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Thesis Abstracts

Sonagraphic Identification of Individual Breeding Bald Eagles (*Haliaeetus leucocephalus*) in Arizona

"Chatter" calls of adult Bald Eagles (*Haliaeetus leucocephalus*) were recorded from 1983–86 at nesting territories along the Salt, Verde, and Big Sandy rivers in central Arizona. Sonagrams prepared from these field recordings were visually and quantitatively analyzed to test the feasibility of identifying individual eagles by voice. Visual identification tests were conducted with untrained volunteers to determine if individual eagles could be readily distinguished by their sonagrams. A stepwise discriminant function analysis (DFA) was performed on data produced from digitizing the sonagrams with a graphics calculator to identify those features of the eagle's call that best distinguish individuals. Fifty-nine to 83% of the eagles were correctly identified in the visual identification tests. Eighty-three to 100% of the eagles were correctly identified in the DFA within a given year. The calls of an individual eagle, however, vary significantly both within and between years. This variation may limit the utility of sonagrams for purposes of individual identification. **Eakle, Wade Laney. 1986. M.Sc. Thesis, School of Renewable Natural Resources, The University of Arizona, Tucson, AZ 85721, USA. Thesis directed by R. William Mannan.**

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Habitat Selection, Movements and Activity of Boreal and Saw-whet Owls

Habitat selection, movement patterns and breeding season calling activity of Boreal (*Aegolius funereus richardsonii*) and Northern Saw-whet Owls (*A. a. acadicus*) were monitored from April 1980–June 1985 in Larimer and Jackson counties, northcentral Colorado. Intensive surveys were conducted in 1983 and 1984 to identify habitat requirements and to determine calling activity of the two species. Radiotelemetry was used in 1984 to determine the movement patterns and habitat selection of Boreal Owls.

Macrohabitat was analyzed for Boreal (N = 21) and Saw-whet Owl (N = 12) territories located in 1983 and 1984. Boreal Owls selected high elevation (2770–3300 m) mature spruce-fir (*Picea engelmannii-Abies lasiocarpa*) forests while Saw-whet Owls were found in lower elevation (2370–2700 m) deciduous or mixed forests. Saw-whet Owl territories (N = 6) had significantly more deciduous tree cover and smaller trees than did Boreal Owl territories (N = 18). Boreal Owls preyed primarily on Red-backed Voles (*Clethrionomys gapperi*) and *Microtus* spp., while Saw-whet Owls fed primarily on Deer Mice (*Peromyscus maniculatus*). Three Boreal Owls (two ♂♂, one ♀) were trapped and radio-marked in 1984. Home range sizes of the two ♂♂ increased significantly from the breeding season ($\bar{X}$ = 296 ha) to post-breeding season ($\bar{X}$ = 1132 ha). Analysis of roost site selection (N = 174) showed that Boreal Owls preferred roosts in dense tree stands on steep slopes. Extensive diurnal activity of the owls was observed.

Calling activity of both Boreal and Saw-whet Owls fluctuated considerably over a six-yr period (1980–85), probably due to changes in the prey populations. Overall length of the courtship period ranged from 31–119 d ($\bar{X}$ = 63) for Boreal Owls and from 70–93 d ($\bar{X}$ = 81.5) for Saw-whet Owls. Calling activity of Boreal Owls was slightly influenced by wind, precipitation and moon phase while cloud cover and temp had no apparent effect. Saw-whet Owl calling activity was influenced primarily by wind. **Palmer, David Andrew. 1986. M.Sc. Thesis, Department of Fishery and Wildlife Biology, Colorado State University, Fort Collins, CO 80523, USA.**

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Range, Activity, and Habitat Use by Nesting Flammulated Owls in a Colorado Ponderosa Pine Forest

