RECENT LITERATURE

Edited by Edward H. Burtt, Jr.

BANDING AND LONGEVITY

(see also 24, 45, 46)

1. Analysis of Florida-related banding data for the American Kestrel. J. N. Layne. 1982. North Am. Bird Bander 7:94–99.—Since 1955 1810 American Kestrels (*Falco sparverius*) have been banded in Florida and there have been 50 recoveries (2.8%) of these birds; 31 within the state and 19 elsewhere. There have been 44 Florida recoveries of birds banded outside the state. A female banded in Pinellas County, Florida, on 6 February 1972, was recovered on 3 May 1972, in Nova Scotia. Minimum distance covered from banding to recovery was 2860 km and represented the greatest distance covered for birds discussed. Shortest elapsed time for the records was another female banded 17 March 1967, in Indian River County and found dead in New Hampshire on 7 April of the same year. Her mean rate of movement was 100 km per day. Similar records from birds banded elsewhere were obtained, i.e., greatest distance was of a female banded in Nova Scotia on 25 July 1976, and found dead in the Florida Keys on 9 November 1976 (about 2700 km); shortest time was for 3 females banded at Cape May, New Jersey in the autumns of 1976 and 1977. Their mean speed of travel ranged from 80 to 120 km per day with recoveries 12, 15, and 16 days later.

Longevity records of 78 American Kestrels yielded mean and maximum periods (months of banding and recovery counted as full months) of 6.2 and 48 months for 38 males compared with 10.3 and 70 months for 40 females respectively. The sex ratio of 51 individuals banded from May through August was about 50:50 whereas outside of that period, males predominated. Males were also relatively more frequent in the northern part of the state. Of 33 recoveries of birds killed, injured, or incapacitated by known causes, 17 (52%) involved death or injury from motor vehicles.—Richard J. Clark.

MIGRATION, ORIENTATION, AND HOMING

(see also 33, 49)

2. Computer simulation of autumnal bird migration over the western North Atlantic. P. Stoddard, E. Marsden, and T. Williams. 1983. Anim. Behav. 31:173–180.—Radar studies of avian migration over New England and the Canadian Maritime Provinces have shown that under certain meteorological conditions, large numbers of migrants can be observed moving in a southeastern direction over the western North Atlantic. It is believed that these movements consist of passerines as well as shorebirds whose intended goal is the Bahamas, the Caribbean, or the northern coast of South America. But the question remains, based on energetic considerations, can passerines successfully complete a non-stop, overwater crossing from New England to South America? Using computer simulations to model the movements of birds under defined conditions of heading, air speed, and altitude, as well as wind speed and direction, the authors identify those conditions where a successful non-stop flight to South America, a flight of less than 100 h, could take place. Flight heading was found to be the most important variable in predicting a successful flight. Wind conditions which led to successful flights corresponded nicely to conditions where actual southeastern movements have been observed from New England. In addition, the simulations support the idea of a flight strategy based on a fixed heading with the drifting effects of winds causing the changes in actual flight direction necessary for a successful landing in South America.—Verner P. Bingman.

3. Growing up in an altered magnetic field affects the initial orientation of young homing pigeons. W. Wiltschko, R. Wiltschko, W. Keeton, and R. Madden. 1983. Behav. Ecol. Sociobiol. 12:135–142.—In an attempt to understand whether local magnetic field information is used by young pigeons to determine or influence the development of sun compass orientation, the authors raised several groups of young pigeons in shifted magnetic fields and later compared their orientation behavior with that of control birds. On their first experimental release, the birds raised in the shifted magnetic fields oriented significantly differently from controls, showing a mean direction which was shifted from that of controls in the direction of their altered magnetic field experience. The magnitude of the observed shift, however, was considerably less than expected, making it impossible to interpret the results as demonstrating an unequivocal effect on the birds' sun compass. Alternative explanations are discussed, but the most plausible explanation continues to be an influence on the birds' sun compass and I eagerly await the results of subsequent experiments that may clarify this point.—Verner P. Bingman.

