

RECENT LITERATURE

Edited by Jerome A. Jackson

BANDING AND LONGEVITY

(see 1, 2)

MIGRATION, ORIENTATION, AND HOMING

(see 20, 24, 30)

POPULATION DYNAMICS

(see also 22, 30)

1. Demographic characteristics of a Maine woodcock population and effects of habitat management. T. J. Dwyer, G. F. Sepik, E. L. Derleth, and D. G. McAuley. 1988. U.S. Fish Wildl. Serv. Res. Rep. 4:29 pp. (available from: Publications Unit, U.S. Fish and Wildlife Service, Room 148, Matomic Building, Washington, D.C. 20240)—This monograph is the product of a 10-yr study on Moosehorn National Wildlife Refuge in northeastern Maine. Of the 1884 American Woodcock (*Scolopax minor*) captured and banded, young males represented the greatest proportion. Courtship began in late March each year, with older males dominating singing grounds during April, and first-year males during May. Summer estimates ranged from 19–25 birds/100 ha on the study area. The daily survival rate of woodcock chicks in a brood was 97.1%, and 58.8% of chicks survived the 18-d interval between hatching and fledging. Singing-male surveys were found to not reflect the actual number of males in the population. Woodcock showed a preference for use of new clearcuts for courtship, although suitability of clearcuts was shortlived as a result of rapid regrowth of vegetation.—Jerome A. Jackson.

2. Regional decrease in the number of White Storks (*Ciconia c. ciconia*) in relation to food resources. J. H. Dallinga and S. Schoenmakers. 1987. *Colon. Waterbirds* 10:167–177.—Data on the distribution and relative abundance of White Storks in Europe date from ancient times, banding data from the beginning of the twentieth century, and census data from the 1930s. These data suggest a long-term downward trend in stork populations, and circumstantial evidence indicates that deteriorating food supplies in wintering areas of Africa are a major causal factor. The western European population winters in western Africa, and the larger eastern population in eastern and southern Africa.

Short-term population fluctuations also seem related to variations in winter food supplies. The authors' analysis suggests a positive affect from locust and African army worm plagues on stork breeding populations, and shows a positive correlation between rainfall (a measure of non-migratory insect populations) and stork numbers. The abundance of winter food also correlates positively with early arrival at the breeding grounds and breeding success.

The authors suggest that decreases in western stork populations after 1960 are related to drought accompanied by overgrazing, and control projects on locusts in Africa. Long-term decreases may be due to climatic changes. The factors causing long-term decreases in the eastern population are less clear. Regional population fluctuations in Europe appear to be related to land use changes in the breeding localities, with the impact favorable in some areas, negative in others. Continued grassland exploitation may cause further population decreases and threaten the White Stork in much of its breeding range. The authors recommend preserving and managing the best European breeding habitats that still exist and reconstructing habitat in areas where it has been eliminated. Even these policies may be insufficient, for the western population at least, because of the impact of deteriorating feeding conditions in African wintering areas.—William E. Davis, Jr.

3. Changes in gull numbers over 25 years and notes on other birds of the Otaki-Oahu coast. R. G. Powlesland and H. A. Robertson. 1987. *Notornis* 34:327–338.—Powlesland and Robertson compared surveys made in 1961 and 1986 between the Otaki and Oahu river estuaries, a distance of 11 km, on the coast of North Island, New Zealand. Black-backed Gulls (*Larus dominicanus*) more than doubled, whereas Red-billed Gulls (*L. novae-hollandiae*) decreased threefold. Analysis is complicated by shifts in nesting areas in the

Black-backed Gull and loss of a major colony of Red-bills, and by the small area surveyed, so that no firm conclusions are apparent. This is unfortunate because a population explosion of large gulls of several species has been well documented in Europe and North America in the past half-century, and it is of interest to know whether similar changes are occurring in the southern hemisphere.—J. R. Jehl, Jr.

NESTING AND REPRODUCTION

(see also 1, 15, 16, 24, 31, 33, 39)

4. **Connecticut Piping Plovers—1987.** F. Sibley and D. Varza. *Conn. Warbler* 8: 46–51.—This paper concerns Piping Plover (*Charadrius melodus*) work done in Connecticut in 1987, and compares it to results from previous years. Twenty-four nesting pairs were found at eight sites. Each nest was followed to fledging or loss of clutch. Total population size was estimated to be over 50, which was higher than estimates of previous years. This increase was not necessarily due to a larger population but, more likely, accurate identification of banded renesting pairs. Site fidelity was recognized in recaptured adults; of six birds, four were found at the same sites, while two were no more than 1.6 km away. Nest initiation was in late April and early May. Twenty-nine nest attempts from 24 pairs resulted in 14 failed nests and 15 successful. Thirty-one chicks were fledged. Total fledging rate was 1.3 chicks per pair for all pairs. Egg loss was 37 out of 110 laid. Chick loss was about two per clutch. Predators seriously reduced nest success; control methods are greatly in need. Beach-goers and beach-sweepers were also serious threats. Further study of Piping Plovers in Connecticut is essential. To provide better management, more data should be collected on recruitment, recolonization, mortality rates, and availability of nesting sites.—Robin J. Denmore.

5. **Nest scrape characteristics of Piping Plovers and Least Terns in Nebraska.** J. Duccy. 1988. *Nebr. Bird Rev.* 56:42–44.—Data were recorded from Piping Plover (*Charadrius melodus*) and Least Tern (*Sterna antillarum*) nest scrapes along the Missouri, South Platte, Middle Loup, and Niobrara rivers. Of 142 plover nest scrapes, 70% had no vegetation within one meter. Of 116 tern nests, 69% lacked vegetation around the nest. The percentages of nests with woody or plant debris associated with plover and tern nests were not significantly different (86 vs. 72 respectively). However, the percentages of nests with fragments (pebbles and twigs) lining the scrapes were different (79 vs. 15 respectively). Pebbles were more prevalent around plover nests while terns had about the same frequency of either pebbles or twigs.—D. J. Ingold.

6. **The breeding biology of the Dunnock *Prunella modularis modularis* (Linnaeus, 1758) in the Ojcow National Park (South Poland).** P. Narodowym. 1988. *Acta Zool. Cracov.* 31:115–166.—The number of Dunnocks in ONP have been declining due to loss of coniferous trees because of industrial air pollution. The breeding season is from March–August. Eggs are generally laid in late May to early July. The average clutch size is 5.14. The female does most of the incubation, with the male contributing very little. Incubation is 12–13 d. Both adults feed the young. Growth weights of nestlings are given. The nestling period is 11 days. Nest helpers were present at two of the 12 nests observed. Breeding success was 1.13 chicks per nest built.—L. A. Willimont.

