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ORNITHOLOGICAL LITERATURE

NESTING ECOLOGY OF CANADA GEESE IN THE HUDSON BAY LOWLANDS OF ONTARIO: EVOLUTION AND POPULATION REGULATION. By D. G. Raveling and H. G. Lumsden. Ontario Ministry of Natural Resources, Fish and Wildlife Research Report No. 98, 1977: 77 pp., photographs, maps, graphs, paper cover. $3.50. (Available from Ontario Government Bookstore, 880 Bay St., Toronto, Canada M5S 1Z8.)—The main purposes of this report are "to present the results of investigations of apparent optimum and accomplished reproductive rates, habitat preferences, and density and spacing of nests in relation to the regulation of population size." This use of terminology is unfortunate as the report contains nothing about "population regulation." Rather, the emphasis is on factors limiting population size. The study is, in effect, the breeding and population biology of the Mississippi Valley Population (MVP) of Canada Geese (*Branta canadensis interior*). The geese nest in the Hudson Bay Lowlands and winter in southern Illinois, western Kentucky, southeastern Missouri and western Tennessee. The nesting study was done during 1967, 1968, and 1969 at Kinoje Lake (90 km west-northwest of Moosonee) and a surrounding area of 412 km^2. The MVP is one of the most important populations of Canada Geese in North America, both economically and in terms of its numbers. Before this report, very little was known of the subspecies' breeding habits and adaptations to the northern environment.

The report is presented in 2 sections: Nesting Ecology (Part I) and Population Limitations (Part II). Part I includes a 2 page description of snow conditions, precipitation, ice conditions, water levels and air temperatures on the study area. The remainder discusses the usual breeding biology topics such as arrival on the nesting grounds, egg-laying, nesting habitat, spacing of nests, clutch-sizes, nesting success, predation and general behavior. The authors report that as open water prevails at the nesting area, the geese disperse over the available habitat. Arrival in the north coincided with the average time of snow thaw and initial open water. Preferred nesting habitat consisted of small ponds (0.4–2 ha) containing 2 or more low, small islands that provided protection from predators throughout the nesting season. Nest success averaged 80%. Most nest losses were attributed to predators such as Ravens (*Corvus corax*), Herring Gulls (*Larus argentatus*), wolves (*Canis lupus*) or red foxes (*Vulpes fulva*).

The authors discuss at length their ideas on the evolution of clutch-size. This is the only section of the report that discusses evolution. They suggest that clutch-size may have evolved so that egg-laying ceases when the accumulated spring reserves are depleted to the point where the post-laying body weight approximates that of the winter body weight. The incubation period is thus described as a starvation regime. Unfortunately their hypothesis is based on the collection of only 4 late-nesting females. Certainly the authors erred in not considering recent work on the evolution of clutch-size in the Lesser Snow Goose (*Anser caerulescens caerulescens*), which, for the most part, counters their proposed scheme.

Part II is a compilation of data on winter distribution, population size, and mortality; the major objective "was to examine the nesting ecology of MVP Canada Geese to provide insight into the factors limiting their numbers." The size of the MVP, after most mortality from hunting, averaged 350,000 geese between 1966 and 1970 (from winter inventories in Wisconsin and Illinois). The authors conclude that "the population was clearly not limited on the summer range" and that "winter mortality was the major limiting factor for MVP geese and this mortality was overwhelmingly accounted

for by hunting." These conclusions are not justified by their data. For example, in 1967 (a "retarded spring nesting season") they calculated that non-nesting and mortality of broods depressed the autumn population by 13% (37,000 geese) over that expected from an excellent nesting season; the calculated hunter kill that autumn/winter was 36,000 geese. More significantly, in 1968, "an excellent nesting season," 147,000 goslings (of 270,000 hatched) died before October; hunters killed 43,000 geese that autumn. Clearly, some limitation of population size occurs on the breeding grounds. The data suggest that mortality from hunting is largely density-independent, probably because the kill is controlled by a quota system. As the authors have little data on whether gosling mortality is caused by density-dependent or independent factors, they are unable to say what is regulating population size (wolf predation on nests was density-dependent). The authors concluded that the nesting grounds could support additional geese if the conditions recorded during this study prevail; unknown, however, is whether the additional breeding geese would have resulted in a net increase in gosling production. From a wildlife management viewpoint, hunting is certainly the mortality factor most easily manipulated. Thus the authors rightly suggest that the harvest in non-quota areas, such as the Kentucky side of the Ohio River, should be closely monitored.

