



An examination of potential predation threats to the Common Eider (*Somateria mollissima*) at a mixed offshore seabird colony

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Abstract

Populations of Common Eiders (*Somateria mollissima*) are believed to be currently in decline in Maine, although the causes for these changes are not clear. Some studies in literature have suggested that predation by gulls may play a major role in chick mortality, while others indicate that proximal nesting gulls may actually ward off predators. The role of human disturbance in estimates of predation is always difficult to observe. In this study, potential threats to *S. mollissima* during their breeding season were observed. Observations of *S. mollissima* chicks were recorded at varying times of day, tide levels, tidal pool conditions, weather conditions, and stages of growth of the chicks. No examples of predation from the nesting gull species (*Larus marinus*, *L. smithsonianus*) were observed. It was found that there are multiple potential threats to *S. mollissima*, Maine's only hunted sea duck, in the form of Bald Eagle (*Haliaeetus leucocephalus*), Atlantic Harbor Seal (*Phoca vitulina vitulina*), Grey Seal (*Halichoerus grypus*), and human disturbance.



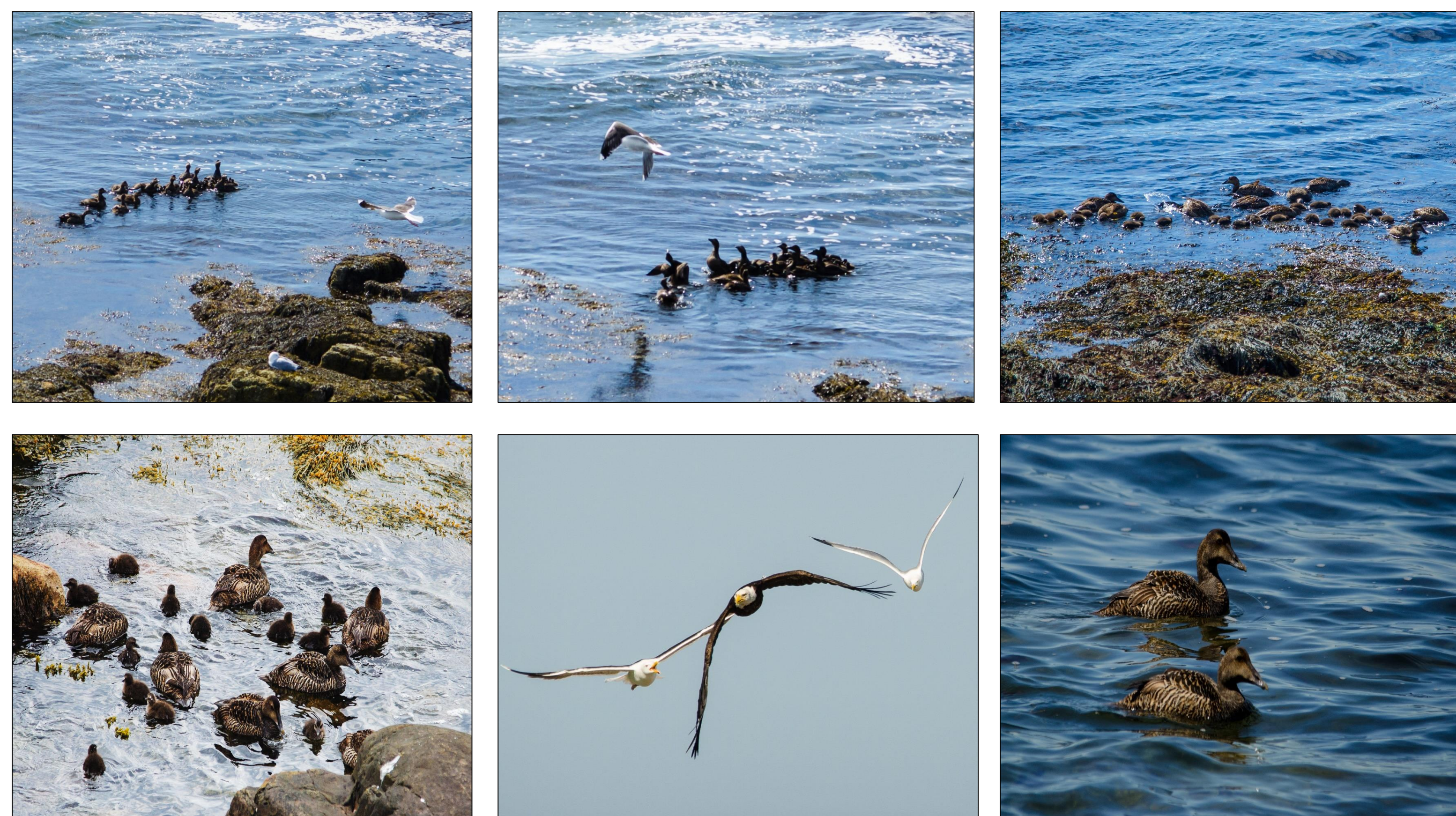
Above: View of the south end of the island from Great Duck Light.

