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Abstract

Colony Failure or Colony Collapse? Absence Suggests Functional Loss of Crested Auklets at Big Koniuji I., Alaska

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Abstract: The colony of crested auklets (*Aethia cristatella*) at Big Koniuji I. (BK), AK (Lat. 55°03′58.1″ N, Long. 159°31′45.5″ W) was reputed to be one of the largest breeding concentrations of crested auklets in existence in the early 20th Century. However, a precipitous population decline followed the initiation of fox farming in 1916. Fox were removed by the mid-1980's, but by 2002 the colony had not increased substantially in population size or area, despite available nesting habitat. Metrics in 2002 did not indicate food limitations. Indices of diet were comparable between BK and Little Diomede I. Baseline corticosterone did not differ among BK and two other colonies, Hall and St. Lawrence Is., AK. Predation, may have inhibited population growth, but we did not find direct evidence. Arctic ground squirrels (*Spermophilus parryii*) occupied the colony and are known to predate seabird chicks and eggs. However, stable isotope analysis of ground squirrel scat did not indicate a marine-derived signature in their diet. By 2012 the BK colony had increased substantially in its areal extent based on delineation of the colony boundaries. However, in 2021 there were no signs of activity at the colony in mid-July, when crested auklets are usually tending their chicks. It appeared that some crested auklets attempted to attend the colony in 2021, based on the remains of a few predated carcasses, but the colony appeared abandoned. We discuss the potential factors that may have contributed to the apparent loss of this colony, the only breeding colony of crested auklets east of the Aleutian Islands.

Keywords: seabirds; coloniality; climate change; integrative biology; corticosterone; fatty acids

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