This monograph contains numerous data: 54 tables, 34 figures, 2 appendices. There are 123 references, the latest of which is unfortunately 1974. The use of the word "predated," referring to what predators do to goose nests and eggs, is undefined in our dictionaries. Although we did not check all the statistics, there is an error in Table 39. The student's t value of 1.78 under "width of eggs" results in $P > 0.05$ instead of the reported $P < 0.05$.

For anyone interested in avian ecology, population biology and/or boreal ecology, this report is interesting and provides an opportunity for the serious investigator to compare the results with concurrent and later work, now in the literature, on other arctic and subarctic nesting geese.—JOHN P. RYDER and C. DAVISON ANKNEY.

THE BIRD WATCHER'S DIGEST. A new bimonthly magazine reprinting popular articles about birds from North American newspapers. Price: $1.50 per copy, or $7.50 per year in the U.S. and territories, $9.00 elsewhere. Pardson Corp., Box 110, Marietta, OH 45750.

BIRD BEHAVIOUR. This is a new journal of avian behavior and behavioral ecology. Two numbers have been published; the original name *The Babbler* having been changed with volume 1, number 2. The price is 75 cents (Australian) an issue. For further information write to J. J. Counsilman, Box 115, Indooroopilly, Queensland, Australia 4068.

IMPACTS OF TRANSMISSION LINES ON BIRDS IN FLIGHT. By Michael L. Avery (ed.). Biological Services Program, U.S. Fish and Wildlife Service, 1978: 151 pp., paper cover. Price not given. Document FWS/OBS-78/48. For sale by Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

AVIAN MORTALITY AT MAN-MADE STRUCTURES: AN ANNOTATED BIBLIOGRAPHY. By Michael L. Avery, Paul F. Springer, and Nancy S. Dailey. Biological Services Program, U.S. Fish and Wildlife Service, 1978:108 pp., paper cover. Price not given. Document FWS/OBS-78/58. Available as stock number 024-010-00472-0 from Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

SPECIES INDEX TO FLORIDA BIRD RECORDS IN AUDUBON FIELD NOTES AND AMERICAN BIRDS, VOLUMES 1–30, 1947–1976. By Margaret Coon Bowman. Special Publication No. 1, Florida Ornithological Society, 1978: 42 pp., paper cover. $3.75.—Available prepaid from the Treasurer, Florida Ornithological Society, 1701 NW 24th Street, Gainesville, FL 32605.

BIRDS OF THE SOUTHWEST PACIFIC. By Ernst Mayr. Charles E. Tuttle Co., Rutland, VT, 1978 (1945): 316 pp., 3 color plates, 16 line drawings, map. $5.75.—This is a reprint of the 1945 book. The first part deals with birds arranged by taxa, in 3 chapters covering seabirds, shorebirds, and land and freshwater birds. The second part contains 7 chapters reviewing the birds by geographical regions, specifically Samoa; Fiji, Tonga, and neighboring islands, New Caledonia and Loyalty Islands; the New Hebrides and Banks Islands; the Santa Cruz Islands; the Solomon Islands, and Micronesia.—R.J.R.

GUIDE TO THE IDENTIFICATION AND AGEING OF HOLARCTIC WADERS. By A. J. Prater, J. H. Marchant and J. Vuorinen. British Trust for Ornithology Field Guide No. 17, British Trust for Ornithology, Tring, Herts., England. 1977. 168 pp., 1 color plate (2 photos), 16 black and white plates (32 photos), 10 figures and numerous text illustrations. £2.50 or $6.00 (U.S.), including postage.—This book is a 'must' for all banders trapping shorebirds in North America and for anyone else who is interested in improving their ability to age shorebirds both in the hand and in the field. Very little useful information has been brought together previously on this topic and the present volume goes a long way towards filling the gap. Much of what has been previously available has either been scattered through the literature in papers or handbooks, often in a form not very suitable for field use, or has dealt with anatomical techniques (e.g., bursa of Fabricius, cranial pneumatisation) which are either inapplicable to live birds or of no value for shorebirds (R. McNeil and J. Burton, Wilson Bull. 84:329–339, 1972), or flight feather characters which appear to be unreliable (J. Burton and R. McNeil, Bird-Banding 47:201–209, 1976). The authors have drawn together information obtained from shorebird collections in various museums, as well as from extensive field observations made by banders throughout the world, to present a series of plumage and structural characters that may in many instances enable the age of the bird to be readily determined, and which may be of use in determining its sex or racial origin.