Methods

Observations were made on Great Duck Island, an offshore island 12 miles south of Mt. Desert Island, Maine. The island contains a mixed offshore seabird colony containing nesting *L. smithsonianus*, *L. marinus*, *Cephus grylle*, *S. mollissima*, and *Oceanodroma leucorhoa*. Observations were made from the Great Duck Island Lighthouse. The lighthouse stands at approximately 11 meters above the land, and approximately 20 meters above the water. Observations were made every day that there was adequate visibility and weather conditions were conducive to *S. mollissima* being out with their chicks. Observation hours totaled 141 hours between June 9th, 2015 and August 1st, 2015. Observations were made between the hours of 07:00 and 18:00, using binoculars, scopes, and camera equipment. The height of the tower allowed observations to be made with minimal human disturbance to the animals below.

Results

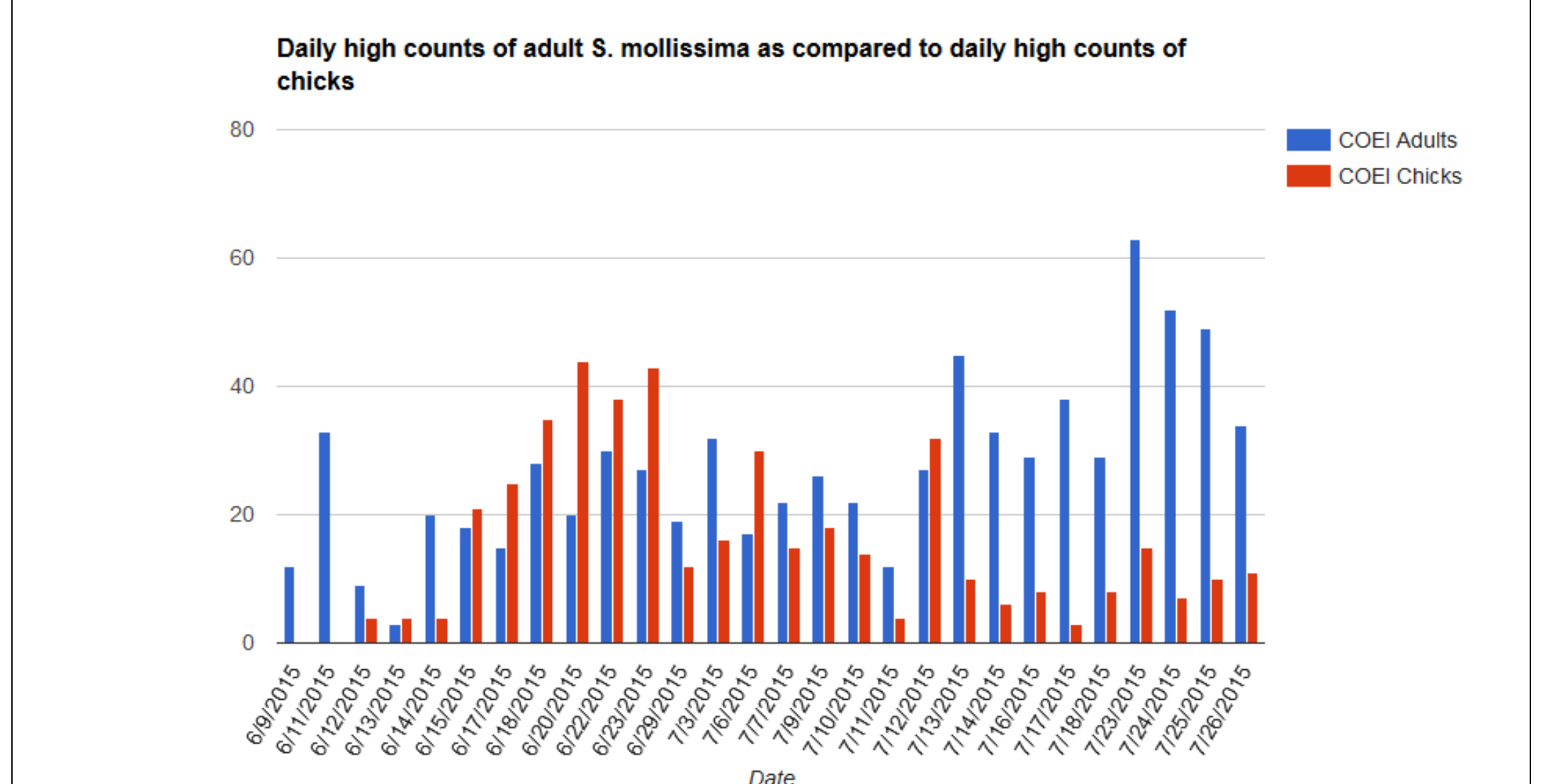
During 141 hours of observation there were a total of five predation attempts by *L. marinus* on *S. mollissima* chicks, with no successful predation. Four of the attempts happened within the same two day period in early June. There were no predation attempts by *L. smithsonianus*. There was stalking behavior exhibited by *P. vitulina vitulina* and *H. grypus*, and predation attempts observed by *H. leucocephalus*. The defensive behavior of the female *S. mollissima* proved to be effective against predation with no successful predation upon their chicks observed.