4. Expression and significance of the winter strategies in a partially migratory population of European Blackbirds (*Turdus merula*). (Ausprägung und Bedeutung des Teilzugverhaltens einer südwestdeutschen Population der Amsel *Turdus merula*.) H. Schwabl. 1983. J. Ornithol. 124:101–116. (German, English summary)—Armed with an impressive amount of banding and recovery data of locally breeding European Blackbirds, the author investigates the demographic makeup and fitness correlates of migratory and non-migratory birds. Both sexes showed a similar tendency to migrate as first-year birds. The tendency to migrate as adults continued near first-year levels for females, but declined for males. Correspondingly, reproductive rate of resident males was higher than that of migratory males, a result presumably based on accessability to potential breeding sites, while no difference in reproductive rate could be found between sedentary and migratory females. The author uses these data to support a model emphasizing genetic factors as the major determinant of migratory strategy. Schwabl excludes models based on more proximate social or environmental stimuli. However, the data are presented in such a way as to make any discussion of genetic determination untenable and the discussion detracts from what is otherwise excellent research.—Verner P. Bingman.

5. Migration of the Greenish Warbler *Phylloscopus trochiloides* in western Europe. A. J. van Loon. 1982. Limosa 55:139–140. (Dutch, English summary)—A record for western Europe is discussed as probably originating from Scandinavia. The recent expansion of this species' breeding range is discussed. Loon argues that the increase in records in the west, since the species is normally more eastward, should be explained by development of new migration routes and wintering areas rather than by "reversed migration" as suggested for other parts of western Europe and the British Isles.—Clayton M. White.

6. Effects of weather conditions on the intensity of diurnal migration, flight height and directional scatter in the Swiss Lowlands. (Die Wetterabhängigkeit von Zugintensität, Zughöhe und Richtungsstreuung bei tagziehenden Vögeln im Schweizerischen Mittelland.) G. Hilgerloh. 1981. Ornithol. Beob. 78:245–263. (German, English summary)—In this paper the author describes the autumnal migration of diurnal, mostly passerine migrants through Switzerland and the role weather plays in determining the birds' behavior. Heavy migration was associated with high pressure and winds toward the predominant migratory direction (southwest) as well as with weak headwinds. As observed in other studies, birds tended to fly higher with tailwinds and lower with headwinds.—Verner P. Bingman.

POPULATION DYNAMICS

(see also 58, 59)

7. Population dynamics, colony formation and competition in *Larus argentatus, fuscus,* and *marinus* in the archipelago of Finland. G. Bergman. 1982. Ann. Zool. Fenn. 19:143–165.—Originally the limited productivity of the Baltic shores supported only isolated pairs of Herring (*Larus argentatus*), Lesser Black-backed (*L. fuscus*), and Greater Black-backed gulls (*L. marinus*). The Lesser Black-backed Gull was the first to breed in small colonies as its population increased with an increase in refuse from the local fishing industry. Herring and Greater Black-backed gulls were still limited by winter conditions that were avoided by the migratory Lesser Black-backed Gull. In the 1920's technical advances in the fishing industry provided year-round sources of food. Herring and Greater Black-backed gulls increased and colonies formed. Populations of gulls and colony formation are limited now by the size and availability of islets in the Finnish archipelago and the availability of man-made food resources.

Isolated and colonial gulls differ in their territorial and foraging behavior. Isolated pairs maintain a large territory on which they feed and nest. Colonial pairs maintain a small territory around the nest and forage elsewhere. Colonial birds do not forage on the territories of isolated pairs. These gulls offer great potential for ecological and behavioral study.—Edward H. Burtt, Jr.

