

McIntyre, C.L. 2002. Patterns in nesting area occupancy and reproductive success of golden eagles (*Aquila chrysaetos*) in Denali National Park and Preserve, Alaska, 1988-99. *Journal of Raptor Research* 36 (1 Supplement):50-54.

**ABSTRACT.**--Annual territory occupancy and reproductive success of nesting Golden Eagles (*Aquila chrysaetos*) were monitored at 58-76 nesting areas in Denali National Park and Preserve, Alaska since 1988. Data were collected annually using two standardized aerial surveys and follow-up foot surveys. Aerial surveys were conducted during the early incubation period (late April) to determine occupancy and nesting activities and late in the nestling period (late July) to count fledglings and determine nesting success. All aerial surveys were conducted using a Bell 206B Jet Ranger helicopter with one or two experienced observers and an experienced wildlife pilot. Aerial surveys were the most time- and cost efficient means to survey the 1800-km<sup>2</sup> study area. Average flight time during late April surveys was 12.8 flight hr (over 3 d) and during late July was 5.3 flight hr on 1 d. Duration of surveys depended on nesting activities. Foot surveys were useful for making longer observations in areas where territory occupancy could not be determined during aerial surveys. Annual occupancy rates averaged 83%. Laying rates, success rates, and overall population productivity varied significantly over the study period. Fledgling production varied greatly over the 12-yr period from a low of 9 fledglings in 1994 to a high of 70 fledglings in 1999. Laying rates, mean brood size, and overall population productivity were significantly correlated with abundance of cyclic snowshoe hare (*Lepus americanus*) and Willow Ptarmigan (*Lagopus lagopus*) populations. Cyclic prey did not influence occupancy rates. Most territories were occupied more than 8 yr, but four remained vacant throughout the study. Productivity varied greatly among nesting territories. More than 50% of all fledglings were produced at 17 nesting areas and >75% of all fledglings were produced at 35 nesting areas.