

DISSERTATION ABSTRACTS

WINTER TERRITORIALITY AND PREDATION ECOLOGY OF AMERICAN KESTRELS (*Falco sparverius*) IN SOUTHCENTRAL FLORIDA

Migrant American Kestrels (*Falco sparverius*) wintering in southcentral Florida showed marked segregation of sexes due to differential habitat use. Females typically occupied territories in pastures, mowed hayfields and recently planted citrus groves. Males were observed primarily along the margins of slash pine (*Pinus elliotii*) woodlots, eucalyptus (*Eucalyptus* spp.) plantations and cypress (*Taxodium distichum*) sloughs, and within scrubby flatwoods, mature citrus groves and residential areas. Although most males were found in less open habitats, both sexes foraged in open patches of the same type of hunting substrate, grasses or weedy forbs <25 cm in height (herein, suitable hunting substrate). Pellet analysis revealed that both sexes fed exclusively on arthropods. Male and female territories differed in the proportion of area covered by suitable hunting substrate (median values of 0.30 and 0.60, respectively). Additionally, more numerous and larger trees or shrubs characteristic of male territories formed a visual barrier such that a smaller proportion of the available hunting substrate was visible from any one perch. Differential prey availability was evident from differences between male and female activity budgets. Males were similar to females in capture success, once a prey item was detected, and in the total number of prey items captured per day. However, most males were constrained to forage actively throughout the entire day while females were able to satisfy most of their daily food requirements earlier in the day and thus had a substantial amount of time remaining to allot toward nonforaging activities. In addition males were more likely to attack novel prey items and experienced a greater loss of body mass during a period when ambient temp <0°C reduced arthropod prey availability. The evidence supports the hypothesis that most female territories were of superior foraging quality.

Kestrels wintering in the study area were captured in order to collect their pellets. Dry mass of pellets was used as an index of accumulated mass of prey consumed between dawn, when pellets representing prey consumed the previous day had been regurgitated, and time of capture. Kestrels holding territories of superior foraging quality (those with >50% coverage by suitable hunting substrate) consumed a greater prey mass during morning than did kestrels inhabiting territories of lesser foraging quality. No difference was found between territories of high and low foraging quality in terms of the total prey mass consumed by the end of the day. Most territories of high foraging quality were occupied by females, but within habitats of either high or low foraging quality, the temporal patterns of prey mass accumulation by males and females were similar. These results are consistent with observed kestrel activity budgets, and lend further support to the hypothesis that the temporal differences in foraging behavior between males and females were due to differences in the foraging quality of their territories; there was no evidence of any inherent sex-specific differences in predatory behavior. The foraging quality of kestrel winter territories in the study area was a function of the extent to which locations were covered by patches of a particular foraging substrate.

The establishment of 240 winter territories by kestrels on a 293-km census route in the study area was observed during autumn 1985. Most females arrived before males. Analysis of 18 367 USFWS records of kestrels banded during autumn in eastern North America revealed that immatures of both sexes and adult females preceded adult males in migration, thus skewing the sex ratio of early arrivals toward females. In the south Florida study area territorial kestrels occupied habitats in decreasing order of foraging quality, as measured by percent cover of suitable hunting substrate and by woody canopy cover (which was negatively correlated with suitable hunting substrate and obstructed the view of a hunting kestrel). Although most females arrived first, early-arriving males also occupied habitats of superior foraging quality and were as successful as females in defending territories against same-sex and opposite-sex kestrels as space in high quality habitats became limited. There was no evidence that a kestrel of either sex, once established, was ever displaced by a later-arriving conspecific. Results of experiments in which free-flying intruder kestrels were released into defended territories suggest that males, which typically held territories with smaller surpluses of prey resources and therefore stood to suffer more from an intrusion by a food competitor, defended winter territories more tenaciously than did females. Because there was no evidence of male submissiveness on wintering grounds, a female dominance hypothesis is not a plausible explanation for sexual segregation by habitat in wintering kestrels. Each kestrel's arrival date was apparently the principal determinant of which habitats were still available for occupancy, foraging quality was negatively correlated with arrival date for both adult males and for females and immatures. Delayed molt in adult males, associated with differential sex roles on breeding grounds, may result in delayed migratory departure and thus late arrival onto wintering grounds.