8. Limitation of local population size in the shelduck. I. J. Patterson, M. Makepeace, and M. Williams. 1983. Ardea 71:105–116.—In a local breeding population of Common Shelducks (*Tadorna tadorna*) in Scotland, numbers in territorial and non-territorial flocks fluctuated similarly, but with smaller amplitude in territorial flocks. Average annual survival was higher (89%) in territorial than in non-territorial (ca. 48%) birds over a 9-year period. The lack of return in non-territorial birds may also represent emigration rather than mortality. Only 19% of banded fledglings returned. The population was probably not self-sustaining based on fledging and mortality rates and in most years the population was probably augmented by immigrants. The study suggested that limitation of population size may occur at two levels: recruitment to flocks, affected by food supply and recruitment from flock to territory, affected by territorial behavior.—Clayton M. White.

9. Characteristics of Oystercatchers killed by cold-stress in the Dutch Wadden Sea area. C. Swennen and P. Duiven. 1983. Ardea 71:155–159.—An 11-day cold spell in an otherwise mild winter caused a 3–4% mortality of Oystercatchers (*Haematopus ostralegus*). The mean weight of 380 dead birds was 38% less than normal winter weights. Anatomical deviations, mainly legs and bills, were found in 61% of the victims. More than 19% of those older than yearlings had not finished primary molt, which, in normal birds, is completed 2 months earlier. Adults resisted the cold stress better than juveniles.—Clayton M. White.

10. The breeding biology of the Common Sandpiper *Actitis hypoleucos* in the Peak District. P. K. Holland, J. E. Robson, and D. W. Yalden. 1982. Bird Study 29:99–110.—Data from 98 nests observed during the 1977–1980 breeding seasons provided the following results: mean clutch size = 3.74, hatching success = 89%, and fledging success (i.e., number of young banded as chicks that were observed later as fledglings) = 24–35%. Young fledged at about 19 days and weighed approximately 40 g at fledging. Banding data indicated a minimum adult survival rate of 81%. Most adults (85%) returned to the same nesting territory in successive years, and females were more likely to shift territories than males. The authors concluded from analysis of these data that reproduction was sufficient to maintain the population at its current size. Dispersal from the breeding grounds by adults and juveniles remains poorly documented in this species.

Common Sandpipers are apparently monogamous. The Nethersole-Thompsons (*Greenshanks*, Buteo Books, Vermillion, South Dakota, 1979) attributed monogamy to the large clutch weight of *A. hypoleucos* which is equal to the female's weight. The serially polyandrous Spotted Sandpiper (*A. macularia*) lays a clutch that weighs 70% of the female's weight, perhaps making it possible for her to lay again a short time later. Continued study of *A. hypoleucos* at this site is necessary to accurately document the population biology of this species and would provide interesting data for comparison to the closely related *A. macularia*.—Stephen R. Patton.

NESTING AND REPRODUCTION

(see also 4, 10, 19, 29, 31, 32, 46, 55, 58)

11. Characteristics of vegetation and topography near Red-shouldered Hawk nests in southwestern Quebec. M. M. J. Morris and R. E. Lemon. 1983. J. Wildl. Manage. 47: 138–145.—This paper describes characteristics of the nesting habitat, nest site selection, and develops a predictive model of habitat selection by *Buteo lineatus* in Quebec. Topographical and floristic variables of 30 active nest sites were compared to 25 randomly-selected control sites. No differences were found among topographic features; however, there were differences in forest structure. Nest sites had greater densities of mature trees, greater stem basal area, and greater canopy height. Seedling, sapling, and young tree densities were low on nest versus random sites as was tree species richness. Discriminant function analyses successfully separated nest and random sites on the basis of both habitat structure and tree species composition, showing a continuum of habitat choice from mature forests to more early-successional stands with high seedling density. Red-shouldered Hawks primarily selected mature forests for nesting habitat. A separate data set from 15 additional nests supported the predictive ability of the discriminant functions.

Data suggest that in southwestern Quebec this species is flexible in nest site selection with a certain level of tolerance to human intrusion. However, any habitat alteration that would reduce the number of mature trees or canopy height would probably reduce a site's suitability for Red-shouldered Hawks. Increasing loss of mature beech-maple forests to development may result in a future shortage of nest sites. The authors suggest that the best way to preserve nesting habitat for this species in Canada may be through the provincial park system.—Richard A. Lent.