7. **Breeding biology of the Dune Lark.** H. J. Boyer. 1988. *Ostrich* 59:30–37.—Five pairs of Dune Larks (*Mirafra erythrochlamys*) were studied in the Namib Desert of Africa from April 1985 to December 1986. Of 13 clutches of eggs, seven were laid in January and February, while none occurred during the months May–July and October–December. Nests were built on the ground and were usually domed (12 of 13). The female builds the nest, incubates eggs, and broods young, but both sexes feed young. Eggs hatched after 13–14 d of incubation; young fledged after 12–14 d; parents cared for fledglings about one month. Overall productivity for 5 pairs for one season was one chick fledged per pair, although only 2 pairs fledged young. Predation appeared to be the major cause of loss of eggs and young. Eggs, growth and development of nestlings, and nest dimensions are also described.—Malcolm F. Hodges, Jr.

8. Nesting box entrance hole size preferred by Mountain Bluebirds. D. Hagerman. 1988. *Sialia* 10:83-86.—One hundred nest boxes for Mountain Bluebirds (*Sialia currucoides*) were placed in pairs at 50 sites near Reno, Nevada, using boxes with entrance openings of both 3.81 cm (1.5 in) and 3.97 cm (1.56 in) at each site. Boxes were placed in three groups: (1) 18 pairs on an existing bluebird trail at locations which were used successfully by bluebirds during the previous year, (2) 12 pairs on an existing bluebird trail at locations which were not used or used unsuccessfully during the previous year, and (3) 20 pairs at new locations along the existing trail. Thirty-seven of the 50 sets of paired boxes were used by nesting Mountain Bluebirds. Twenty-one of these were used twice. Of the 58 total choices made by bluebirds, they nested in boxes with the 3.97 cm entrance 72% of the time. Bluebirds using boxes at sites 1 and 2 showed a 61% preference for the 3.97 cm entrance hole. Bluebirds using boxes at site 3 showed an 88% preference for the 3.97 cm entrance hole.—D. J. Ingold.

9. Influence of the Mediterranean climate on the reproduction of the Black Swift (*Apus apus*). [Influence du climat méditerranéen sur la reproduction du Martinet noir (*Apus apus*)]. G. Gory. 1987. *Oiseau Rev. Fr. Ornithol.* 57:69-84. (French, English summary).—Six years of observations were conducted in a Black Swift colony at the Nîmes Museum of Natural History. Reproductive success was most negatively affected by a strong wind from the north, the "Mistral." If this wind persists, it can cause delayed or even discontinued egg-laying. Additionally, growth rates of chicks are affected, sometimes causing death in the third chick. High temperatures can also cause mortality in chicks. Rain has little effect on nest success.—Robin J. Densmore.

10. Egg-flotation to estimate incubation stage of Ring-necked Pheasants. J. P. Carroll. 1988. *Wildl. Soc. Bull.* 16:327-329.—Embryo aging, candling, egg weight, and specific gravity are methods used to estimate the stage of incubation, but not all are appropriate for field use. Westerskov (1950) developed an estimation technique based on the degree of flotation in the water for artificially incubated Ring-necked Pheasant (*Phasianus colchicus*) eggs. This study applied the Westerskov method to practical use in the field. Results included 29 age estimates from 20 clutches. Accuracy was not greater than ± 3 days. Precision may be limited by the use of only six prediction categories for stages of incubation. Testing more eggs per clutch and resampling each clutch in later stages could help reduce error caused by intraclutch differences. Measuring the height that the egg rises above water level during late incubation may also improve accuracy.—Robin J. Densmore.

BEHAVIOR

(see also 31, 44)

11. Social preening in Soras and in Virginia Rails. G. Kaufmann. 1988. *Loon* 60: 59-63.—Five pairs of captive Soras (*Porzana carolina*) and 5 pairs of captive Virginia Rails (*Rallus limicola*) were observed as juveniles and adults to obtain information about their preening behavior. Preening was categorized as self preening (autopreening) or preening between individuals (allopreening). In juveniles of both species, allopreening was aggressive often resulting in feather loss. Adult Soras and Virginia Rails only allopreened their mates. Female Soras allopreened and autopreened more frequently than did their mates, perhaps to reduce male aggressiveness. However, in Virginia Rails, males allopreened and autopreened more frequently than did their mates. Preening bouts between members of a pair in Virginia Rails were more prolonged than in Soras. Bowing, facing the mate, and autopreening often preceded allopreening in both species.—D. J. Ingold.

ECOLOGY

(see also 9, 15, 18, 19, 21, 22, 23, 27, 30, 33, 34, 42, 43)

12. Predation on seabirds by sea otters. M. L. Riedman and J. A. Estes. 1988. *Can. J. Zool.* 66:1396-1402.—It turns out that if you were one of these who thought that sea otters (*Enhydra lutris*) only ate such foods as sea urchins, crabs, and various molluscs like abalone, you were wrong. Although predation on seabirds is relatively rare in sea otters, Riedman and Estes document 20 instances in California and more in Alaska. The most

commonly eaten species in California was the Western Grebe (*Aechmophorus occidentalis*). Six of the incidents in California occurred at the same site and probably involved the same male otter; the other incidents, too, were clustered in space or time. Thus, preying on seabirds may be a learned behavior restricted to relatively few individual otters. The basic predatory technique is for the sea otter to dive and grab the bird from underwater as it floats on the surface. It will be interesting to see if the behavior spreads and becomes more common over time.—A. John Gatz, Jr.

WILDLIFE MANAGEMENT AND ECONOMIC ORNITHOLOGY

(see also 1, 4, 8, 10, 15, 17, 18, 24, 42)

13. Waterfowling American style. [Okhota na utok v SShA.] O. L'vov. 1987. Okhota okhot. khoz. 8:27–29. (Russian.)—[What this author has emphasized for his Soviet readers may highlight differences from Soviet practices.] The abundance of clubs, magazines, art competitions, clothing, equipment, and outfitters devoted exclusively to waterfowl hunting reflects the seriousness with which Americans approach this sport. Camouflage is available for everything, including the hunter's face and hands. Americans think that the more decoys one sets out, the better, and prefer the naturally-posed, keeled, plastic, larger-than-life versions. Mallards should predominate, and hens should be in the leading group of the decoy arrangement. Four general placements are used: the fishhook, the diamond, the wedge, and (for river ducks only) random. To add to the illusion of a safe, undisturbed place to land, hunters sometimes also set out equally naturalistic, tranquilly posed decoys of herons, gulls, or crows. The hand-painted wooden decoy is now reserved for interior decoration; journals often contain details instructions for making your own.

