

through July of each breeding season. I also monitored 35 nests for 877 hr to obtain measures of mass using electronic balances and data on provisioning rates of parents during the brood-rearing period.

The results of my study suggest that environmental factors, such as climate and food availability, may have had a strong influence on the physical condition of adults early in the breeding season. During the brood-rearing period, females with 5-chick broods displayed trends in mass loss that may have been related to increased provisioning rates, while males did not. Parents with smaller broods did not display significant trends in mass related to their provisioning rates, possibly because of the lower stress in feeding fewer young. The stress of foraging on parents may have been further mitigated by the use of nutrient reserves and the combined effort by breeding pairs to feed young.

Although foraging may have caused stress-related mass loss, I also found that the physical condition of parents may influence the subsequent change in mass and the amount of food delivered to offspring. Parents in good condition were more likely to lose mass and deliver more food to their offspring than parents in poor condition. Parents may therefore be balancing their physical condition (good or poor) within the limits of self-maintenance with their level of food provisioning throughout the breeding season.—**William M. Iko. 1991. M.Sc. thesis, Department of Biology, University of Saskatchewan, Saskatoon, Saskatchewan, Canada S7N 0W0.**

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#### FORAGING ECOLOGY OF URBAN-BREEDING MERLINS (*Falco columbarius*)

I studied the foraging ecology of breeding Merlins (*Falco columbarius*) in Saskatoon, Canada, from May to July, 1987–90. I identified 1332 prey items belonging to 36 vertebrate species from prey remains collected near 65 Merlin nests. The principal prey of breeding Merlins was the House Sparrow (*Passer domesticus*), which along with the Horned Lark (*Eremophila alpestris*) were usually taken more frequently than expected from their relative abundance in the environment. Other potential prey species were usually taken in proportion to, or less than, expected.

The proportion of adult House Sparrows in the diet decreased while that of juveniles increased significantly as the Merlin breeding season progressed. During the incubation and nestling periods, the relative abundance of male and female House Sparrows did not differ significantly from rates at which they were consumed. In the fledging period, based on relative abundances, adult House Sparrows were taken less often than expected while juveniles were eaten more often than expected by Merlins.

Twenty-seven Merlins were radiotracked. Mean hunting range of resident (hatched in the city) and immigrant (presumed to have hatched outside the city) males were  $6.3 \pm 1.3$  (SE) km<sup>2</sup> and  $33.7 \pm 12.1$  km<sup>2</sup>, respectively. Mean hunting ranges of resident and immigrant females were  $6.6 \pm 3.4$  km<sup>2</sup> and  $8.6 \pm 1.6$  km<sup>2</sup>, respectively. Merlins that hunted exclusively in the city used all habitats in proportion to availability. Merlins that hunted both in and outside the city usually avoided hunting in agricultural areas, which were relatively low in prey abundance.

During the incubation and nestling periods, males with more prey birds in their ranges had significantly smaller hunting ranges. Male Merlins with more prey birds in their ranges spent relatively less time hunting and males with larger broods spent more time hunting compared to those with smaller broods. For female Merlins, hunting range was inversely correlated with both body mass and House Sparrow abundance.—**Navjot S. Sodhi. 1991. Ph.D. thesis, Department of Biology, University of Saskatchewan, Saskatoon, Saskatchewan, Canada S7N 0W0. Present address: Department of Veterinary Anatomy, Western College of Veterinary Medicine, University of Saskatchewan, Saskatoon, Saskatchewan, Canada S7N 0W0.**