12. Ferruginous Hawk nest site selection. N. D. Woffinden and J. R. Murphy. 1983. J. Wildl. Manage. 47:216–219.—In Utah 37 of 56 nests of Ferruginous Hawks (*Buteo regalis*) were in juniper (*Juniperus osteosperma*) trees; 18 were on rock outcrops, and 1 was on the ground (see review **25**). Mean height of nest trees was 3.5 m. Nests were clumped around the perimeters of valleys. Nesting hawks seemed to select isolated juniper trees. If isolated junipers are protected as part of habitat management for this species, potential nest sites could be increased. This is important because juniper stands are often removed in this region to improve livestock range. The unique nesting ecology of *Buteo regalis* may allow nest site manipulation to lessen the impact of habitat changes.—Richard A. Lent.

13. Breeding area fidelity of the Pied Flycatcher *Ficedula hypoleuca* at Ammarnas, Swedish Lapland. N. E. I. Nyholm and H. E. Myhrberg. 1983. Ornis Fenn. 60:22–27.—Breeding area fidelity of 840 male and 1260 female Pied Flycatchers was studied to determine the proportion of birds returning to their breeding area at the margin of the species' range. Nestboxes were erected and breeders were caught while incubating (females) or feeding nestlings (males). The study was conducted from 1965–1976. A sex- and year-specific correction factor was used to adjust the return rate relative to capture efficiency each year. Birds breeding in the nestboxes for the first time returned in subsequent years at a rate of 21–25% for males, and 8% for females; those that bred more than once in the nestboxes returned about 50% of the time, a rate equal to survival. Males tended to nest within 100 m of the previous site (50%) or reuse the same nestbox (20%). Females moved significantly farther away than males with just 25% nesting within 100 m of the previous site. No mention was made of mate fidelity or return to the site relative to prior nesting success. No hypotheses were presented to explain the degree of site fidelity in this population relative to fidelity in other parts of their range, where the return rate is about equal for males and females. The author fails to interpret or discuss the results.—Lise A. Hanners.

14. Breeding schedules and feeding strategies of Seychelles seabirds. C. J. Feare. 1981. Ostrich 52:179–185.—During an earlier study of breeding Sooty Terns (*Sterna fuscata*), the author noted (Feare, J. Zool. (Lond.) 179:317–360, 1976) that birds laying during the peak of laying in this highly synchronous breeder had heavier eggs and shorter, more regular incubation shifts than those that laid later. These differences were apparently not due to younger parents laying later. In the present paper Feare expanded these observations and compiled a survey of 8 species of breeding marine birds. Contrary to the hypotheses of others, he found no relation between synchronous breeding and the distance adults had to fly to gather food for their young. He also came up with an interesting hypothesis, as he found that birds that flocked while feeding (n = 6) tended to be more synchronous than those who were solitary (n = 2). He suggests that synchronous, colonial breeding helps individuals locate schooling prey fish driven to the surface by predators, the "information center" hypothesis of Ward and Zahavi (Ibis 115:517–534, 1973). To support this argument, he ties in the fact that his solitary, asynchronous species are light colored, while the others are dark in plumage. He suggests that the dark backs of flock feeders make them cryptic, thus reducing competition for the schooling prey fish. The white plumage of the asynchronous breeders facilitates their spacing themselves for feeding on dispersed prey. These are interesting ideas, ones that could be easily tested by comparing similar data on birds from other areas, and would be especially telling in those species that have plumage morphs. However, as with most generalizations, we will probably find that this factor is just one of the pantheon of determinants of synchrony.—C. J. Ralph.

