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## ABSTRACTS OF THESES AND DISSERTATIONS

### THE NESTING BIOLOGY AND BEHAVIOR OF WOODLAND RAPTORS IN WESTERN MARYLAND

This thesis reports the composition and status of the raptor community in the central Appalachian eastern deciduous forests of western Maryland. In addition, the breeding chronology, behavior, and food habits of these raptor species are described.

Red-tailed (*Buteo jamaicensis*), Red-shouldered (*Buteo lineatus*), Broad-winged (*Buteo platypterus*), and Cooper's (*Accipiter cooperi*) Hawks nest in western Maryland. Forty-one breeding pairs of these raptor species were monitored during the 1978 and 1979 nesting seasons.

Broad-winged Hawks were the most successful species with 82.3% successful attempts. Cooper's Hawks were the next most successful at 66.6% followed by Red-shouldered Hawks at 62.5% and Red-tailed Hawks at 50.0%. Fledging rates for Broad-winged, Cooper's, Red-shouldered and Red-tailed Hawks were 1.7, 2.5, 1.8 and 1.5 per successful attempt, respectively. Although Broad-wings were the most successful nesters in this area, Cooper's Hawks had the greatest productivity per successful nest.

Nesting survival to fledging was 58.8% for the Cooper's Hawk, 68.9% for the Broad-winged Hawk, 60.0% for the Red-shouldered Hawk and 50.0% for the Red-tailed Hawk. Small mammals, particularly the eastern chipmunk (*Tamias striatus*), were the major prey item for Red-shouldered, Cooper's, and Broad-winged Hawks. Prey remains from Red-tailed nests were composed primarily of the eastern fox squirrel (*Sciurus niger*) and the eastern gray squirrel (*Sciurus carolinensis*).

- Janik, Cynthia A. 1980. The nesting biology and behavior of woodland raptors in western Maryland. M.S. Thesis, Frostburg State College, Frostburg, Maryland.

### NEST SITE SELECTION BY THE RED-SHOULDERED HAWK (*BUTEO LINEATUS*) IN SOUTHWESTERN QUEBEC

The patterns of nest site selection by the Red-shouldered Hawk (*Buteo lineatus*) were studied in 1978 and 1979 at two areas in southwestern Québec in order to investigate the potential effects of this behavior on reproductive success. Hawks arrived in the main study area (Vaudreuil County) by late March and began nesting activities almost immediately. A comparison of thirty nest sites and twenty-five randomly located control sites in that area indicated that there were significant ( $p < 0.05$ ) differences in several habitat features between the two groups. The nests of the Red-shouldered Hawk were typically

located in the most mature sugar maple (*Acer saccharum*) or beech (*Fagus grandifolia*) stands available. The nests were usually located in multibranch forks in the middle of the forest canopy, at about half of the total height ( $\bar{x} = 49\%$ ) of the large nest trees, probably providing protection for incubating adults and nestlings from predation and adverse environmental conditions. There is evidence that some nesting pairs may be able to tolerate considerable human activity in the immediate vicinity of their nests. A variety of discriminant analyses were used to identify the habitat features which contributed most to the significant ( $p < 0.05$ ) separation of the nest sites from the control sites. Principal components analyses demonstrated that suitable Red-shouldered Hawk nesting habitat, as defined by the nest sites, comprises a recognizable subsection of the available forest habitat in the main study area. The possible implications of these findings on the behavioral mechanisms of nesting habitat selection by the Red-shouldered Hawk are discussed.

Morris, Michael M. J. 1980. Nest site selection by the Red-shouldered hawk (*Buteo lineatus*) in southwestern Québec. M. Sc. Thesis, McGill University, Montréal, Québec, Canada. 57 pp.

#### NEST SITE HABITAT SELECTION BY WOODLAND HAWKS IN THE CENTRAL APPALACHIANS

Four diurnal woodland raptor species (Broad-winged Hawk, *Buteo platypterus*, Red-shouldered Hawk, *B. lineatus*, Red-tailed Hawk, *B. jamaicensis*, and Cooper's Hawk, *Accipiter cooperii*) are present in the central Appalachians but no quantitative studies of their nest site habitat have been conducted. By measuring a variety of habitat variables associated with each nest site and also at random points in the forest an assessment of the nest sites selected by each species was made, along with interspecific differences.

Using analysis of variance and stepwise discriminant function analysis, potentially important habitat characteristics were identified for each species. White oak (*Quercus alba*) was the most common nest tree. Distance to water, percent nest height, distance to the nearest forest opening, basal area and dbh of the nest tree were important discriminating variables among the four hawk species. Compared with the available forest area as described by random sampling, Broad-winged Hawks were found nesting close to water and to forest openings and in areas with a high site index. Red-shouldered Hawks consistently nested very near to water and in very large trees contained within stands of mature forests. Red-tailed Hawks nested higher in trees than any of the other species, on or near the tops of ridges, placing their nest sites far from water and forest openings. Cooper's Hawks nested proportionally higher in trees than the Broad-winged and Red-shouldered Hawks. They were associated with semimature forest with a well developed understory and ground cover layer. The discriminant function analyses revealed that each species appears to select rather specific nesting areas both in terms of the proximity of the site to various physiographic features and in terms of the nest tree itself.

Titus, Kimberly. 1980. Nest site habitat selection by woodland hawks in the central Appalachians. M.S. Thesis, Frostburg State College, Frostburg, Maryland.