

two species of similar size are seldom observed, and may be rare in nature, but such direct sources of mortality or competition undoubtedly occur in the wild.

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THESIS ABSTRACT

HABITAT USE, MOVEMENTS, MIGRATION PATTERNS, AND SURVIVAL RATES OF SUBADULT BALD EAGLES IN NORTHERN FLORIDA

The state of Florida supports over half of the breeding population of Bald Eagles (*Haliaeetus leucocephalus leucocephalus*) in the southeastern United States; this represents a significant resource for the Southeast and for Florida. Currently, primary management emphasis and protection is focused on bald eagle nest sites. No habitat protection or management activities are aimed at foraging, roosting or loafing areas for subadult eagles. In fact, habitats and habitat characteristics important to subadults have not been quantified. In this study, I examined various aspects of eagle biology that might be pertinent to survival or management of the Florida subadult eagle population. Specifically, using radiotelemetry, I examined post-fledging habitat needs, factors affecting timing of migration, local movements, habitat use, and survival in north-central Florida from spring 1987 through spring 1991.

Fledgling eagles (birds prior to their initial migration) remained dependent on adults and remained within 4 km of the natal nest until they initiated migration (approximately 7 wk post-fledging). It was determined that habitat protection within the 229 m primary protection zone used in Florida was not sufficient to meet the habitat needs of fledgling eagles and that the protection period should extend until fledglings initiate migration in the summer. Timing of migration for fledgling and 1- to 4-year-old eagles appeared to be correlated more with prey availability than with temperature, although both factors appear to affect migration.

Locations of radio-tagged eagles outside of Florida ranged from South Carolina to Prince Edward Island, Canada. Data suggest that eagles are philopatric to summering areas, which emphasizes the need for protection of significant summering areas. Known and assumed mortality occurred primarily during migration in northern states. The 1½ year age class had the lowest survival. Survival was significantly lower for eagles fledged from 1-chick nests and for the younger chick in 2-chick nests. The minimum survival rate through 4½ years of age was 50% and did not vary by sex.

After subadults returned to the north-central Florida study area in the fall, individuals continued to use the same general areas each year. Temporally and locally abundant food sources resulted in temporary small concentrations of eagles. Certain portions of the study area were used consistently each year by large numbers of eagles. Subadult eagles were not distributed randomly over the study area. Logistic regression analyses revealed that eagles tended to be located close to large water bodies, and eagle nests were frequently in cypress and marsh habitats, and avoided main roads and developed areas. Immature eagles (1-year olds) tended to be located closer to eagle nests than 2- to 4-year-olds. Thus, management for subadult populations must include these heavily used concentration areas that supply the habitat features preferred by subadults. Survival of subadults may be affected if a highly used area becomes unsuitable.—**Petra Bohall Wood. 1992. Ph.D. thesis, Department of Wildlife and Range Sciences, University of Florida, Gainesville, FL 32611. Present address: West Virginia Coop. Fish and Wildlife Research Unit, West Virginia University, P.O. Box 6125, Morgantown, WV 26506-6125.**