15. Cooperative breeding and group territoriality in the Black Tit. W. R. Tarboton. 1981. Ostrich 52:216–225.—This interesting study documents 2 breeding seasons in *Parus niger* in central Transvaal. The author followed 19 nestings, 11 of which had multiple males with a single female. The remaining 8 were normal pairs. During courtship the dominant male tried to prevent any interaction of the helpers with the female, but the helpers freely fed the female while she incubated. They also fed the young while they were in the nest and after they left. This latter period was relatively long (7 weeks). The author could detect no difference in the rate that the young were fed between those pairs with helpers and those without, perhaps due to a small sample. In contrast to some other studies, the 8 single pairs produced an average of .87 young, while the pairs with helpers produced an average of 1.54 young. Alas, the sample was small, and didn't quite graze significance. The author suggests that the helper system is caused by a 1.7:1 male to female sex ratio. Of course, it is problematical whether this is a cause or an effect of cooperative breeding. Territories are maintained throughout the year. This is a species that obviously will deserve further study over a long period. Fortunately the study site is a nature reserve, and the birds can be followed in years to come.—C. J. Ralph.

16. The laying interval and incubation period of Rockhopper and Macaroni penguins. A. J. Williams. 1981. Ostrich 52:226–229.—The author found that both the Rockhopper (*Eudyptes crestatus*) and the Macaroni (*E. chrysolophus*) have similar laying intervals (about 4.5 days) and incubation periods (38–39 days). Unlike most birds, the second-laid egg is much larger than the first. The young from second eggs are usually the ones that survive to independence. Incubation doesn't begin until laying of the second egg, and it usually hatches first. The author suggests that the faster incubation rate of the second-laid eggs may be due to differences in care, a higher thermal capacity, or a smaller surface to volume ratio. However, he points out that when smaller, first-laid eggs are substituted for second-laid eggs, and are the only ones left in the nest, they still take longer to hatch. This is another bit of the puzzle of the strange breeding pattern of the genus. The central question remains as to why the birds bother with the smaller first egg. The obvious explanation of it as an insurance policy seems wasteful of rather limited resources, and may be inadequate.—C. J. Ralph.

17. Thermal properties of eggs of some species of arid zone birds (Termicheskie svoistva iaits nekotorykh vidov ptits aridnoi zony). T. S. Ponomareva. 1982. Zool. Zh. 51: 576–584. (Russian, English summary)—The rate of temperature fall in eggs artificially incubated and then left to stand at room temperature was measured in the laboratory for 11 species of desert birds. The main indices of thermal properties of the eggs (thermal conductivity, conductance, and coefficients of surface heat emission by radiation and by convection) were calculated (the article presents and discusses the equations used). A summarized index of thermal properties of eggs, the constant of cooling (K), is minimal in large eggs and maximal in small ones. The mean value of K for Passeriformes is $.16 \pm .017$; for all other birds, it is $.06 \pm .012$. The cooling constant of an egg set out by itself is much higher than for eggs in a group and more than for eggs in an incubated nest. During incubation, eggs lose heat mostly by conduction; heat loss by convection and radiation occurs mainly when the parent bird is off the nest. In Passeriformes the main role in heat exchange is played by the thermoisolating properties and the location of the nest; in other birds, it is played by the thermal properties of the eggs themselves. Correspondingly, there are two means to optimize heat exchange during incubation: either perfecting the thermal properties of the nest, i.e., by ecological-ethological adaptations, or by adjusting the relationships among egg structure, egg form, egg dimensions, and clutch size.—Elizabeth C. Anderson.

BEHAVIOR

(see also 7, 8, 14, 15, 23, 58)

18. Caterpillar leaf damage, and the game of hide-and-seek with birds. B. Heinrich and S. L. Collins. 1983. Ecology 64:592–602.—Can Black-capped Chickadees (*Parus atricapillus*) use leaf damage as a cue to help them find cryptic caterpillars? The answer for 6 birds tested in a seminatural outdoor enclosure is yes. While many individual differences were recorded, each bird sooner or later learned to spend significantly more time searching experimental, leaf-damaged trees for food than control, non-leaf-damaged trees. This ability to recognize leaf damage may be useful to a bird only at a refined level. Unpalatable caterpillars cause the most obvious leaf damage in trees as they leave tatters and partially eaten leaves. Palatable caterpillars tend to camouflage their activities either by eating an entire leaf or by chewing off or trimming a partially eaten leaf. The authors quite reasonably suggest that predation by birds is the probable selective pressure that has operated in the evolution of feeding behavior exhibited by palatable, cryptic caterpillars. Field observation of birds using leaf damage as a cue to find prey remains to be done.—A. John Gatz, Jr.