A radio-telemetry study of movements, activities, and habitat use by nesting Flammulated Owls (*Otus flammeolus*) was conducted in a 274-ha area of montane forest in central Colorado from April–October 1982–1983. Home range sizes for seven nesting pairs ranged 8.5–24.0 ha ($\bar{X}$ = 14.0 ha, SD = 5.0). Range size appeared to be determined by

extent of patchiness on overstory tree species and age, while range shape appeared to be determined by topography, and juxtaposition of ranges of neighboring conspecifics. Foraging, done mostly by males, was most intense in the early evening but continued periodically throughout the night. Eighty percent of observed foraging attempts by males occurred in one to four intensive foraging areas (IFAs) within each home range. Mean size of 15 IFAs in seven ranges was 0.5 ha (range 0.1–1.4 ha, SD = 0.4), and mean total area in IFAs per range was 1.0 ha (range 0.6–1.5 ha, SD = 0 3). Distances from centers of IFAs to respective nests ranged from 10–410 m but most (73%) were <140 m from nests, and six of seven nests were contained within an IFA. Foraging areas, day roosts, and territorial song posts of males were mostly associated with mature, open stands of ponderosa pine (*Pinus ponderosa*) mixed with Douglas-fir (*Pseudotsuga menziesii*). One brood of three young and one brood of two young dispersed from the nest in different directions, with part of the brood being attended by the male and part by the female. Fledged young were dependent on adults for food for 13–17 d, but by 24–31 d young were no longer provisioned with food. Adults rarely associated with young after this time. Fledglings left the study area by 1 September and adults by 13 October. **Linkhart, Brian D. 1984. M.Sc. Thesis, Department of Fishery and Wildlife Biology, Colorado State University, Fort Collins, CO 80523, USA.**

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RESOURCE PARTITIONING IN AN ASSEMBLAGE OF BREEDING RAPTORS FROM SOUTHEASTERN WYOMING

Food habits and nest site features of Golden Eagles (*Aquila chrysaetos*), Prairie Falcons (*Falco mexicanus*), Red-tailed Hawks (*Buteo jamaicensis*), and Ferruginous Hawks (*B. regalis*) were studied near Medicine Bow, Wyoming, during 1981 and 1982. Foods consisted primarily of leporids and sciurids. Wyoming Ground Squirrels dominated the diet of Prairie Falcons, while Golden Eagles preyed on leporids more than the other raptors. Diet overlap ranged 59–99% between the species. Nest aspects varied widely but the mean used by this raptor assemblage was 300°. Mean height of nests and nest substrates used by Golden Eagles were greater than those of other species. Seventy-eight percent of the raptors nested out of sight of the nearest active neighbor, and 77% nested within view of a road. Overlap in use of different nest substrates ranged 62–94%. Prairie Falcons were the most specialized and Ferruginous Hawks the most versatile raptor species in terms of food habits and use of nest sites. In spite of high levels of overlap, detailed analyses suggested possible partitioning of leporid and sciurid prey and differential use of trees and cliffs as nest sites. **MacLaren, Patricia A. 1986. M.Sc. Thesis, Department of Zoology and Physiology, University of Wyoming, Laramie, WY 82071, USA.**

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NEWS AND REVIEWS

Proceedings of the Second Symposium on African Predatory Birds by J. M. Mendelsohn and C. W. Sapsford (EDS.). 1984. 245 pp. Published by the Natal Bird Club, % Durban Natural History Museum, P.O. Box 4085, Durban 4000, SOUTH AFRICA.

These proceedings represent the culmination of a symposium held at majestic Golden Gate Highlands National Park in South Africa, 22–26 August 1983. The proceedings contain a total of 43 contributions and four resolutions adopted at the symposium. Eighteen contributions are abstracts or extended abstracts, and three of the remaining 25 papers are in the form of notes. Eleven full length articles discuss natural history of species in specific regions of southern Africa. Two articles were on captive propagation, two on pesticides (others mention pesticide usage in southern Africa), four on general physiology and one article introduced falconry as an arm of conservation. Among the papers was an update on the distribution, status and conservation of raptors in Madagascar. The author list contains 64 names representing seven countries outside South Africa.