Another essential item is a duck or goose call. Those made of plastic are cheaper, lighter, easier to clean, but hunters prefer the nicer appearance and more realistic sound of wooden calls. The Scotch Company produces hand (instead of mouth) calls for cold-weather use. Tape-recorded calls are marketed too, but it's considered unsporting to use them. Bird dogs are as useful to American as to Soviet waterfowlers; popular USA breeds include the American and Irish spaniel and the Labrador retriever that are not well known in the USSR.

In sum, American waterfowl hunters demand high quality equipment and seem willing to pay a few dollars more for it so as to achieve both efficiency and enjoyment in their waterfowling experience.—Elizabeth C. Anderson.

14. Waterfowl mortality surveys on the Southern High Plains of Texas. A. M. Fedynich and R. D. Godfrey, Jr. 1988. Southwest. Nat. 33:185–191.—Fifteen playa lakes were searched for waterfowl carcasses during the winter 1985–1986 to obtain information on the extent and causes of waterfowl mortality. One-hundred-forty-four carcasses, representing 8 species were collected from 13 of the 15 lakes surveyed. Mallards (*Anas platyrhynchos*), accounted for 45% of the carcasses, followed by American Wigeons (*A. americana*, 22%), Green-winged Teal (*A. crecca*, 20%), and Northern Pintails (*A. acuta*, 7%). Of the Mallards and American Wigeons collected, males were significantly more numerous than females ($P < 0.05$). Significantly more adult Mallards were collected than juveniles ($P < 0.05$). However, similar sex and age classes were detected among these species from birds live-trapped in 1987, suggesting that mortality was not sex or age specific. Necropsies of 21 birds suggested that the major cause of non-hunting mortality was avian cholera (found in 10 of 12 birds). Waterfowl mortality inflicted by this disease is highly variable among years, and was not an important factor during the winter of 1985–1986 on the 15 playa lakes surveyed.—D. J. Ingold.

CONSERVATION AND ENVIRONMENTAL QUALITY

(see also 2, 6, 22, 23, 24, 29, 31, 33, 42)

15. Monitoring the endangered Abbott's Booby on Christmas Island 1983–1986. R. Reville, J. Tranter, and H. Yorkston. 1987. Austral. Natl. Parks Wildl. Serv. Occ. Pap. No. 11.—Christmas Island is the only remaining breeding area for Abbott's Booby (*Sula abbotti*). The population is currently estimated at approximately 2000 breeding pairs. Phos-

phate mining began on Christmas Island in 1895. In the 1960s large scale clearing began with about one-third of the native habitat being cleared. The impact threatened the species and it was listed as endangered. The species nests only on the crowns of trees in the native forest, has a slow reproductive rate and strong site fidelity making it vulnerable to extinction if clearing continues.

Through conservation efforts the Abbott's Booby Monitoring Program began in 1983 "to monitor the breeding success of Abbott's Booby to permit continual review of the protection of the bird and the continuation of mining." More than 600 nest sites were monitored over the first 3 years of a 6-year study by direct observation and time-lapse cameras.

Nest site areas near the phosphate mines are being abandoned at a higher rate than areas farther away from the mines presumably because of lower breeding success in these areas. Increased exposure to the southeast trade winds because of clearing may cause the lower breeding success.

Management recommendations are given. The future survival of this species is dependent on conservation and rehabilitation efforts.—L. A. Willimont.

16. Common Loon reproduction and chick feeding on acidified lakes in the Adirondack Park, New York. K. E. Parker. 1988. *Can. J. Zool.* 66:804-810.—Common loons (*Gavia immer*) are piscivorous. Acid rain has completely destroyed the fish populations in some Adirondack lakes and put an end to fish reproduction in other lakes. This combination of facts does not bode well for the loons. The good news is that in this study of breeding loons at 15 lakes, the loons managed to cope—there was no significant association between reproductive success and the pH of the lake where breeding occurred. Loons breeding on acidified, fishless lakes did such things as feed their chicks fish from nearby, less acidified lakes or shift to acid-tolerant aquatic insects as an alternate food source for their chicks. This latter strategy caused the adults to spend inordinate amounts of time gathering the small food items and left the chicks begging constantly, but it worked at least through fledging. Loons breeding on lakes where fish reproduction has ceased, fed their chicks the large adult fish that were available despite their inappropriate size. The bad news is that, just because the loons studied by Parker were managing so far, does not mean that they can indefinitely. Parker notes a long term downward trend in the numbers of loons throughout the northern United States, and one cannot help but imagine that continued acidification of lakes will ultimately extract its toll from loons.—A. John Gatz, Jr.

17. Status of and conservation priorities for the world's stork species. C. S. Luthin. 1987. *Colon. Waterbirds* 10:181-202.—Of the 19 species of Ciconiidae, plus the Shoebill (*Balaeniceps rex*) considered in this report, seven are considered "threatened." The Greater Adjutant (*Leptoptilos dubius*) is considered Endangered (in danger of extinction), the Oriental White Stork (*Ciconia boyciana*), Black Stork (*C. nigra*), Lesser Adjutant (*L. javanicus*), and Milky Stork (*Mycteria cinerea*) are Vulnerable (likely to become Endangered), and Storm's Stork (*C. stormi*) and Shoebill are in other categories of threatened species. Nine additional species are listed as threatened in some regions. The author considers the difficulties and complexities involved in determining the status of stork species, and problems with developing conservation strategies for species which migrate or make other seasonal movements in response to dry and wet season changes. Conservation efforts are most effective on a regional level because of problems associated with cultural and socio-economic differences among countries.

The bulk of the article consists of regional summaries of the Americas, Europe/Western Palearctic, Africa, South and Southeast Asia, and East Asia. These summaries include individual accounts of 14 species, each threatened globally or regionally. Two threatened African species are discussed together. Species accounts include distribution, population dynamics, conservation problems, current conservation action, and recommendations.

