genetic bottlenecks in the Alaska population so they would be likely to withstand any climate-mediated impacts (e.g. disease outbreaks) that would wipe out a less genetically diverse population.

Phenological Response: There is at least one long-term data set on arrival dates of Northern Pintails in Arctic Alaska that could shed some light on how this species phenology may be changing with climate (J. Hupp, pers. comm.), however, that data set has currently not been analyzed so it is unknown how this species will respond to changing biotic schedules.

In summary, this assessment suggests that Northern Pintails will likely be able to cope with climate and perhaps even benefit from associated habitat changes that may occur in Arctic Alaska during the 50 year timeline of this assessment.

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