

Literature Cited

- Bequaert, J. 1942. *Carnus hemapterus* Nitzsch, an ectoparasitic fly of birds, New to America (Diptera). *Bull. Brooklyn Ent. Soc.* 37:140-149.
- Capell, K.J., and T.L. Whitworth. 1973. The distribution and avian hosts of *Carnus hemapterus* (Diptera: milichiidae) in North America. *J. Med. Ent.* 10:525-526.
- Hendel, F. 1928. Zweiflügler order Diptera. II. Allgemeiner Teil. in F. Dahl, Die Tierwelt Deutschlands, XI, Dipt., Pt. 2, pp. 1-135.
- Main, A.J., and R.C. Wallis. 1974. Primary records of two vertebrate ectoparasites in New England (Acarina: Argasidae and Diptera: Milichiidae). *Proc. Entomol. Soc. Washington* 76:427.
- Noller, W. 1920. Die Ergebnisse der Hemoptroteus-Forschung. Zugleich vorläufige Mitteilung über Züchtungsversuche an einigen anderen Trypanosomen. *Arch. F. Protistenk.*, 41:149-168.
- Wilson, N. 1977. Ectoparasites found in the nest cavities of Pileated Woodpeckers in Oregon. *Bird-Banding* 48:171-173.

THREE ADULT BALD EAGLES AT AN ACTIVE NEST¹

by

James D. Fraser²

L.D. Frenzel

Department of Entomology, Fisheries, and Wildlife,

University of Minnesota, St. Paul, MN 55108

John E. Mathisen

Chippewa National Forest

Cass Lake, MN 56633

and

Mark E. Shough

Bemidji Aviation Inc.

Bemidji, MN 56601

Although Bald Eagle (*Haliaeetus leucocephalus*) trios have been observed at nests in Alaska (Sherrod et al. 1976, Heglund and Reising 1980), we are unaware of similar reports in the coterminous United States. Here we describe 4 observations of 3 adult eagles at a nest on the Chippewa National Forest, north central Minnesota. The nest was observed 93 times between March and October in 1976-1978. All observations were made from fixed-wing aircraft.

On 7 April 1976, an adult eagle was observed in the nest in incubating posture; 2 others, 1 in adult plumage and 1 with an off-white head similar to Southern's (1967) plumage F, were perched next to the nest. On 22 June 1977, an adult with a nearly white head was in the nest with 2 nestlings, another adult was in the nest tree, and a third adult was in a tree approximately 100 m to the south. On 7 April 1978, an adult was in incubating posture while 2 others were perched together in the nest tree. On 30 June 1978, 2 adults and 1 nestling were in the nest and a third adult was perched 200-300 m to the north. One fledgling was produced in 1976, 2 in 1977, and 1 in 1978. Because our observations were brief, we were unable to determine the nature of interactions among the eagles involved. It is not clear to us, therefore, what role, if any, the 3rd adult played in the nesting effort.

Sherrod et al. (1976) reported 3 sites occupied by trios on Amchitka Island, Alaska. Three Amchitka nests were also occupied by trios in 1980 and one of these contained 4 eggs (Heglund and Reising 1980). Both Herrick (1934:106) and Bent (1937:325) reported 4-egg clutches for the Bald Eagle, and Bent suggested that the eggs may have been produced by more than 1 female.

The data suggest that Bald Eagles are occasionally polygynous. Detailed behavioral observations of trios are required to test this hypothesis, however.

The Amchitka population apparently has not experienced the level of reproductive failure reported for eagle populations elsewhere (Sprunt et al. 1973, Sherrod et al. 1976) and the Chippewa population appears to be recovering rapidly from effects of contamination (Fraser 1981). The 4-egg clutches reported by Herrick (1934) and Bent (1937) were laid well before the earliest report of widespread Bald Eagle nest failures (Broley 1950). Perhaps trios occur most frequently at nests in healthy Bald Eagle populations. If so, trios may become more common in the coterminous states if Bald Eagle reproduction and survival improve.

¹Paper No. 12,049, Scientific Journal Series, Minnesota Agricultural Experiment Station, University of Minnesota, St. Paul, MN 55108

²Present Address: Department of Fisheries and Wildlife Sciences, Virginia Polytechnic Institute and State University, Blacksburg, VA 24061.

We acknowledge financial support from the Caleb Dorr Fund, the Hunt-Wesson Corporation, the Minnesota Agricultural Experiment Station, the National Wildlife Federation, and the Herz Foundation.

Literature Cited

- Bent, A.C. 1937. Life histories of North American birds of prey. Part I. U.S. Natl. Mus. Bull. 167. Dover Publ., New York. 409 pp.
- Brolley, C.L. 1950. The plight of the Florida Bald Eagle. *Audubon* 52:42-9.
- Fraser, J.D. 1981. The breeding biology and status of the Bald Eagle on the Chippewa National Forest. Unpubl. Ph.D. Diss., Univ. of Minnesota, St. Paul. 236 pp.
- Heglund, P.J., and B. Reiswig. 1980. 1980 Raptor survey, the breeding Bald Eagle population, Amchitka Island, Alaska. Unpubl. rep., U.S.D.I. Fish and Wildl. Serv., Aleutian Islands National Wildlife Refuge. 19 pp.
- Herrick, F.H. 1934. The American eagle: a study in natural and civil history. Appleton.
- Sherrod, S.K., C.M. White, and F.S.I. Williamson. 1976. Biology of the Bald Eagle on Amchitka Island, Alaska. *Living Bird* 15:143-182.
- Southern, W.F. 1967. Further comments on subadult Bald Eagle plumages. *Jack Pine Warbler* 45:70-80.
- Sprunt, A., IV, W.B. Robertson, Jr., S. Postupalsky, R.J. Hensel, C.F. Knoder, and F.J. Ligas. 1973. Comparative productivity of six Bald Eagle populations. *Trans. N. Amer. Wildl. Conf.* 38:96-106.

ABSTRACTS OF THESES AND DISSERTATIONS

ARTIFICIAL PERCH USE BY RAPTORS ON RECLAIMED SURFACE MINES IN WEST VIRGINIA

Raptor use of 24 artificial perches on 4 reclaimed surface mines in West Virginia was studied from May to October, 1980. Each perch had crosspieces at heights of 3 and 6 m. Perch use was documented by direct observations and use of 24 automatic event recorders. More than 99% of total use by raptors was made by American Kestrels (*Falco sparverius*.) Red-tailed Hawks (*Buteo jamaicensis*) and, as indicated by the event recorders, possibly Great Horned Owls (*Bubo virginianus*) made relatively small use of the perches. The 6-m crosspieces were used substantially more than the lower heights and this choice was independent of topography. Relationships among perch use, prey abundance, and vegetational structure were evaluated and, based on these variables, models were generated to predict perch use by the 3 raptor species. Vegetational structure appeared to be important in determining perch use by all 3 species but use by kestrels may be determined more by insect prey.

Forren, John D. 1981. Artificial perch use by raptors on reclaimed surface mines in West Virginia. M.S. Thesis, West Virginia University, Morgantown. 199 pp.

KESTREL USE OF NEST BOXES ON RECLAIMED SURFACE MINES IN WEST VIRGINIA AND PENNSYLVANIA

Kestrel (*Falco sparverius*) use of mines with boxes (treatment) and without boxes (control) was studied in a 4-county area in northern West Virginia and southern Pennsylvania during March to August of 1980 and 1981. Kestrels did not nest on nor was any breeding activity observed at 6 control mines during either year of the study. In contrast, Kestrels accepted 14 of