The threat to survival of stork species is greatest in Southeast Asia where most wetlands have been altered by human use. However, wetlands conversion on a large scale in Latin America is underway and will negatively impact stork populations. One of the major obstacles to conservation action in some of the more severely threatened species is a lack of information on their distribution and ecology. Luthin concludes by suggesting that conservation work should begin long before a species is threatened, and with the observation that conservation

action on storks will ultimately benefit all wetlands species. This paper cites more than 100 references, including many unpublished reports.—William E. Davis, Jr.

18. Mapping of Wood Stork foraging habitat with satellite data. M. C. Coulter, A. L. Bryan, Jr., H. E. Mackey, Jr., J. R. Jensen, and M. E. Hodgson. 1987. *Colon. Waterbirds* 10:178-180.—The authors report on preliminary testing of satellite imagery techniques as a method for locating Wood Stork (*Mycteria americana*) foraging habitat. Storks were followed in fixed-wing aircraft from their nesting colony to foraging sites. Subsequently, ground crews measured habitat characteristics at each foraging site. Thematic mapper (TM) imagery, capable of providing spatial resolution to 30 m², was used to map the area and predict appropriate foraging habitat and locate the specific foraging sites previously identified. Of 39 foraging sites near the Birdsville Wood Stork colony in east-central Georgia, 37 (95%) were correctly mapped as appropriate foraging habitat. The two sites missed were a small pond and a drainage ditch in agricultural fields which were too small to be detected by TM imagery. In eight additional cases, all in hardwood and cypress swamps, the openings in the forest canopy through which the storks had descended were too small to identify by TM imagery, and thus, although classified as part of the appropriate foraging habitat, they were not specifically identified. If included in the sites missed category, the accuracy was reduced to 29 of 39 (74%). These results are encouraging, and suggest that TM imagery techniques may be suitable for habitat location, especially when investigating large areas or seasonal changes in habitat.—William E. Davis, Jr.

PARASITES AND DISEASES

(see 14, 35)

PHYSIOLOGY

19. The effect of plumage color on the thermoregulatory abilities of Lesser Snow Goose goslings. B. A. Beasley and C. D. Ankney. 1988. *Can. J. Zool.* 66:1352-1358.—The Lesser Snow Goose (*Chen caerulescens caerulescens*) has two color phases: "blue" and "snow." This paper tests whether or not these color phases have adaptive significance in relation to thermoregulation. Theoretically, one might expect differences, e.g., darker plumage should absorb more shortwave solar radiation than lighter plumage so blues should thermoregulate more easily than whites on cold, sunny days. Conversely, on cold, windy days whites might be expected to be at an advantage because radiant heat would be transmitted more deeply without the pigment layer present in the blues, and thus whites would be less subject to heat loss from superficial layers in the wind. However, when Beasley and Ankney used doubly labeled water to test for differences in daily energy expenditures between the color phases, they found no significant differences. Unfortunately, the range of weather conditions that occurred during the experiment was not ideal for identifying the types of differences hypothesized, so it is premature to conclude that energetic efficiency is not an important selective force in the evolution of the color phases of Lesser Snow Geese.—A. John Gatz, Jr.

MORPHOLOGY AND ANATOMY

(see 36)

PLUMAGES AND MOLTS

(see also 19, 36)

20. Molt, weight and biometrical data for some Palearctic passerine migrants in Zambia. K.-H. Loske and W. Lederer. 1988. *Ostrich* 59:1-7.—The authors netted 511 birds of nine species from February through March 1985 in central Zambia. Of these, 195 were measured and weighed, and their molt stage scored. Most discussion concerns Bank Swallow (*Riparia riparia*), Barn Swallow (*Hirundo rustica*), European Sedge Warbler (*Acrocephalus schoenobaenus*), and Willow Warbler (*Phylloscopus trochilus*).—Malcolm F. Hodges, Jr.

ZOOGEOGRAPHY AND DISTRIBUTION

(see also 38, 46, 47)

21. Breeding birds of an old-growth spruce-fir forest. D. Hallock. 1988. *Colo. Field Ornithol. J.* 22:44-55.—Although the age of the “old-growth spruce-fir forest” studied by Hallock is not stated, he defines old growth forests as ones which “have been undisturbed for several hundred years.” That his was such a forest is further implied by its presence within the Indian Peaks Wilderness Area, Roosevelt National Forest, Colorado, and by his statement that the study area was bounded on the south by an “early successional forest resulting from a burn occurring around 1900.” With the status of the forest thus “defined,” this is a study that should be scrutinized by those of us concerned by the continued loss of old growth forests.

Ten breeding bird censuses were conducted from late May through late July 1987 and 21 breeding species were found. The breeding avifauna was dominated by tree foliage and ground feeders and nesters. Six of these were cavity nesters. Comparison with other old-growth forest studies and with mature forest studies led Hallock to conclude that old-growth forests have a more complex breeding bird community which includes early and late seral stage species as well as habitat specialists. Recognition of such complexity—and that there is indeed a difference between a “mature”—or even, as some foresters say, an “over-mature”—forest and one that is truly a climax forest. Already in the southeastern United States some land managers are referring to 60-yr-old pine plantations as “old growth.”

In this particular study, I would like to have seen some comment on fire history and a specific study site that included old growth boundaries on all sides. I hope additional years of study and further characterization of the habitat are planned.—Jerome A. Jackson.

22. Some bird population changes in Michigan: 1900 to 1965. R. A. Wolinski. *Jack-Pine Warbler* 66:59-69.—This useful summary and discussion of changes in Michigan's avifauna since the turn of the century compares the status of Michigan birds as given in Barrows (1912. *Michigan Bird Life*. Mich. Agric. College Special Bull.) with 1965 status and discusses changes noted. Eight species listed by Barrows as in imminent danger of extinction in Michigan (Great Egret, *Casmerodius albus*; Greater Prairie Chicken, *Tympanuchus cupido*; Sandhill Crane, *Grus canadensis*; Whimbrel, *Numenius phaeopus*; Upland Sandpiper, *Bartramia longicauda*; Red Knot, *Calidris canutus*; Pileated Woodpecker, *Dryocopus pileatus*; and Common Raven, *Corvus corax*) had changed little in status by 1965, although factors influencing them have changed (e.g., pollution and habitat destruction have replaced plume hunting). The Greater Prairie-Chicken has since been extirpated. Common Barn-Owls (*Tyto alba*) were once rare in Michigan, increased in numbers and distribution, then declined, all perhaps because of habitat changes. Selected species with currently changing (mostly expanding) distributions that are discussed include: Northern Mockingbird, *Mimus polyglottos*; Tufted Titmouse, *Parus bicolor*; Northern Cardinal, *Cardinalis cardinalis*; Red-bellied Woodpecker, *Melanerpes carolinus*; Dickcissel, *Spiza americana*, and Carolina Wren, *Thryothorus ludovicianus*).—Jerome A. Jackson.

