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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