



Central Alaska Network

Denali NP & Pres. • Wrangell-St. Elias NP & Pres. • Yukon-Charley Rivers N Pres.

Golden Eagles Resource Brief

September 2013, no. 54



Status & Trends

Monitoring golden eagles in the Central Alaska Network

The northern foothills of the Alaska Range in Denali National Park and Preserve are home to approximately 80 pairs of nesting golden eagles each summer, making this area one of the largest nesting densities in North America. Annual territory occupancy is fairly stable throughout the study area. However, there was a 25% decline in the probability of female eagles laying eggs and the average number of fledglings produced per occupied nesting territory in the study area from 1988 to 2010.

Recent analysis of nesting data and prey abundances shows a positive relationship between likelihood of a pair nesting and abundance of prey, especially abundance

of snowshoe hares. However, the declines in probability of egg laying and fledglings per territory cannot be explained by fluctuations in food supply, weather, or habitat conditions on the breeding grounds in Denali. Because golden eagles reproduce at low levels, these declines could lead to declines in the size of the nesting population.

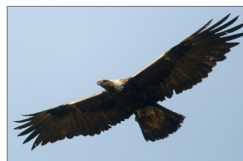
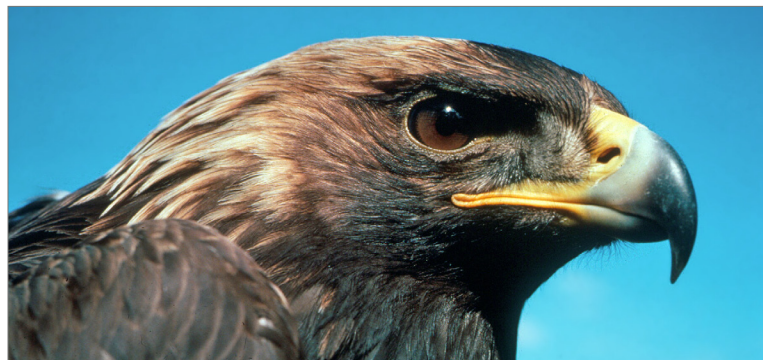
Network staff are currently conducting several focused studies to further explore the potential causes of these declines. Specifically, studies include a cooperative study with the USGS to estimate

nesting territory fidelity, turnover of breeders, and adult survival as well as a study with the US Fish and Wildlife Service on a range-wide mortality and risk assessment. In addition, a proposed study will examine factors constraining the reproductive success of Denali's golden eagles along migratory routes and on wintering grounds.

Objectives

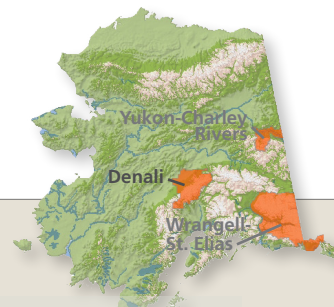
What do we want to know about golden eagles in CAKN?

- Monitor trends in occupancy of nesting territories and reproductive success and identify the factors driving these trends.
- Identify important migration corridors in autumn and spring.



The future of Denali's golden eagles depends on the wise management of habitat and prey resources across its year round range.

Golden Eagles are being monitored in 1 of 3 network parks



Importance

Why are golden eagles important in the Central Alaska Network?

The Denali population of nesting golden eagles is internationally recognized and is one of the largest migratory populations of Golden Eagles in the world. Increasing threats from wind farm development and habitat loss in the western U.S., western Canada, and northern Mexico, and other hazards, such as electrocution and lead poisoning, have prompted new concern for and studies on the factors influencing population size and reproductive success of this iconic species.

Golden eagles are top trophic-level predators, and they respond quickly to changes in their environment by changing their breeding activities. Long-term studies in Denali (1988–present) provide the only contemporary data on reproductive characteristics of a large migratory population of this species in northern North America. Data collected in Denali is directly comparable to the only other long-term data set for this species in North America, collected in the Snake River Birds of Prey National Conservation Area.



Management Applications

How can monitoring protect golden eagles in CAKN?

- Contribute to international efforts to conserve and manage an iconic, migratory species
- Inform decisions regarding threats to and management of golden eagles across their year round range



Long-term Monitoring

How do we monitor golden eagles in the Central Alaska Network?

Nest occupancy and reproductive success of golden eagles have been monitored annually in Denali since 1988. Aerial surveys are used to determine nesting area occupancy and reproductive success. Occupancy surveys are flown early in the nesting season during April and May, and reproductive success surveys are flown in mid-July. During occupancy surveys, known nesting territories are visited and observations of nest activity are recorded. During reproductive success surveys, territories are revisited and nestlings are recorded. Aerial surveys also include searching for new or undocumented territories. Ground-based surveys supplement the data collected during aerial surveys.

Prey abundance of snowshoe hares and willow ptarmigan is also recorded annually. The number of individuals counted per day per year is used as an index of annual abundance.

*clockwise left to right:
a small helicopter is
used to conduct surveys;
biologists repel into a
golden eagle nest to
collect samples; the bill of
a juvenile golden eagle is
measured*



CENTRAL ALASKA NETWORK

USING SCIENCE TO PROTECT OUR PARKS

THE CENTRAL ALASKA NETWORK (CAKN) IS ONE OF 32 NATIONAL PARK SERVICE INVENTORY AND MONITORING NETWORKS. EACH NETWORK EXISTS AS PART OF A NATIONAL EFFORT TO BETTER UNDERSTAND AND MANAGE PARK LANDS USING SCIENCE-BASED INFORMATION.

In order to focus this effort, 270 national park units with significant natural resources were grouped into 32 regional networks.

The Central Alaska Network is made up of 3 parks: Denali National Park and Preserve, Wrangell-St. Elias National Park and Preserve, and Yukon-Charley Rivers National

Preserve. Together, these 3 parks contain over 21.7 million acres and makeup 25% of all the land in the National Park Service. They represent a great diversity of climate and landform, from temperate coastal rainforests to glaciated mountain ranges. What they share in common are their largely wild and unaltered landscapes.

In order to track the condition of our parks, Central Alaska Network scientists have chosen 34 key indicators, or “vital signs,” to represent the overall health of the network. Each vital sign falls into one of 4 categories: animal life, physical environment, human use, or plant life. Underlying these 4 vital sign categories is a focus on habitat change.

CAKN VITAL SIGNS:

Animal Life

Arctic Ground Squirrel
Bald Eagles
Brown Bear
Caribou
Dall's Sheep
Freshwater Fish
Golden Eagles
Moose
Passerines
Peregrine Falcons
Ptarmigan
Small Mammals
Snowshoe Hare
Wolves

Physical Environment

Air Quality
Climate
Fire
Glaciers
Land Cover
Permafrost
Shallow Lakes
Snow Pack
Soundscape
Streams & Rivers
Volcanoes & Tectonics

Human Use

Human Populations
Human Presence/Use
Natural Resource Consumption
Trails

Plant Life

Exotic Species
Insect Damage
Plant Phenology
Subarctic Steppe
Vegetation Structure/Composition

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