23. Bird population changes in Michigan, 1966-1985. R. J. Adams, Jr., G. A. McPeck, and D. C. Evers. 1988. *Jack-Pine Warbler* 66:71-86.—During the past 20 yr, most species of waterfowl, rails, bitterns, the Black Tern (*Chlidonias niger*), and Marsh Wren (*Cistothorus palustris*) have suffered declines in Michigan. Habitat losses, including a 70% decline in wetlands since presettlement times, are suggested as the cause for these declines. Greater Prairie-Chicken (*Tympanuchus cupido*), Common Barn-Owl (*Tyto alba*), and Lark Sparrow (*Chondestes grammacus*) were apparently extirpated during the period as a result of losses in grassland habitats. Other grassland species that appear to have declined include: Short-eared Owl, *Asio flammeus*; Loggerhead Shrike, *Lanius ludovicianus*; Northern Harrier, *Circus cyaneus*; Sedge Wren, *Cistothorus platensis*; Dickcissel, *Spiza americana*; several grassland sparrows, and meadowlarks. Woodland species that have declined include the Red-shouldered Hawk (*Buteo lineatus*) and Wood Thrush (*Hylocichla mustelina*). Species of agricultural areas and second growth forest have increased. Discussion touches on climatological factors and pesticide problems as well as habitat changes.—Jerome A. Jackson.

24. The birds of the Bialowieza Forest. P. P. Białowieskiej. 1988. *Acta Zool. Cracov.* 31:65-114.—The Bialowieza Forest lies on the border of Poland and the U.S.S.R. Past literature on the birds of the forest is reviewed. The present survey is based on observations from 1950-1981 and supplemented with data from the literature. A total of 226 species are listed. Scientific names, arrival and departure dates for migrants, and some breeding information are given. The effects of human interference are discussed and conservation suggestions given.—L. A. Willimont.

25. First specimen of Acorn Woodpecker from Utah. C. LaRue. 1987. *Utah Birds* 3:56-57.—A specimen of an adult Acorn Woodpecker (*Melanerpes formicivorus*) collected during January in San Juan Co., Utah, has been deposited at the Utah Museum of Natural History at the University of Utah. This species had only recently (1985) been documented in Utah.—Andrea Dinep.

26. The recolonization of the Isle of May by Common and Arctic Terns. S. Wanless. 1988. *Scott. Birds* 15:1-8.—The Isle of May served as nesting grounds for Common (*Sterna hirundo*), Arctic (*S. paradisaea*), Sandwich (*S. sandwicensis*), and Roseate (*S. dougallii*) terns during the first half of the 19th century, but was abandoned around 1850. Between the years 1921 and 1957 the island was again colonized, the peak year being 1946. Between 1958 and 1979 the island was virtually void of terns. Factors possibly responsible for reproductive failure include: predation by Herring (*Larus argentatus*) and Lesser Black-backed (*L. fuscus*) gulls, decline in an important prey fish, changes in vegetation, and inclement weather. Common and Arctic terns were re-established by 1982 and 1984, respectively.—Robin J. Densmore.

27. Records of the African Crane *Crex egregia* in western southern Africa. G. Avery, R. K. Brooke, and J. Komen. 1988. *Ostrich* 59:25-29.—Records of this species for areas west of its usual range in southern Africa are reviewed. These records are believed to be of birds which were blown out of range by strong easterly winds. The authors propose that the African Crane is an "unobtrusive resident or nomad" to eastern southern Africa, contrary to Keith and Taylor (1986. Pp. 98-100, in E. K. Urban, C. H. Fry, and S. Keith [eds.]. *Birds of Africa*. Academic Press, London.), who describe the species as a breeding visitor to the area. Its range in southern Africa is shown to correlate closely with precipitation.—Malcolm F. Hodges, Jr.

28. The distribution of Stanley's and Ludwig's Bustards in southern Africa: a review. J. J. Herholdt. 1988. *Ostrich* 59:8-13.—Because of the difficulty in distinguishing between Stanley's (*Neotis denhami*) and Ludwig's (*N. ludwigii*) bustards in the field, the author has reviewed all records for southern Africa. The former occurs in drier western portions of the subcontinent, and the latter in warmer temperate eastern areas. Stanley's appears to be more common than Ludwig's Bustard.—Malcolm F. Hodges, Jr.

29. A review of the Birds of Christmas Island, Indian Ocean. T. Stokes. 1988. *Austral. Natl. Parks Wildl. Serv. Occ. Pap. No. 16*.—Stokes lists and describes 21 resident species of birds, 28 species of migrant waders, and 42 vagrants. The influences of people and forest clearing on the breeding birds are described. Introduction of rats and cats on the island has not created a problem to date. Conservation priorities are given.—L. A. Willimont.

30. Glossy Ibis start to over-winter. [Karavaika ostaetsia zimovat'.] A. N. Kokhlov and N. L. Zabolotnyi. 1988. *Priroda (Mosc.)* 6:59. (Russian).—The Glossy Ibis (*Plegadis falcinellus*) is listed in the Red Data Book for the USSR's Russian Soviet Federative Socialist Republic, where its nesting population was no more than 6000 birds in 1983. This species migrates to Africa, India, and Mesopotamia in September and October, when it is still warm in the USSR. But observations in Krasnodar Region since the early 1970s show small numbers of birds (flocks of about a dozen) lingering into late December and eventually weathering -10 C temperatures to spend the entire winter there. The mass of migrants is returning sooner, too: previously expected in early April, they now are appearing in early to mid March, despite snowfall as late as the second half of April (as in 1987). Thus, in areas with considerable human activity, these ibis are displaying the beginnings of sedentaryness.—Elizabeth C. Anderson.

31. The White-tailed Eagle. [Orlan-belokhvost.] V. P. Belik. 1988. *Priroda* (Mosc.) 5:57-59. (Russian.)—The White-tailed Eagle (*Haliaeetus albicilla*) was found throughout most of the USSR until the 1950s, when its range and population began to decrease for several reasons. One was the extermination campaign against predatory birds, which were seen as causing unacceptable losses to human hunting and fishing. Another was the use of DDT, which lowered eagle fertility and survival. Prey species declined then too, and human activity in the eagle's nesting range increased the disturbance factor. Today, partly as a result of being listed in the USSR's Red Data Book, the White-tailed Eagle is beginning a come-back along the lower reaches of southern Soviet rivers.

