

**CLIMATIC CONDITIONS DURING OUTWARD MIGRATION
AFFECT APPARENT SURVIVAL OF ARCTIC-NESTING PEREGRINE FALCONS**

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ABSTRACT.—In long-lived species, population growth rate is highly sensitive to changes in adult survival. Despite the growing concerns regarding recent climate changes, few studies have investigated the effect of climatic conditions on survival in long-lived species. This seems especially true for arctic-breeding species. In this study, we evaluated the effect of climate during major life history stages across the annual life cycle (breeding, outward migration, wintering, and inward migration) on apparent annual survival of arctic-breeding Peregrine Falcons. From 1982 to 2008, Peregrine Falcons breeding near Rankin Inlet, Nunavut, Canada were monitored, in part, to assess apparent annual survival (the product of true survival and site fidelity) using re-observations of marked individuals. Our study indicated that apparent annual survival of adult Peregrine Falcons was correlated with indices of climatic conditions during outward migration (i.e., flight from the arctic breeding grounds). These climatic indices (fall NAO of the current year and fall NAO with a lag of one year) explained about 35% of the temporal variation in apparent annual survival of Peregrine Falcons. Our results suggest that this top-predator is vulnerable to weather-related environmental conditions encountered during fall migration. However, further study is required to assess the mechanisms that underlie this correlation. *Received 1 November 2010, accepted 1 February 2011.*

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