Top: The viewing platform on Great Duck Light.
Center (left and middle): A crèche and its successful defense from a predation attempt.
Center (right) and Bottom (left): A crèche feeding near shore.
Bottom (center): *H. leucocephalus* being pursued by *L. marinus* and *L. smithsonianus*.
Bottom (right): Two mature *S. mollissima* females.

Discussion

In regards to the population of *S. mollissima* observed on Great Duck, it is believed that there were *S. mollissima* coming over to Great Duck from other nesting sites, as there were more adults and chicks present and feeding than there were nest sites accounted for on Great Duck itself. What makes this site a great location for this research is the opportunity for direct observation with minimal human disturbance to the birds themselves, due to the viewing area available on the lighthouse. When human disturbance was observed through humans entering the colony, *S. mollissima* flushed into the water with their chicks. The females were observed checking the location of the humans and waiting for their young once they entered the water. The human researchers themselves never came within close proximity to *S. mollissima*. In instances where *S. mollissima* flushed at human disturbance without humans in direct line of sight, *S. mollissima* seemed to be taking alarm cues from the calls of the nearby nesting gulls. This also seemed to be the case in a predation attempt by *H. leucocephalus*, *S. mollissima* alerting to the predator before *H. leucocephalus* came into view. Potential threats to *S. mollissima* did not appear to be coming from the gulls on the island, as predation attempts were minimal and unsuccessful. Potential threats by the rising seal and *H. leucocephalus* populations need to be further examined, as both were seen attempting to predate upon *S. mollissima*. Predation from other birds of prey is also a potential threat, as there were observations of other raptors hunting on Great Duck. The potential threats of human disturbance and persecution need to be further examined. There have been reports from other sites of *S. mollissima* chicks being predated upon by gulls due to increased human disturbance flushing the females away from the chicks. Another threat could be through current hunting practices. Further research is necessary to determine the current cause of *S. mollissima*'s declining numbers.



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