

of twilight, cloud cover, and presence of a full moon were significant factors ($P < 0.01$) influencing the timing of eagle roosting relative to sunrise and sunset. These factors, all affecting relative light intensity, accounted for 72% and 68% of the variability in the timing of first morning activity and last evening activity, respectively. Higher ambient light conditions relative to sunrise or sunset (as indicated by long twilight period, lack of cloud cover, or presence of a full moon) resulted in later initiation of roosting in the evening and earlier termination of roosting at dawn. Temperature, nest site, and age of the eagle (adult or young) did not significantly ($P < 0.05$) affect the timing of roosting behavior. Observations indicated that a single adult roosted at the nest tree until nestlings were approximately 7 weeks old, at which time adult nest-tree roosting behavior terminated at all nests. From incubation to the fledging of young, adult roost locations away from the nest tree were primarily at repeatedly used supercanopy trees within 400 m of the nest. Fledgling eagles, including siblings, differed considerably regarding use of the nest tree for roosting. Nest trees continued to be important roosting locations for some fledglings through the first few weeks after their first flight. With progress of the nesting cycle, adults and fledglings roosted at increasingly greater distances from the nest tree. However, 4 weeks after their first flight, some fledgling roost locations still ranged to within 12 m of the nest tree. Adults roosted to 1,866 m and fledglings as far as 3,057 m from the nest tree prior to dispersal of the young from the forest. After fledgling, siblings showed a slight tendency to roost together (29 of 115 observations), this behavior occurring primarily in recently fledged young. Adults rarely were observed roosting with fledged young (2 of 102 observations). Characteristics of 44 identified roost trees were variable regarding species, height, distance to water, and community type. However, most roosts occurred on habitat edges (55%) and had considerable foliage (89%). Based on observed relative use of identified roosts in this study, identification and protection of actual and potential important roosts within other eagle nesting territories appear practical within only a 400-m zone around nest trees.

Pramstaller, Michael E. 1977. Nocturnal, prerooting and postroosting behavior of breeding adult and young of the year Bald Eagles (*Haliaeetus leucocephalus alascanus*) on the Chippewa National Forest, Minnesota. M.S. thesis, University of Minnesota, St. Paul. 97 pp.

Present address: Michael E. Pramstaller
Raptor Information Center
National Wildlife Federation
1412 16th Street, N.W.
Washington, D.C. 20036

BOOK REVIEWS

A symposium on African predatory birds. 1977. South African Ornithological Society. 108 p. Paper covers. Price (unstated). Obtainable through Northern Transvaal Ornithological Society, P.O. Box 4158, Pretoria 0001, South Africa.

This collection of papers was presented at the 1977 Symposium on African Pre-

datory Birds. The contents consist of 11 papers printed in full text and 16 papers represented by title and abstract. The opening addresses set the tone for the symposium, with Ian Newton discussing population regulation in diurnal birds of prey (abstract only) and Leslie Brown providing a comprehensive summary of the current knowledge about all species of African birds of prey.

The topics of other papers for which the full text is provided are classified into three categories: predatory behavior, predator biology, and predator conservation. Predatory behavior is represented by one interesting paper which compares the prey and foraging methods of the terrestrial hunting Ground Hornbill and the Secretary Bird. Articles about predator biology include an ecological comparison of four sympatric owl species in Transvaal, South Africa, and papers on aspects of the general ecology of the Long-crested Eagle, Mackinder's Eagle Owl, Dickinson's Kestrel, and Greater Kestrel. Also there is a comprehensive paper on the various raptor measurements used to document aspects of bird design. Articles about predator conservation include a comparison of Black Eagle populations in protected and unprotected areas, a status report on the raptors of the Eastern Cape, South Africa, and a description of raptor leg surgery. Papers read at the symposium that are represented only by abstracts cover a wide variety of topics including, for example, the food resources of two sympatric *Phoebetria* albatrosses, Bat Hawk feeding behavior, Snake Eagle biology, Peregrine Falcons in Victoria, Australia, and several reports on Cape Vulture research.

The primary value of this publication is that it provides the reader with a spectrum of the types of avian predator research which are currently being pursued in Africa by many of the continent's leading raptor biologists. For persons seriously interested in African raptor research, this publication offers an opportunity to obtain a series of generally good papers on research currently in progress.

Thomas L. Thurow

Bird of Prey Management Techniques. 1978. T. A. Geer (ed). A symposium sponsored by the International Association of Falconry and Conservation of Birds of Prey. 160 pp. Price not stated. (Available through T. A. Geer, Minor Road, Brewster, New York 10509.)

Because research on birds of prey has undergone a rapid growth in the past decade, the number of symposia treating them has likewise increased. These symposia tend to treat specific topics, and this symposium has brought together a truly international group of individuals concerned with the problems of management. The meetings were held at Wadham College, Oxford, England. In all, 202 participants are listed representing some 20 countries, although Europeans were in the majority. There are five major areas of discussion, and each area had several contributing papers. These areas are (1) Population Dynamics and Habitat Management, (2) Reducing Mortality in the Wild, (3) Increasing Productivity in Wild Populations, (4) Captive Breeding and Release as Management Techniques and (5) General Considerations (a discussion of falconry, legal and economic problems). Of the 17 papers published in this volume, most appeared to offer new material although two were taken from *Endangered Species* (S. A. Temple (ed.) 1978.).

Some of the papers, while of general interest, report on projects of regional scope such as the *Project Eagle-Owl, South West*, which describes the introduction of Eagle Owls in a small area of southwestern Sweden. Others, *Productivity Manipulation in Wild Eagles*, as an example, are review papers of a general nature. The opening address by T. Lutz, president of IAFCBP, sets the tone of the conference and reminds us that birds of prey have a variety of meanings to us all. We frequently need this reminder, and thus I quote from his address: "One has an admiring, revering love for them, the other loves them as a scientific object, another loves them as a possession, and yet others find the fulfillment of their love in the partner relationship with them." All are valid viewpoints. All in all the proceedings of this conference are recommended highly.

C. M. White

Hawks and Owls of North America. D. S. Heintzelman. 1979. Universe Books, New York. 197 pages. 8 color plates, many black and whites. \$18.50.

Donald Heintzelman is a well-known author to most people interested in raptors and has produced another fine book to add to his list of quality works. In the preface, the author states that *Hawks and Owls of North America* is not written on a professional level, but rather, is a guide for the general public. To those familiar with Heintzelman's other books, this style is probably his hallmark.

The subtitle of this book is "A Complete Guide to North American Birds of Prey," and indeed, the list of included raptors is exhaustive. For example, the roadside hawk (*Buteo magnirostris*) is discussed, even though Heintzelman documents it as being seen only once in North America. The description given for each species varies greatly, but generally includes information on nesting, feeding, identifying features, and unique characteristics. I can foresee some criticism about the amount of space given to some birds while others seem neglected, as with the eight pages describing the osprey compared to the fewer than four pages devoted to the red-tailed hawk.

Chapters are divided taxonomically, plus Heintzelman includes several short sections on topics such as ecology, migration, and conservation. An appendix, listing raptor related organizations, is included as well as a seven-page list of selected references. Overall, the book is well written and interesting, and would be a nice addition to the bookshelf of anyone interested in hawks and owls.

William K. Parker