In the Volga's delta there are about 200 pairs, i.e., 3-6 nests per 100 km², and along the Don the species' presence has been quickly increasing since at least 1979, when a large (for eagles) influx of birds came into the Lower Don basin to nest. These initially were young pairs breeding for the first time. There now are at least 10 pairs along the 150-km stretch between the delta and the Tsimlyansk Reservoir, or an average of one pair per 307 km² of floodplain. Some eagles that nest elsewhere spend the winter on the lower reaches of the Don, where they find plentiful supplies of fish (from fish farms) as well as ducks, hares, herons—this large raptor will take almost any prey that flies, swims in or on water, or runs on dry land.

The White-tailed Eagles in the Lower Don often nest in colonies of herons, cormorants, or rooks, who frequently must decamp and set up a new colony. The eagles (particularly first-time breeders) may have started this habit to escape human attention: their smaller nests are less easy to find and to destroy in a dense grouping of colonial birds. There is also unusual interaction between the Don population of eagles and Ospreys (*Pandion haliaetus*). The eagles dominate the smaller raptors, harrying them to drop fish they are carrying or building nests on top of Osprey nests and so evicting them from their nesting range. This may be leading to a decline in Osprey numbers.

The White-tailed Eagle's resurgence in the Don River basin seems to be attributable to hiding its nests in heron colonies, to adult birds hunting from so high that they do not draw attention to themselves, and to immature birds being largely absent from the delta during the nesting season. The most important reasons are the widespread development of pond fisheries here, and a new attitude on the part of humans who no longer regard the eagles merely as destroyers of fish and game.—Elizabeth C. Anderson.

32. Considerations on the presence of the Griffon Vulture (*Gyps fulvus*) in the Julian Alps. F. Genero. 1988. *Larus* 38-39:137-144.—Seven years of observations were conducted in the Eastern Italian and Yugoslavian Alps. Griffons returned to the same roosting sites each summer, although they had not previously been regularly documented in the region. Theories are suggested for their intriguing presence in a new area.—Robin J. Densmore.

33. The Golden Eagle (*Aquila chrysaetos chrysaetos*) in south-eastern Yugoslavia. B. Grubac. 1988. *Larus* 38-39:95-135.—Though the basic biology of Golden Eagles has been well-studied, this is the first extensive research in southeastern Yugoslavia. For 10 years, data were collected on distribution, habitat, diet, nesting, and conservation problems. The area is estimated to host 70 nesting pairs. Preferred habitat is rocky mountain and hilly areas. All nests were found on inaccessible cliffs, from 250 to 1800 m above sea level. Prey, based on capture sightings and remains in nests, consisted of 61% reptiles, predominantly tortoises (*Testudo* sp.), 36% mammals, and 3% birds. Golden Eagles are protected in Yugoslavia, but the extent of this protection is inadequate because their persecution continues.—Robin J. Densmore.

34. The birds of Umfolozi Game Reserve: new distribution and breeding records. W. Howells. 1987. *Lammergeyer* 38:32-34.—The data presented are supplementary to previously published checklists of Umfolozi which included information on distribution, habitat, and status. Twelve species are discussed.—Robin J. Densmore.

35. Occurrence of Ross' Geese (*Chen rossii*) detected from avian cholera losses. R. G. Stutheit. 1988. *Nebr. Bird Rev.* 56:44-46.—In the spring and winter of 1975-1986 counts of waterfowl carcasses in the Rainwater Basins area of southcentral Nebraska included

two Ross' Geese. From the winter of 1986 through the spring of 1988, 33 Ross' Geese were collected, suggesting a substantial increase in its numbers. This increase coincided with an increase in the number of Snow Geese (*Chen caerulescens*) in the region during the previous 7 yr.—D. J. Ingold.

SYSTEMATICS AND PALEONTOLOGY

(see also 45)

36. Field identification of North American accipiters. J. P. Smith. 1987. Utah Birds 3:37–55.—From the literature, Smith has collected information on nuances in relative size, flight, shape and proportion, tail shape, plumage, head size, and position of wing; and on details such as eye size and position, and structure of tarsi and toes.—Andrea Dinep.

37. Hawks and owls of the world: a distributional and taxonomic list. D. Amadon and J. Bull, with the genus *Otus* by J. T. Marshall and B. F. King. 1988. Proc. West. Found. Vertebr. Zool. 3(4).—This monograph lists 292 species in the order Falconiformes and 162 species in the order Strigiformes. Scientific name, common name, distribution, and habitat preference are given.—L. A. Willimont.

38. Late Holocene fossil vertebrates from Burma Quarry, Antigua, Lesser Antilles. G. K. Pregill, D. W. Steadman, S. L. Olson, and F. V. Grady. 1988. Smithsonian Contrib. Zool. No. 463, 27 pp.—The fossils described were found in sediment that filled a fissure in limestone on this island in the northern Lesser Antilles. Radiocarbon dates from the sediment range from 2560 ± 70 to 4300 ± 150 yr before present. The authors suggest that most of the vertebrate fossils accumulated as the prey remains of owls such as the Burrowing Owl (*Athene cunicularia*; the most commonly represented bird fossil), or the Common Barn-Owl (*Tyto alba*; not represented in the fossil material). Other bird species represented included: Audubon's Shearwater (*Puffinus lherminieri*); Yellow-breasted Crake (*Porzana flaviventer*); Zenaida Dove (*Zenaida aurita*); Common Ground-Dove (*Columbina passerina*); Antillean Crested Hummingbird (*Orthorhynchus cristatus*); Pearly-eyed Thrasher (*Margarops fuscatus*); Trembler (*Cinclocerthia ruficauda*); and Lesser Antillean Bullfinch (*Loxigilla noctis*).

There are no recent records of the shearwater or crake from Antigua; the Burrowing Owl became extinct on Antigua early in this century. The presence of the Trembler suggests the former presence of a "well-structured, canopied forest"—which may occur only as isolated patches in the lowlands of Antigua today.—Jerome A. Jackson.

