

FEATURE ARTICLES

**NEST SURVIVAL PATTERNS IN WILLOW PTARMIGAN: INFLUENCE OF TIME, NESTING STAGE, AND FEMALE CHARACTERISTICS**

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*Abstract.* Nest predation is the most important factor limiting reproductive success of Willow Ptarmigan (*Lagopus lagopus*), as it is for many bird species. Using program MARK, we examined patterns of daily nest survival in two widely separated populations of Willow Ptarmigan in Manitoba and British Columbia, Canada, by examining variation among years, over the course of the breeding season or in relation to the age of the nest, or age and condition of the female. At La Pérouse Bay, Manitoba, daily nest survival increased linearly throughout the season, with moderate annual variation. Nests also had higher daily survival during laying and late in incubation, and lower survival early in incubation. At Chilkat Pass, British Columbia, daily nest survival varied strongly by year and nests had higher survival early and late in the season, but survival was not affected by the age of the nest. At both sites, but especially at Chilkat Pass, periods of lower nest survival tended to coincide with peak breeding periods, suggesting predators may adjust their search effort based on the likelihood of locating nests. Neither female age nor condition were included in the best models. Thus, in both ptarmigan populations, nest survival patterns appeared to be influenced more by ecological factors than by individual characteristics of breeding females. The extent of annual variation and seasonal patterns may have differed between sites due to the different predator and alternative prey communities.

*Key words:* *alternative prey, information-theoretic approach, Lagopus lagopus, nest survival, predator activity, program MARK, Willow Ptarmigan.*