The book itself covers 117 species of shorebirds breeding in the Palaearctic and Nearctic faunal regions and is thus equally useful to European and North American workers. For each species, information is presented on distribution and migration, identification, ageing, sexing, geographical variation and biometrics. References on particular topics are listed with each species account and there is also a general bibliogra-

phy. European terminology is used throughout the book, and there is a comparison of age codes and moult terminology used by workers in Europe and North America in the introduction for those not familiar with the equivalent terms. The book is quite well produced for field use, being bound in a water-resistant thin card cover, and measuring 15 × 21 cm. The 32 black-and-white photographs by J. B. and S. Bottomley are outstanding, and the book deserves special mention for the two magnificent, exclusive color photographs by Dr. V. Flint of a Spoon-billed Sandpiper and Lesser Sandplover on nests in northeastern USSR.

The book is clearly intended primarily for the use of banders who are able to examine shorebirds in the hand, though it will also be of interest to museum workers and taxonomists for its information on plumage and geographical variation. Much of the information can also be applied in the field and is thus of interest to bird watchers: the photographs are excellent in illustrating many of the ageing features referred to in the text.

The authors are generally aware of the present shortcomings of the book and point out that it is intended very much as a first edition, to which a great deal of further information can be added as it becomes available from the large amount of fieldwork presently being undertaken on shorebirds in Europe, North America and Africa. One area in which the book could do with expansion is on moult processes in 1-year-old birds wintering in tropical areas, where replacement of outer primaries or more complicated moult patterns may be of considerable use in ageing individuals (e.g., Stilt Sandpipers and Solitary Sandpipers in Surinam may moult outer primaries during their first winter (A. L. Spaans, pers. comm.)). Information on brood patches would also be useful. Hopefully, more extensive data on measurements of different races and species will become available, and it would be helpful to include field measurements of live birds as well as those of museum specimens. There are some inaccuracies which should also be weeded out. For instance, North American populations of the Red Knot do not generally suspend their primary moult during migration between North and South America, a misconception that appears to have arisen from the literature. Recent evidence indicates most of the population migrates to the wintering quarters in South America before moulting, though some may moult and perhaps subsequently remain to winter on the U.S. eastern seaboard.

In general, the book is to be highly recommended. For anyone banding shorebirds it is indispensable. I found the book useful and accurate in the field in 1978, and hope that other banders will use the book and contribute information towards the production of a more robust second edition.—R. I. Guy Morrison.

Birds in Peril. By John P. S. Mackenzie, illustrated by Terence Shortt. Houghton Mifflin Co., Boston, 1977: 191 pp. $14.95.—This book is an account of the historical background, current status, and future prospects for existence of most species and subspecies of endangered North American birds. Although the author notes that 32 species or subspecies of continental North American birds are included on the Endangered Species List, such taxa as the Golden-cheeked Warbler, Red-cockaded Woodpecker, Yuma Clapper Rail, and so on, are not included within the 20 species selected for detailed treatment. Before the individual species accounts, which compose the bulk of this volume, there is a very brief section (overly brief, I would say) dealing with a smattering of bird evolution, bird life in North America before European man's

arrival, examples of species which have "shuffled off the mortal coil" (the Dodo, Great Auk, Passenger Pigeon, Heath Hen), and some causes of extinction (DDT, hunting pressure, etc.). The species accounts generally include a short historical sketch of the endangered bird, various facts about the animal's life cycle, some observations on behavior, food habits, and habitat requirements, a discussion of the factors that led to the decline of the species, using population size estimates over the years to document the event, and a section on conservation efforts including the future prospects for avoiding extinction. The text is well written; the style is attractive; the information is accurate; and the illustrations transcend the scientifically accurate depiction of a species to convey the life of a species. They are truly artistic and superb.

I wish to go beyond a mere review of this enjoyable volume, however, to say a bit about books of this sort and extinction in general. Presumably the author wrote this book to inform people about the fact of extinction, its causes (particularly those correlated with human activity), and the efforts being expended to reverse the trend toward extinction of a few species. Many books are available on this subject; many bureaucrats are supported by endangered species; many species are going extinct and little is being done to save them. I wish to consider the following postulate: extinction is part and parcel of evolution; efforts at reversing human-related extinction are futile and likely to remain so; and books of this genre mislead people by implying that effective efforts are underway to reverse the environmentally unsound practices of humans around the world.

