# Whimbrel (*Numenius phaeopus*)

Vulnerability: **Presumed Stable** Confidence: High

The Whimbrel is one of the larger breeding shorebirds in Arctic Alaska, occurring in both taiga and tundra habitats. In Arctic Alaska, this species nests in a variety of tundra habitats ranging from lowland wet polygonal to well-drained moist upland tundra, sometimes with significant shrub cover (Skeel and Mallory 1996). During the breeding season, Whimbrel will visually search for prey in wet to dry tundra habitats. This species winters along North American coastlines, mainly from the southern U.S. to South America (Skeel and Mallory 1996). Current North American population estimate is 66,000 (Morrison et al. 2006).

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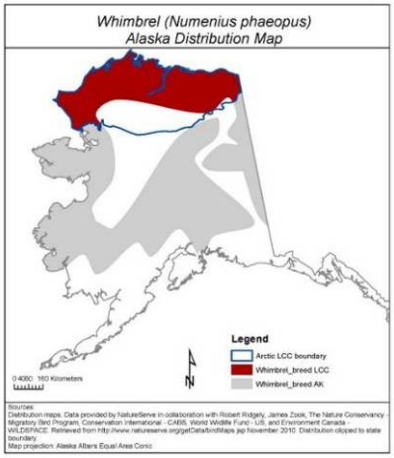
***Range***: We used the extant NatureServe range map for this assessment as it closely matched that of the Birds of North America (Skeel and Mallory 1996). However, it should be noted recent studies from Alaskan Arctic have indicated Whimbrel distribution is centered in the Brooks Range foothills and that they are largely absent in wet sedge dominated habitat closer to the Arctic Ocean coastline (Johnson et al. 2007, Bart et al. 2012).

***Physiological Hydro Niche***: Among the indirect exposure and sensitivity factors in the assessment (see table on next page), Whimbrel scored "neutral" in many categories. In the physiological hydrologic niche category there was broad range of scores from slightly decreased to 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 Whimbrel (less or greater vulnerability). 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. Also, complex hydrological processes could ameliorate or exacerbate the drying trend (Martin et al. 2009).

***Biotic Habitat Dependence***: The uncertainty also reflects this species' relatively flexible nesting and foraging behavior. Although they tend to occupy more well-drained sites in general, they do commonly utilize a mix of both dry and wet foraging habitats and will nest in wet tundra as well (although tend to select drier microsites; Skeel and Mallory 1996).




***Disturbance Regime:*** Climate-mediated disturbance processes, such as thermokarst, could both create and destroy nesting and foraging habitats. Fire frequency is likely to increase (Racine et al. 2004), potentially diminishing availability of invertebrate prey. Fires could also reduce nest site availability. In the foreseeable future, fire will likely only affect a small portion of the landscape and thus not significantly impact Whimbrel habitat.

***Interactions with Other Species:***
Climate changes may reduce the amplitude of lemming cycles making them less available as alternative prey (Ims and Fuglei 2005) and thus could expose this species to greater nest predation.

***Dietary Versatility***: This species has a flexible diet and current evidence suggests they take advantage of a wide variety of prey (Skeel 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.

Mallory 1996) so they would likely not face any negative impacts from a changing prey base.

***Phenological Response***: Although not demonstrated in Whimbrel, there is evidence suggesting some 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, Whimbrel appear to have enough versatility in their life history traits and behaviors on the breeding grounds that will likely enable them to cope and remain "stable" with regard to climate change at least during the timeframe of this assessment (to 2050).

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From: Liebezeit et al. 2012. Assessing Climate Change Vulnerability of Breeding Birds in Arctic Alaska. A report prepared for the Arctic Landscape Conservation Cooperative. Wildlife Conservation Society, North America Program, Bozeman, MT., 167pp.