

## EFFECT OF NESTING HABITAT ON NICHE WIDTH AND REPRODUCTIVE SUCCESS OF PEREGRINE FALCONS NESTING NEAR RANKIN INLET, NUNAVUT

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ABSTRACT.—Although variability in resource use is well known in wild animals, proximate causes are difficult to identify, and fitness consequences are poorly known. We investigated niche variation in a population of Peregrine Falcons (*Falco peregrinus tundrius*) inhabiting a coastal environment around Rankin Inlet, Nunavut. We evaluated whether nesting habitat influenced niche variation and breeding success in falcons nesting in three habitat types (inland, coastal, island). We tested two competing hypotheses. The “restricted generalist hypothesis” assumes that Peregrine Falcons have limited ability to exploit marine resources and thus predicts that terrestrial resources would form the bulk of their diet regardless of nesting habitat. As restricted generalists, Peregrines nesting in marine dominated landscapes are predicted to fledge fewer young given the additional costs associated with foraging and handling time (lower provisioning rates). On the other hand, the “flexible generalist hypothesis” assumes that Peregrines are not limited in their ability to exploit marine prey. Individuals nesting in marine-dominated landscapes would thus use marine subsidies and show a shift in diet characterized by increased proportions of marine prey. As “flexible generalists,” provisioning rate and reproductive success are predicted to be similar regardless of nesting habitat type.

Using stable isotopes analysis, we found that terrestrial-derived prey (herbivores and insectivores) were the main food sources for virtually all nesting pairs, particularly early in the chick-rearing period. However, the proportion of marine prey in the diet of nestlings increased later in the chick-rearing period. Furthermore, isotopic niche variation was related to nesting habitat (proportion of terrestrial and marine habitat surrounding the nest), and we found a significant relationship between nesting habitat and the number of young fledged (individuals nesting in marine-dominated areas fledged fewer offspring on average). Moreover, niche width was highest for birds breeding in marine-dominated areas.

Although nesting habitat influenced relative use of terrestrial and marine prey, Peregrine Falcons nesting near Rankin Inlet, Nunavut, predominantly used terrestrial resources and thus appear to typify restricted generalists. *Received 26 November 2010, accepted 1 February 2011.*

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