19. Polyandry, cloaca-pecking and sperm competition in Dunnocks. N. B. Davies. 1983. Nature 302:334–336.—Dunnocks (*Prunella madularis*) show elaborate pre-copulatory displays during which a male may spend up to 2 min pecking the female's cloaca. This stimulation causes the cloaca to distend and contract while the female jerks her abdomen downward. This activity often results in the female ejecting fecal material and sperm, and this is followed quickly by copulation. In a marked population, 40% (10/25) of the mating arrangements were monogamous, the remainder were trios of 2 unrelated males and a female. Within trios, one male (alpha) was dominant to the other with regard to female access. Beginning 4 to 5 days before laying, alpha and monogamous males guarded females closely and were very aggressive to beta and intruding males, respectively. In 12 of 21 breeding attempts observed among trios, both males mated with the female. Davies contends that cloaca-pecking may stimulate females to eject the sperm of other males. Consistent with this sperm competition hypothesis, it was found that males copulate more frequently and do more cloaca-pecking the more time another male spends near the female (the relationship for cloaca-pecking was, however, not significant for a sample of alpha males only).

A major cost of the elaborate pre-copulatory behavior is increased probability of interruption. Fifty of 125 mating attempts by alpha males were interrupted by betas, and 14 of 38 attempts by betas were broken off by alphas, suggesting that considerable advantages must be associated with cloaca-pecking. From the female's perspective it is speculated that she may profit from these interactions by increasing her chances of being fertilized by more than one male or by deceiving males about paternity. Females were observed trying to elude alpha males and to approach and solicit copulations from beta males. In 7 cases where both males copulated with a female, both fed chicks; whereas in 5 instances where only the alpha male copulated, the beta male provided no food for young. A very interesting study with more to come.—W. A. Montevecchi.

20. Differences in flight speed in martins (Razlichiia v skorosti poleta u lastoch̦ek). A. N. Tsvelykh. 1982. Zool. Zh. 51:742–746. (Russian, English summary)—Flight speed in 6 species of swallows was compared by natural and experimental observations and by examining the literature. Wild Sand Martins (*Riparia riparia*) flying about near their river-bank colony were studied with the aid of theodolites and plumb lines: two observers recorded the time necessary for one bird to pass between the lines. Wild Barn Swallows (*Hirundo rustica*) were timed as they flew the length of a long barn. Birds of these species and House Martins (*Delichon urbica*) were trapped at their nests and then released at one end of a tunnel or corridor and allowed to escape out the other end. They were timed as they flew towards the light. The investigators also measured tails and wings of museum specimens of these 3 species and of 3 others: the Wire-tailed Swallow (*Hirundo smithii*), the Crag Martin (*Ptyonoprogne rupestris*), and the Red-rumped Swallow (*Cecropis daurica*).

Based on these studies and their reading, the investigators concluded: (1) The 6 species can be ranked from fastest to slowest in this order: *Hirundo smithii, Ptyonoprogne rupestris, Riparia riparia, Delichon urbica, Hirundo rustica,* and *Cecropis daurica.* (2) The 3 species observed in nature (*Riparia riparia, Delichon urbica,* and *Hirundo rustica*) rarely exceed 50 km/h, and when they do it is by virtue of diving, a tail wind, or some other external impetus. (3) The shorter a bird's tail and the longer and more pointed its wings, the swifter its flight.