An examination of relative importance of three prey characteristics, size, color and activity, with respect to prey selection by wild kestrels wintering in the study area was conducted using House Mouse (*Mus musculus*) as prey. Results suggest that prey activity was more important than either prey size or prey coat color with respect to selection

by kestrels. Active prey were selected more often apparently because they were more easily detected. Although conspicuous coloration did not appear to enhance detectability of prey in the present study, conspicuousness may be important in prey detection under certain environmental conditions. **Smallwood, John A. 1987. Ph.D. Dissertation. Department of Zoology, The Ohio State University, Columbus, OH 43210, U.S.A.**

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THESIS ABSTRACTS

BEHAVIORAL DEVELOPMENT OF YOUNG GOLDEN EAGLES AT A HACK SITE: A COMPARISON TO WILD EAGLETS

A project was begun in 1981 to establish a breeding population of Golden Eagles (*Aquila chrysaetos*) in the southern Appalachians by hacking captive produced young near the Shining Rock Wilderness Area in Haywood County, North Carolina. The study attempted to determine behavioral differences between wild and hacked eaglets.

Performance levels of 35 "key" behaviors were quantified and entered into an electronic data recorder, allowing data to be analyzed by computer. Behavioral performance levels of hacked eaglets were statistically compared to wild eaglets (Ellis 1973) by *t*-Tests.

Some behavioral differences seem to be due to the effect of hacking (e.g., lower bout numbers for postures and higher Flap and Spread-hold performances), while other differences seem to be caused by abnormal physical development (e.g., slow transition from Lie to Stand and higher performance levels of Preening). Alternate hacking methods and uses of behaviors as indicators of proper development are discussed. **Roberts, Dan Allan, 1985. M.Sc. Thesis (under the direction of Dr. Richard D. Brown), Department of Biology, The University of North Carolina at Charlotte, Charlotte, NC 28216.**

NEWS AND REVIEWS

Chevron Conservation Awards Program and 1988 Honorees. The Conservation Awards Program is the oldest privately-sponsored program of its kind in the United States. Founded in 1954 by Ed Zern, the program has been sponsored by Chevron since 1986. Anyone in the United States or Canada can nominate an individual or a nonprofit organization for a Conservation Award. An independent committee of distinguished conservationists, representing a variety of conservation activities in North America, evaluates the nominees. From this list, the panel and Ed Zern select ten volunteer citizens, ten professionals and five nonprofit organizations. Honorees receive \$1000 and a bronze plaque in honor of their conservation achievements.

Among the 1988 honorees were **Gerald R. Craig** of the Colorado Division of Wildlife Resources for his work in the Peregrine Falcon recovery program in the western United States, and **Hope Carpenter** who is director of the Pennsylvania Raptor Association and has led a 20-year campaign to gain public awareness and acceptance of avian wildlife.

For further information on nominating procedures for 1989 contact **W. C. Roper, Corporate Program Director, Chevron Conservation Awards, P.O. Box 7753, San Francisco, CA 94120-7753; Telephone (415) 894-2457.**

1989 Annual Meeting of The Raptor Research Foundation, Inc.—A joint meeting of The Raptor Research Foundation, Inc., and the ICBP World Working Group of Birds of Prey will take place 8–14 October 1989 at the Hotel Mocambo in Veracruz City, Veracruz, Mexico. Approximate costs will be \$420.00 U.S. for single and \$300.00 U.S. for double occupancy, including breakfast and dinner. Major themes of the joint meeting will be Biology and Conservation of Tropical Raptors. Mario A. Ramos is Chairman of the Local Committee. All individuals interested to attend should write to **Mr. Romeo Dominguez Barradas, Local Arrangement Committee, RRF/WGGB Meeting INIREB, P.O. Box 63, Xalapa, Veracruz, 91000 MEXICO.** Those requesting additional information will receive the formal meeting announcement and the call for papers.