We know that extinction has been a part of life since life evolved. As death and life are 2 sides of the same coin, so are extinction and evolution. Dinosaurs, hominids, flying reptiles, and hosts of other vertebrates, invertebrates, plants, bacteria and viruses have entered, or been forced into, the black hole of extinction, whence light in the form of similar genomes never again emanates. "But these are 'natural' extinctions," you say, "not the 'untimely' extinction wrought by man, much like the difference in degree of mourning for a young man murdered as opposed to an old man slipping quietly away." Be it natural or unnatural, however, species do slip into extinction. Ecosystems recover; the biosphere continues.

Humans expend a lot of time, money and effort in evolutionarily killing a species. It takes a lot of DDT to cause Peregrine Falcons to go extinct. It is at least equally as expensive, and perhaps more so, to stay the populational decline of a species toward extinction. Species may well be important, in and of themselves, and perhaps to themselves if they could perceive their existence. But are they important to an ecosystem? Most species probably are not. That is, although a particular ecosystem may be somewhat perturbed by the removal of a species, the overall system will probably continue to exist and function in a basically similar manner. The removal of 30 California Condors from the mountains of southern California would have essentially no effect on the ecosystems that we see there today. The same can be said for the Whooping Crane, Ivory-billed Woodpecker, or any other species included in this book. In most of the world people live at levels that are substandard from the point of view of health, economics, intellectual environment, aesthetics and nutrition. They care little about the extinction of Attwater's Prairie Chicken and, indeed, would probably be glad to eat the last individual of the species.

Extinction is a worldwide phenomenon, and I have to wonder about the advisability of efforts, sometimes heroic and often costly, to save a few species of vertebrates. Do we really think that we are reversing a trend? Habitat destruction (and I feel that this is the greatest threat to the continued existence of all types of species) is progres-

sing largely unabated throughout the world. The possibility of the spectacle of the snail darter's stopping the development of a hydroelectric plant in South America or Africa is inconceivable. Are we, are members of an environmentally aware elite, really doing a service by supporting haphazard, expensive efforts to save a few species, in effect running around trying to plug a few holes in the dike of environmental degradation as crisis after inevitable crisis develops?

A good general does not lose site of the goal. If a few battalions of soldiers must be sacrificed to win the war then it is too bad for them. The war must be won and a callous, dispassionate leader often carries the day. In a sense we are caught up in a war against environmental deterioration. The enemy is, of course, ourselves and the high standard of living maintained in the United States, high consumption societies in general, and the world's burgeoning human population.

I believe that a concerted effort is necessary to win this war. Forget about Whooping Cranes and condors. They are about gone anyway and are expensive to save. All available funds should be channeled into a global conservation master plan to attack environmental degradation on all fronts. Education, scientific data, propaganda, votes, political alliances, active and aware political leaders, personal sacrifices—these are some of the armaments to be used. Humans are really wrecking the environment. Most do not know it; most do not care. It is the duty of the informed to make them care. But I am afraid that we have underestimated the problem, misdirected our efforts, and sat back to lament the plight of the Whooping Crane. All about us is crumbling, and we rush about in a rag-tag manner saving this and saving that, and ultimately saving nothing, and perhaps becoming 1 more endangered species in the process.—MICHAEL A. MARES.

WEIGHTS OF 151 SPECIES OF PENNSYLVANIA BIRDS ANALYZED BY MONTH, AGE, AND SEX. By Mary H. Clench and Robert C. Leberman. Bulletin of Carnegie Museum of Natural History, No. 5, 1978:87 pp., $5.00.

BREEDING BIRDS OF ELEPHANT BUTTE MARSH. By Charles A. Hundertmark. New Mexico Ornithological Society Publication No. 5, 1978: 17 pp., 1 map, $1.35.

REVISED CHECK-LIST OF THE BIRDS OF NEW MEXICO. By John P. Hubbard. New Mexico Ornithological Society Publication No. 6, 1978: 110 pp., 2 maps, $2.50.—Order from Secretary, New Mexico Ornithological Society, 223 Morningside Drive, N.E., Albuquerque, NM 87108.