County Audubon Society and Boulder County Nature Association helped me locate nests. The City of Boulder Open Space and Mountain Park Rangers, and G. Craig of the Colorado Division of Wildlife, provided helpful information. R. Weiser and the Getmans allowed me access to their land and Red-tailed Hawk nests. R. Adams, B. Gilbert, S. Pederson, and J. Strauch helped identify pellet contents. D. M. Armstrong, D. L. Evans, B. Jakob, M. R. Lein, R. K. Murphy, and J. R. Parrish helped improve previous versions of this paper. I was supported by a UCD Graduate Fellowship during manuscript preparation.

#### LITERATURE CITED

- Adamcik, R. S., A. W. Todd and L. B. Keith. 1979. Demographic and dietary responses of Red-tailed Hawks during a snowshoe hare fluctuation. *Can. Field-Nat.* 93:16–27.
- AMERICAN ORNITHOLOGISTS' UNION. 1983. Check-list of North American birds, sixth ed. American Ornithologists' Union. 877 pp.
- Armstrong, D. M. 1972. Distribution of mammals in Colorado. *Univ. Kansas Mus. Nat. Hist. Monogr. No. 3*. 415 pp.
- BEEBE, F. L. 1974. Field studies of the Falconiformes

- of British Columbia. British Columbia Prov. Mus. Occas. Pap. No. 17. 163 pp.
- ERRINGTON, P. L. AND W. J. BRECKENRIDGE. 1938. Food habits of buteo hawks in north-central United States. Wilson Bull. 50:113-121.
- JONES, J. K., JR., D. C. CARTER, H. H. GENOWAYS, R. S. HOFFMANN AND D. W. RICE. 1982. Revised checklist of North American mammals north of Mexico, 1982. Texas Tech Univ. Occas. Papers No. 80. 22 pp.
- KINGERY, H. E. AND W. D. GRAUL. 1978. Colorado bird distribution latilong study. Colorado Div. Wildl. 58 pp.
- MARR, J. W. 1964. The vegetation of the Boulder area. Pages 34-42. *In* H. G. Rodeck, ED. Natural history of the Boulder area. *Univ. of Colorado Mus. Leaflet No.* 13. 100 pp.
- Department of Environmental, Population, and Organismic Biology, University of Colorado, Boulder, CO 80309. Present address: Animal Behavior Graduate Group, % Department of Zoology, University of California, Davis, CA 95616.

Received 18 October 1987; accepted 6 March 1989

J. Raptor Res. 23(2):55-56 © 1989 The Raptor Research Foundation, Inc.

# Bald Eagle Kills Sharp-shinned Hawk

### Jay R. George

Klem (Wilson Bull. 97:230–231, 1985) described several instances of diurnal raptors killing other diurnal raptor species. I witnessed a similar incident during raptor migration in the fall of 1985.

At 1005 H on 28 September 1985 two raptors were observed flying toward North Lookout at Hawk Mountain Sanctuary, Berks County (40°35'N, 75°55'W), in eastcentral Pennsylvania. The birds were first observed at a distance of approximately 1000 m and were approximately 50 m apart moving parallel to the ridge in a generally WSW direction. The larger of the 2 birds was identified as an eagle, the second bird as an accipiter. Less than 10 s after the initial sightings a third raptor, a smaller accipiter, approached the pair from behind and above and began harassing the eagle by diving repeatedly. At this point the larger accipiter (believed to be a Northern Goshawk [Accipiter gentilis] but identification was not certain), turned to the NW and passed the observation point on the north side of the ridge without further interaction with either of the other two raptors.

The small accipiter, judged to be a Sharp-shinned Hawk (Accipiter striatus) based on size and flight characteristics, made 3 passes at the eagle. Each pass was within centimeters of the bigger bird, causing it to turn quickly from side to side. Considerable distance from the observer to the birds made precise observation difficult, and the accipiter was unobserved for perhaps 3 s. The small raptor was next observed approximately 20 m below and in front of the eagle. The eagle dived but missed the smaller bird, which no longer moved with its previous speed and agility. The larger bird made 3 unsuccessful attempts at capturing the accipiter, but each time the smaller raptor pitched forward and downward with movements that indicated possible wing damage. On the fourth try the eagle successfully grasped the small accipiter in its talons.

The eagle, now clearly seen to be an immature Bald Eagle (*Haliaeetus leucocephalus*) carried its catch as it continued its flight parallel to the ridge. The eagle passed my observation site approximately 200 m to the south and 50 m above. As it did it lowered its head, struck its prey with

its mandible and passed behind me. The eagle circled back briefly and dropped the small raptor to the ground, apparently dead. The eagle then resumed its flight to the WSW.

Klem (1985) suggested that the causes for interspecific killing of raptors by raptors include: competition for food, competition for territory or breeding sites, and annoyance or defense. In the incident I observed, the Sharp-shinned Hawk repeatedly harassed the eagle, and the eagle did not eat the Sharp-shin after killing it. These behaviors suggest that annoyance was the cause.

### ACKNOWLEDGMENTS

I would like to thank Stanley E. Senner and Laurie Goodrich for reviewing an earlier draft of this manuscript and Daniel Klem, Jr. and Laurie Goodrich for encouraging me to write it.

## RD6, Manheim, Pennsylvania 17545.

Received 13 October 1988; accepted 6 March 1989