

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

eagles were perching along the river. During sunny, windy weather, eagles soared in groups and did not display usual feeding and distribution patterns. The social function of such group soaring is discussed. Eagles initially utilized areas on the river that were isolated from human disturbance, and only when food was depleted in these areas did the eagles use sites close to human disturbance. Of 3,322 eagle observations in 1974-75, 68.5% were on the side of the river having no road access; 19.7% were on islands in the river; and 11.8% were on the side of the river where the main road is, and most human activity occurs. Management alternatives to minimize human disturbance and preserve eagle wintering habitat are discussed.

Servheen, Christopher W. 1975. Ecology of Wintering Bald Eagles on the Skagit River, Washington. M.S. thesis, University of Washington, Seattle. 96 pp.

THE INFLUENCE OF FORCED-RENESTING ON REPRODUCTIVE PARAMETERS OF CAPTIVE AMERICAN KESTRELS

Abstract

From 1974 to 1977, the first clutches of 78 pairs of captive American Kestrels (*Falco sparverius*) were removed to induce laying of replacement clutches. This procedure was termed forced-renesting. First clutches were artificially incubated and the hatchlings hand-reared to fledging age.

A Maximum Likelihood Program revealed that replacement clutches had fewer eggs, longer eggs, and eggs with thicker shells than first clutches; but they did not differ in fertility, hatchability, overall growth, and fledging success of young. Clutch size, egg length, eggshell thickness, and fresh-egg weight declined seasonally. Hatching weight and fresh-egg weight were highly correlated, but neither was a reliable index of growth beyond 6 days of age.

Hand-rearing was associated with slower growth rates and the production of physically smaller adults. Hand-reared females laid the largest clutches and the largest and heaviest eggs and were associated with higher fertility than hand-reared males.

The implications of forced-renesting are discussed.

Bird, David M. 1978. The influence of forced-renesting on reproductive parameters of captive American Kestrels. Ph.D. thesis, McGill University, Montreal, 111 pp.