EVOLUTION AND GENETICS

39. Abnormal clutch size in domestic pigeons. R. G. Silson. 1988. J. Hered. 79: 137.—A strain of domestic pigeons is available for study in which some hens lay clutch sizes of three eggs, which is abnormal compared to the normal clutch size of two. No selective breeding for this trait occurred. Preliminary observations show that this effect may be due to a simple recessive gene that is not fully expressed in the homozygote. The three-egg clutches are produced most often during good weather, suggesting that expression might be influenced by the environment. The author hopes that this factor might be useful in studying the control of clutch size by hormones. It could also aid in the study of Lack's theory of clutch size optimization.—Cathy C. Blohowiak.

40. Blood ring: an early embryonic lethal condition in chickens. T. F. Savage, M. P. DeFrank, and S. E. Brean. 1988. J. Hered. 79:124–128.—Blood ring is a lethal embryonic condition which is expressed between 48 and 66 h of incubation in chickens. It is characterized by the presence of uncoalesced blood islands, the absence of vitelline arteries, and a sinus terminalis engorged with erythrocytes. The disorder is inherited as an autosomal recessive trait. Gene frequencies in three commercial populations range from 0.08 to 0.16. Although attempts to identify the exact mechanism for the expression of this gene have not been successful, both genetic and environmental factors have been identified. The possibility that the blood ring condition may be the expression of a gene mutation associated with vitamin A use is supported by unpublished studies by these authors.—Cathy C. Blohowiak.

FOOD AND FEEDING

(see also 2, 16, 26, 31, 33)

41. Mussel kills Oystercatcher *Haematopus ostralegus*. [Mossel doodt Scholekster *Haematopus ostralegus*.] J. B. Hulshcer. 1988. *Limosa* 61:42-45. (Dutch, English summary.)—An adult European Oystercatcher with a relatively large oyster clamped onto its bill was found dead. This bird had apparently attempted to stab the anterior end of the oyster. To be successful and avoid being trapped, birds must immediately sever the posterior, not the anterior adductor muscle.—Andrea Dinep.

42. Seasonal use of feeding grounds by Cormorants *Phalacrocorax carbo* at Voorne. [Seizoengebonden terreinkeuze van Aalscholvers *Phalacrocorax carbo* op Voorne.] C. M. Lok and L. Bakker. 1988. *Limosa* 61:7-12. (Dutch, English summary.)—Overwintering cormorants frequent freshwater rivers and harbors. Lakes with heavy recreational use are avoided at all times of year. Breeding cormorants prefer fishing at sea and in the saltwater lake Grevlingen, in areas with relatively clean water. Breeding success is high and may be linked with the abundant herring and sprat off Voorne's coast during the breeding season.—Andrea Dinep.

43. Feeding habits of Double-crested Cormorants wintering in Texas. J. J. Campo, B. Thompson, J. C. Barron, P. P. Durocher, and S. J. Gutreuter. 1988. Texas Parks Wildl. Dept. 32 pp., maps, graphs and tables. (Avail. free-of-charge by writing to: TP&WD, 4200 Smith School Rd., Austin, TX 78744.)—Stomach contents from 494 Double-crested Cormorants (*Phalacrocorax auritus*), collected from November 1986 to March 1987 on eight public reservoirs and one private lake in east and central Texas, were examined. Of the 29 fish species identified, those which were conspicuous in their numbers were: 79.4% shad (*Dorosoma* spp.), 8% sunfishes (*Lepomis* spp.), 5.2% tilapia (*Tilapia aurea*), 1.2% basses (*Micropterus salmoides* and *Morone chrysops*), and 1.1% catfishes (*Ictalurus* spp.). The breakdown by weight differs as follows: 26.1% shad, 18.2% tilapia, 16.5% basses, 15% sunfishes, 9.6% catfishes, 5.7% crappies (*Pomoxis* spp.) and 4.1% freshwater drum (*Aplodinotus grunniens*). Males and adults consumed larger fish than females and juveniles, respectively. Water depth and clarity and distance from shore of collection sites are described. Origin of cormorants wintering in Texas is summarized from banding data; birds were banded as juveniles in Alberta, Saskatchewan, Manitoba, Montana, the Dakotas, and Minnesota.

Excellent pie graphs and tables for each lake and the study as a whole make the data easy to digest. Unfortunately, no average lengths for important species (such as bass and catfish) are given. Also, no attempt was made to gather data on relative fish abundance in these lakes, so no inferences can be made for cormorant fish preferences. Surely some data have been published on species composition and relative abundance for fishes in major Texas reservoirs; its inclusion in the discussion would have been helpful.—Malcolm F. Hodges, Jr.

44. Foraging behavior and switching by the Grasshopper Sparrow (*Ammodramus savannarum*) searching for multiple prey in a heterogeneous environment. A. Joern. 1988. *Am. Midl. Nat.* 119:225-234.—Switching among four grasshopper species by Grasshopper Sparrows was examined through frequency-dependent predation tests. Grasshoppers were presented against a heterogenous environment in an outdoor aviary where relative density of each species was varied, but the total density was held constant. No significant differences were detected between treatments in the proportion of total time spent handling the prey, searching, or for nonforaging activity. Average elapsed time per prey capture based on either search time or total time did not differ among treatments. Switching, largely between two of the four grasshopper species, and variability in switching among individual birds was observed. Final diet choice appeared to be influenced by the effect of the interaction between grasshopper species as well as species-specific preferences. In the six treatments, one grasshopper species was always preferentially selected and another disregarded independent of changes in relative density. This study suggests that Grasshopper Sparrows take disproportionately more of the common prey type in multiprey situations.—D. J. Ingold.

PHOTOGRAPHY AND RECORDINGS

45. **Voices of all the mockingbirds, thrashers and their allies.** J. W. Hardy, J. C. Barlow, and B. B. Coffey, Jr. 1987. Cassette avail. from ARA Records, P.O. Box 12347, Gainesville, FL 32604-0347.—This important collection of recordings allows us to hear songs of all the Mimidae. Obvious care was taken in obtaining high-quality, diverse, and extensive recordings of these species, with some selections running for minutes. The recordings were reproduced with excellent clarity, and most seem amazingly unhindered by background noise.

Each species is introduced on the tape with its scientific and common names, followed by recordings of its song. Two or more examples of the song are given for 12 of the 34 species. Calls are either mixed with the song recording or provided separately for 14 species.

The tape is accompanied by a folded information sheet. An introduction deals mostly with the systematics and nomenclature of the group, and briefly with the range of the group as a whole. The table of contents provides scientific and common names and ranges for each species. Locations, dates, and name of the recorder are provided for each cut. The table is followed by a section which provides notes on most of the species' vocalizations. Many of these notes give interesting or useful information about the bird's song or the circumstances of recording. The sheet ends with an acknowledgments section.

