

Common Eider (*Somateria mollissima*)

Vulnerability: **Highly Vulnerable**

Confidence: Low

The Common Eider, a large sea duck, is more closely tied to marine environments than are many other sea ducks. On the Arctic Coastal Plain of Alaska this species nests primarily on barrier islands and peninsulas of the Arctic Coastal Plain (a small proportion of the total area) while in other parts of its range they select quite varied nesting sites (Goudie et al. 2000). Common eiders depend on a marine prey base, eating invertebrates (primarily mollusks and crustaceans) by diving to the sea floor. Alaskan breeders spend their winters nearby in the Bering Sea, Gulf of Alaska, and off Russia's Chukotka Peninsula (SDJV 2004). Current Arctic Coastal Plain population is estimated at approximately 2,000 (Dau and Bollinger 2009).



Range: We adjusted the NatureServe Map to more closely reflect the range map depicted in the Birds of North America account for this assessment as the latter more accurately represented this species' range based on multiple accounts and expert opinion (Johnson and Herter 1989, Goudie et al. 2000, C. Dau pers. comm.).

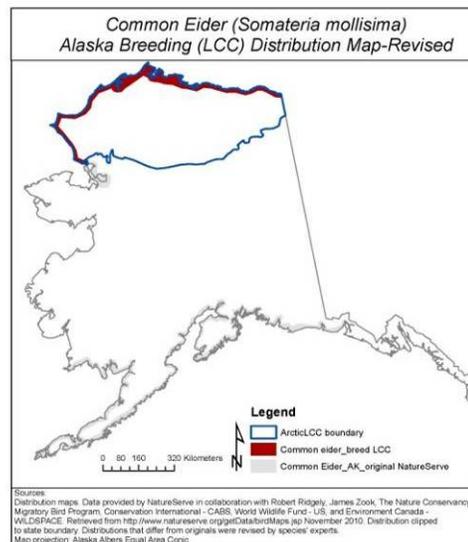
Sea Level Rise: Because of the Common Eiders' reliance on barrier islands and other coastal areas for nesting they would most likely be negatively impacted by predicted sea level rise and a disturbance regime of increased storm surge frequency (IPCC 2007, Jones et al. 2009).

Their ability to shift to nesting habitats that are less susceptible to such phenomena is minimal as they rely on coastal habitats for breeding throughout their range (Goudie et al. 2000).

Human Response to CC: Hardening of the windward side of barrier islands (to prevent erosion on development platforms as off-shore activity increases) could benefit species by protecting islands from erosion, although increased human activity could also increase stress to incubating birds and young (C. Dau, pers. comm.).

Physiological Hydro Niche: The salinity regime encountered by Common Eiders affects breeding

and survival. Climate change will likely affect ice conditions, sea levels, stability of fresh-water habitats, and other factors which would alter the salinity of essential aquatic habitats (Nystrom et al. 1988, C. Dau pers. comm.). These could have negative consequences.



Physical Habitat Restrictions: At other places (outside the Arctic LCC) throughout their breeding range Common Eiders utilize a variety of nesting habitat from tundra heath to boreal forest (Goudie et al. 2000). It is unknown if the Arctic Alaska populations, which seem to rely almost exclusively on barrier islands, have the capacity and adaptability to utilize different types of nesting habitat. In this assessment it was assumed they do not but this could be an area of future investigation.

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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: Common Eiders are known to sometimes nest in the territory of predatory birds to gain protection which can sometimes increase nest success (Goudie et al. 2000). However; it is unknown how a changing climate would alter this behavior and if it would confer a positive or negative outcome.

Phenological Response: Despite the existence of long-term data sets on Common Eiders in northern Alaska (Dau and Bollinger 2009) an assessment of phenology-related variables has not been a part of that effort so it is, at best, speculative to assert how this species will respond to changing biotic schedules.

In summary, the accumulation of potential sources of vulnerability, particularly with regard to barrier island nesting, resulted in a ranking of highly vulnerable for this species in two of the three climate change projections we considered.

Literature Cited

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