



Alagnak

Aniakchak

Katmai

Kenai Fjords

Lake Clark

Bald Eagles

Southwest Alaska parks support large populations of bald eagles. Bald eagles were once listed as an endangered species in the contiguous 48 states, but have since recovered and were delisted in 2007. As top predators, bald eagles can serve as indicators of the overall health of local ecosystems. Their breeding success is influenced by food availability and spring weather conditions, among other factors. Understanding the status and trends of local populations can assist park managers address concerns related to the impacts of human-caused disturbances, such as oil spills.

Improving Survey Methods

Assessing abundance (to estimate population size) is an important tool to monitor the condition of wildlife populations, especially during species recovery. Because it is often difficult to conduct a complete count by observation, modeling techniques and estimates are used.

In 2014, ecologists discovered a key weakness of the bald eagle monitoring methods that led to biased estimates of bald eagle nest occupancy in parks. The bias arises when the true status of a nest (initiated or empty) is ambiguous during observational nest surveys (Wilson et al. 2014). For example, in a single survey, it is impossible to know if an empty nest is truly empty, or if the eagles are just not in the nest during the time of the survey. Conducting two surveys can be used to correct bias from this ambiguous status.



NPS/Kaiti Chritz



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Bald eagles at Kenai Fjords National Park.

National Park Service ecologists are finalizing the official monitoring plan and standard operating procedures for bald eagle monitoring in southwest

Alaska parks. The protocol features important advancements in data collection and analysis that address imperfect detection at multiple levels.

Three bald eagle chicks observed in a nest during aerial surveys in Katmai National Park and Preserve. A clutch of three chicks, while predicted by models, is rarely observed.



Results Using New Methods

Bald eagle reproductive success is largely based on two components: nest initiation and nest productivity.

Nest initiation (that is, the number of nests where eagles attempt to breed in a given year) is important because it provides the context necessary for understanding the total population of breeding eagles, and number of chicks produced. Bald eagle populations are considered stable if nest initiation rates are greater than 0.50. Parks in southwest Alaska appear to have stable populations (Figure 1).

Bald eagle nest productivity is the average number of chicks produced for each nest in a given year. Bald eagle populations are considered stable if the average number of chicks produced for each nest is greater than 0.70. Again, the data show that bald eagle populations are stable in southwest Alaska parks (Figure 2).

The confidence intervals for each estimate (Figures 1 and 2) are depicted by brackets. In Bayesian statistics, the 95% credible interval means one can be 95% certain that the interval contains the true value.

Reference

Wilson, T. L., J. H. Schmidt, W. L. Thompson, and L. M. Phillips. 2014. Using double-observer aerial surveys to monitor nesting bald eagles in Alaska: are all nests available for detection? *Journal of Wildlife Management* 78(6):1096-1103.

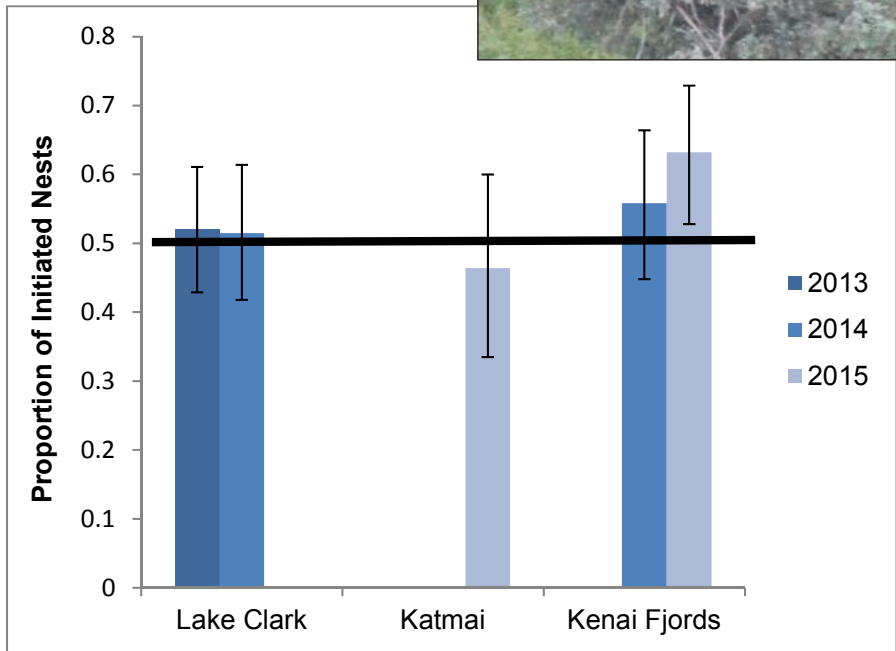


Figure 1. Bald eagle nest initiation in three southwest Alaska parks, 2013-2015. The solid bar indicates the 0.50 threshold at which bald eagle populations are considered stable.

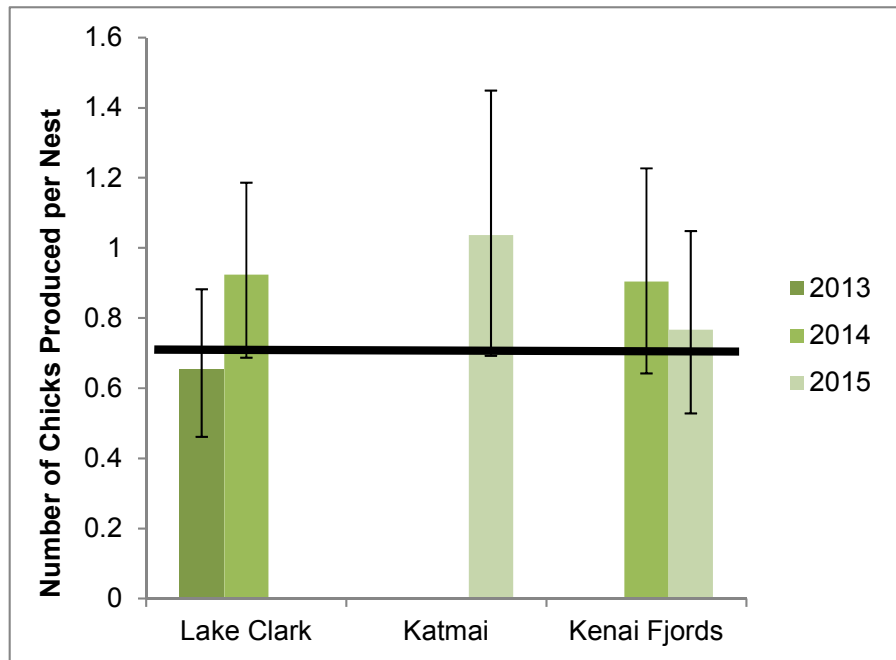


Figure 2. Bald eagle productivity in three southwest Alaska parks, 2013-2015. The solid bar indicates the 0.70 threshold at which bald eagle populations are considered stable.