I found this tape to be interesting, but difficult to listen to. Some of the songs are monotonous or grating, so that the recording is not consistent in lending itself well to listening for pleasure. This has no bearing on the tape's value as a reference for bird song researchers and birders. I recommend this tape to anyone wishing to extend their collection of bird recordings.—Malcolm F. Hodges, Jr.

BOOKS AND MONOGRAPHS

46. **The Atlas of breeding birds in New York State.** R. F. Andrie and J. R. Carroll (eds.). 1988. Cornell University Press, Ithaca. 551 pp., 250 maps and 238 black-and-white drawings; eight acetate overlays (sold separately). Hardcover.—A breeding bird atlas is an attempt to map accurately the breeding ranges of all species of birds within a given geographic area. For the New York atlas, the state was overlain with a grid, so that the it was divided into 5 km × 5 km squares. Each of these 5335 squares, called "blocks," was considered separately. The breeding birds for each block were investigated either by local volunteers (in most cases), or by teams of mercenary birders called "block-busters." They noted birds present, categorized breeding behavior, and turned in lists on standardized cards to coordinators. The results of this extensive survey, conducted from 1980 through 1985, were computerized, boiled down, and expanded upon, to result in the present book.

This is the fourth atlas of breeding birds to be published in the western hemisphere, after the ground-breaking and lauded Vermont atlas (from which the New York atlas differs in its virtually complete coverage of blocks), and the recently-published Ontario and Maine atlases. All are at least basically patterned after the British breeding bird atlas. The New York atlas is a magnificent accomplishment, both because of the tremendous amount of fieldwork involved, and the fine quality of the resulting book.

A "Foreword" (acknowledgments) by Gordon Meade and "A note to birders" (a foreword) by Bob Arbib begin the book, followed by a detailed introduction by the editors. It is clearly written, easy to read, and explains the dauntingly difficult logistics of organizing a breeding bird atlas. Such sub-headings as "Planning and management," "Field surveying and coverage," and "Data checking, processing, and presentation" give an idea of the thorough treatment. A useful section discusses "Biases and limitations" of the atlas, and another mistitled "Results and discussion" summarizes the accomplishments of atlasers.

A field card and an atlas data sheet are reproduced in the introduction, as are the acetate overlay maps (on paper, in black-and-white). Other maps presented here show block coverage, areas of human population concentration, and reporting regions of *The Kingbird*.

The inclusion of the next chapter is difficult to justify; entitled "Prehistoric birds of New York State," it is a discussion of New York ornithological paleontology. Also found here is a list of birds for which fossil evidence has been found in the state, keyed to a map of significant fossil sites. Although this chapter's purpose may have been to provide a far-

reaching historical perspective, the fossil record is extremely biased, and does not necessarily represent breeding birds.

Next come the species accounts, for which not enough good can be said. The editors have done a fine job of making accounts consistently informative, concise, and very readable. With only a block-buster's experience of the state, I found the accounts to be a treasure trove, but a long-time New York birder told me recently that he has discovered something new in every account he has read.

Each account is well-researched, and includes details on the history of the species in New York state, especially as a breeder. This information stresses changes in distribution or abundance, and comparisons are made with atlas data. Findings of the atlas are discussed for each bird in detail; for instance, the number of blocks in which the species was found, and the percentage of block in which its breeding was "possible," "probable," or "confirmed," are given for each species. Also included are the difficulty of locating the species. Notes on the general breeding ecology are given (especially nesting habitat and nest construction), with emphasis on its habits in New York when available, or at least in the northeast. In some cases future prospects for the breeding of the species in the state are included.

Accompanying each account is a line drawing of the species by one of four artists, usually depicting some aspect of its breeding biology. The quality of the illustrations varies, ranging from a delightful skimmer and a striking Palm Warbler (*Dendroica palmarum*), to those whose misproportioned bills (Black-billed Cuckoo [*Coccyzus erythrophthalmus*], kingfisher) ruin the effect. Some, such as the uninspired siskin, are merely mediocre, but many more are excellent.

Facing each species account is a map of New York with blocks marked where the species was recorded during atlasing, with three markings indicating levels of certainty that the species bred. The excellent coverage of this atlas is evident in the Red-winged Blackbird (*Agelaius phoeniceus*) map and those of other widespread species. The maps for species with limited distribution hold the most vital information, though, and are worth many hours of perusal. As patterns emerge on map after map, it is evident that this book will be of much use to researchers, planners, and birders for many years. My only criticism of the maps is that they leave New York floating in space, and might have depicted boundaries of adjoining states and provinces.

Following the species accounts are three useful appendices covering the ecozones of New York state (each is discussed), the natural and cultural ecological communities of the state (a partly annotated list), and a breeding season table (which outlines known inclusive dates of breeding for each species). After these come a references section, a list of atlas participants, and an index to common and scientific bird names.

Sold separately are eight colorful acetate map overlays: counties (also showing state and federal wildlife areas); ecozones; elevation; forest cover; mean annual precipitation; mean July temperature; potential forest types; and river systems.

Here is a book that every northeastern birder; all past, present, and future breeding bird atlas workers; and anyone interested in the biogeography of birds should own. Future New York breeding bird atlas organizers will be challenged to produce a work of equal quality.—Malcolm F. Hodges, Jr.

47. Birds of the Middle East and North Africa. 1988. P. A. D. Hollom, R. F. Porter, S. Christensen, and I. Willis. Buteo Books, Vermillion, South Dakota. Hardcover, \$32.50.—This field guide covers the politically troubled Middle East from Turkey and Iran to the Arabian peninsula, the island of Cyprus, plus the North African countries of Egypt, Libya, Tunisia, Algeria, and Morocco. It is intended as a companion guide to Peterson, Mountfort, and Hollom (1983. *A Field Guide to the Birds of Britain and Europe*. Collins, London). Identifying characteristics of species in European guides are given no detailed coverage except where it is warranted by geographic variation. The 40 color plates by Ian Willis are well done and illustrate about half of the 700+ species covered by the guide. Distribution maps for most species show ranges in red, but since no graphic distinction is made among permanent resident, summer resident, winter resident, and transient species, the use of color adds little. In general, this is another very useful guide in the series produced by Buteo Books and T & A D Poyser Ltd.—Jerome A. Jackson.