a successful captive breeding project are given.

Organochlorine levels in pectoral muscles of 12 New Zéaland Falcons and 14 other New Zealand birds of prey are tabulated. Five juvenile falcons contained a mean of 2.57 mg total DDT per kg wet weight of muscle, 5 adults 13.74 mg/kg. Shell-thinning since 1948 was 0–3.3% in 15 shells. The known status of New Zealand Falcons in all parts of New Zealand is given and summarized in two distribution maps. About 3,100–3,200 pairs of Eastern Falcons, 450–850 pairs of Bush Falcons and 140–270 pairs of Southern Falcons may exist. Probably 3,000–4,500 pairs of New Zealand Falcons is a realistic estimate.

Fox, Nicholas C. 1977. The biology of the New Zealand Falcon (*Falco novaeseelandiae* Gmelin 1788). Ph.D. thesis. University of Canterbury, Christchurch, New Zealand. 421pp.

ECOLOGY OF THE WHITE-TAILED KITE IN SAN DIEGO COUNTY

White-tailed Kites were studied from April 1975 to March 1978 in San Diego, California. The ecology and behavior of both breeding and nonbreeding kites were examined.

Data were obtained on nest sites, nesting success, diet, foraging activity, prey density, and communal roosting behavior.

Of 26 nests studied, 20 contained eggs (mean of 4.0 eggs per clutch) and 17 fledged young (mean of 1.9 fledglings per clutch). Four pairs produced a second clutch during the 1977 nesting season.

Territoriality existed to varying degrees. Intraspecific territoriality was uncommon yet readily visible. Two pairs of kites were evicted from their nesting territories by pairs nesting nearby. Interspecific territoriality was most commonly seen against Red-tailed and Marsh hawks. Other bird species were attacked less frequently.

In 2886 pellets analyzed, 3266 prey animals were represented. Of these 2759 (84.5%) were *Microtus californicus*, 344 (10.2%) *Reithrodontomys megalotis*, 143 (4.4%) *Mus musculus* and 30 (0.9%) other organisms. Only five birds and no reptiles or invertebrates were found in the pellets.

With use of the runway analysis technique, the relative *Microtus* population densities were determined in the kite's hunting areas for each site.

A stepwise multiple regression anaylsis was used to relate these variables (nest data, diet, and prey density) to number of eggs, number of hatchlings, number of fledglings, and nesting success of each nest site.

The number of eggs was related to the mean number of active *Microtus* runways (prey density) in the kites' hunting areas and to the height of the nest in the (R^2 = 52.0%). Number of hatchlings were not significantly related to any of the variables. The number of fledglings, and nesting success, were related to the percent of *Microtus* in the kite's diet (R^2 = 26.9% and R^2 = 41.1% respectively). From these results it was determined that the number of eggs is related to the prey density, and the number of fledglings and nesting success are related to the percent of *Microtus* in the diet.

Communal roosting sites were observed at four locations in San Diego County. A roost at Sorrento Valley was observed at least once per week from early October, 1977 to late March, 1978. Abundant rainfall flooded the valley for most of December, 1977 and February, 1978, decimating most of the *Microtus* population. As the prey density in the valley decreased, so did the number of kites using the valley for hunting purposes and for communal roosting. I found that the kites entered and left the roost in response to conditions of visibility, which was closely related to light intensity except under foggy conditions.

Wright, Bruce Albert. 1978. Ecology of the White-tailed Kite in San Diego County. M.S. thesis. San Diego State Univ. San Diego, Calif. 60 pp. Present Address: Rt. 4 Box 4617-1, Juneau, Alaska 99803.

ECOLOGY OF WINTERING BALD EAGLES ON THE SKAGIT RIVER, WASHINGTON

Winter ecology and behavior of a Bald Eagle (*Haliaeetus leucocephalus*) wintering population were studied in the winters of 1973–74 and 1974–75. Analysis was undertaken of the distribution of the eagles along the river in relationship to the distribution and abundance of the food source. Wintering Bald Eagle habitat selection in relation to habitat availability, distribution, and human disturbance were also described. Criteria for aging sub-adult Bald Eagles in the field were substantiated through molt research on captive eagles. Plumage aging techniques were used to determine the differential arrival and departure dates of different age classes, and behavioral relationships between eagles of different ages in the wintering area. The main food source of the Skagit wintering population is dead salmon (*Oncorhynchus* spp.). Eagles were never observed to kill live salmon. Eagle numbers were correlated to the amount of available salmon. When most salmon carcasses were either washed away by river currents or consumed by eagles, the wintering population dispersed and left the area. Eagles were concentrated in a seven mile stretch of river and were further concentrated within this seven mile stretch at certain gravel bars where salmon carcasses and perching sites were abundant. The population begins to arrive in mid-October with adults arriving first. Most sub-adults arrive in early December. The eagle population peaks were 93 eagles in mid-January 1974 and 165 eagles in mid-February 1975. The lower population level in 1974 was influenced by a flood on 16 January which prematurely removed most salmon carcasses that year. The Bald Eagle population disperses from the Skagit area during March, and few eagles remain after 1 April. The average percentage of sub-adults in the population was 52.6%. This figure is higher than all other wintering sub-adult percentages except Shea's 1971 figure of 54.5% in Glacier National Park, Montana. This may indicate a healthy, productive population, however, sub-adult percentages cannot be utilized to determine population productivity until much more is known about the winter distribution and habitat selection of different age classes. Eagle activity was affected by weather conditions. High winds and clear skies stimulated soaring and flying activity. Consequently, high eagle counts occurred during calm periods with low overcast skies when most