

locating juveniles in forest habitat, and delayed prey delivery encouraged juvenile flight. Shortly after fledging, juvenile eagles began to attempt hunting. However, juveniles remained dependent on their parents until early winter when, as they became increasingly independent, each left the area of its own accord. Ikeda, Yoshihide. 1985. M.S. Thesis, Kanazawa Univ., Japan. 302 pp. (In Japanese). Present address: Division of Life Sciences, Graduate School of Natural Science & Technology, Kanazawa University, Marunouchi 1-1, Kanazawa 920, Japan.

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ASPECTS OF THE ECOLOGY, FOOD HABITS AND FORAGING CHARACTERISTICS
OF GYRFALCONS IN THE CENTRAL CANADIAN ARCTIC

A population of breeding Gyrfalcons (*Falco rusticolus*), studied from 1982–1986 on a 2000 km² study area in the central arctic of the Northwest Territories, occupied 14 to 18 territories each year. The mean internest distance was 10.6 km, giving a density that approaches the highest recorded. There was a tendency for regularity in spacing of territories. Most (85%) nests were in abandoned stick nests of Ravens (*Corvus corax*) or Golden Eagles (*Aquila chrysaetos*) ($\bar{X} \pm SD$) of clutch was 3.80 ± 0.52 , of brood was 2.53 ± 0.89 , and mean productivity was 1.50 ± 1.43 fledged young. Reproductive success declined with increased severity of spring weather.

Three prey species, Rock Ptarmigan (*Lagopus mutus*), Arctic Ground Squirrel (*Spermophilus parryii*) and Arctic Hare (*Lepus arcticus*), accounted for 96.5% of the total prey biomass identified. Gyrfalcons responded functionally to the varying availability of prey. Ptarmigan and hares were taken in May and June of all years (98.2% biomass). About 1 July, when nestling Gyrfalcons were growing rapidly, juvenile ground squirrels emerged and vulnerability of ptarmigan appeared to decline. Squirrels were used extensively in July and August of 1984 and 1985, but in 1986 there was a nearly complete failure of squirrel production, and ptarmigan continued to be the dominant prey species throughout the summer. Spring counts suggested densities of breeding ptarmigan were relatively constant during the study. Mean weight of prey taken by male Gyrfalcons (250 g) was significantly less than prey captured by females (330 g) (*t*-Test; *t* = -1.81; *P* = 0.036). As predicated by optimal foraging theory, larger prey items, on average, were brought to the nest as foraging time away from the nest increased.

Brood size was manipulated at two Gyrfalcon nests in 1986. The parent birds responded to altered brood size by compensatory changes in total prey biomass fed to the nestlings, suggesting that food was not limiting brood size. Conditions of food abundance were also observed at nests of unmanipulated broods, indicating that food was not limiting during the nestling period. I suggest that spacing of pairs was set during courtship and prelaying when food was most likely to be limiting. Courtship and prelaying coincided with the yearly low in prey availability and a period when the male was doing most of the hunting for himself and the female. The observation that most pairs did not initiate laying until after the spring arrival of migrating ptarmigan is consistent with this conclusion. Poole, K. G. 1987. M.Sc. Thesis, Dept. of Zoology, Univ. of Alberta, Edmonton, Alberta T6G 2E9, CANADA. 120 pp. Present address: Wildlife Management Division, N.W.T. Renewable Resources, Yellowknife, N.W.T. X1A 2L9, CANADA.

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POST-FLEDGING BEHAVIOR OF THE EASTERN SCREECH-OWL (*Otus asio*)

Three families of Eastern Screech-Owls (*Otus asio*) (six adults and 10 juveniles) were radio-tagged and monitored during the post-fledging period in central Kentucky. Fledging dates ranged from 14–27 May 1985. Five hundred fifteen roost sites were located and quantified. Adult and juvenile Eastern Screech-Owls used open limbs (46.4%), tangles (31.9%), and conifers (21.7%) for roosting; tree cavities were not used during the study period. Twenty-eight species of trees and shrubs were used for roosting; Eastern redcedar (*Juniperus virginiana*) (26.8%) and shagbark hickory (*Carya ovata*) (18.3%) were selected most often. Families differed significantly in mean roost height, roost tree height, roost tree diameter, distance between daily roost sites, distance from nest, distance from male, and the distance from female roost site. There were no significant differences among adults and juveniles for the above roost site variables. Mean distance between roost sites of juveniles and those of both adult males and adult females increased significantly after the fifth week post-fledging, possibly suggesting a time when juveniles are becoming independent of parents.