The author refutes 2 widely-held ideas about swallow flight. Swallows are usually considered remarkably fast fliers, but their speed is increased apparently (not actually) by their maneuverability and quickness and because they are often seen close at hand and thus seem to be flying faster than birds farther away. The Crag Martin is often said to be a slow-flying swallow, and this is true insofar as it often glides, but when it flaps it can fly quickly. Thus the Crag Martin's speed is second to the Wire-tailed Swallow, and the Barn Swallow joins the Red-rumped Swallow at the end of the list (but compensates for "slowness" by superior agility on the wing).—Elizabeth C. Anderson.

ECOLOGY

(see also 7, 11, 18, 34, 52, 54, 60)

21. An analysis of avifauna-resource relationships on the Serengeti Plains. L. J. Folse, Jr. 1982. Ecol. Monogr. 52:111–127.—Does food or habitat determine the distribution of grassland birds in the Serengeti? This work strongly suggests habitat. A year-long study of birds, arthropods, and vegetation at five 1 km^2 sites varying from short-grass plains to woodland provided ample data for analysis of the question. Arthropods supplied 81% of the food of the 18 most common avian species, thus birds might be sufficiently dependent on arthropods to track variations in their abundance. However, only two species of *Cisticolas* moved from area to area according to abundance of arthropods. The general pattern was a negative relationship between avian biomass and arthropod biomass both among sites and at single sites over time. In contrast, distribution of avian species was related to vegetation height and vertical structure, and the number of individuals of various species was related positively to the amount of green vegetation. Folse suggests several reasons why birds might not exhibit the food-controlled pattern expected in a competitively structured community. To me the most compelling reason is that a competitive equilibrium is an unrealistic expectation in the Serengeti. So many factors, e.g., wet and dry seasons, fire, and grazing and trampling by ungulates, affect the vegetation and hence the arthropods that the bird populations are generally well below environmental carrying capacities. Instead of a food-based pattern of distribution, then, one sees birds selecting habitats based on whether they offer short-grass, mid-grass, or woodland vegetation. The low reproductive rates of these tropical species never seem to permit the building of population sizes to carrying capacities following the irregularly spaced catastrophes characteristic of the Serengeti Plains.—A. John Gatz, Jr.

22. Community organization of arboreal birds in some oak woodlands of western North America. P. B. Landres and J. A. MacMahon. 1983. Ecol. Monogr. 53:183–208.—Is community organization a function of interspecific competition? This study attempts to answer the question by a natural experiment in which physical structure is held constant while species composition varies. Two physically similar oak woodlands were selected, one in Mexico and one in California. No significant differences in tree density, height, profile, or canopy cover were found. Despite the physical similarity, the California site had but 10 resident breeding species whereas the Mexican site had 15, and only 4 of the species were shared. Foraging behavior was divided into 5 categories and guilds were defined by predominant behavioral patterns, e.g., foliage gleaners, aerial salliers, etc. Conspecific behavior at the sites was very different (on average, 4 of the 5 foraging categories were significantly different between sites), and congeneric behavior averaged even more different between sites. All these differences or niche shifts were analyzed to see how many seemed to result from variations in the competitive regimes at the two sites. As it turned out, the overall patterns of niche shifts together with an absence of complementarity in resource use by the birds at either site suggested that competition was quite unimportant in determining the community organization of these birds during the time of this study. There was, of course, some resource subdivision, but Landres and MacMahon suggest that subdivision was due to the existence of morphological and behavioral specializations that arose during allopatric speciation. This certainly is a valid alternative to the traditional view that resource subdivision implies competition. Support for their interpretation here as well as for their more general rejection of the importance of competition in the organization of these two avian communities would be much stronger, however, had the study sites been observed for longer periods of time. Each site was studied for only 2 to 5 wks just after the start of spring breeding in 1977 and 1978 and thus right after the rains that bring an abundance of insects. This obviously is a time when one might expect opportunism and high similarities in resource use among coexisting species. The critical time to analyze community structure and resource use is at a time of resource crunch, not of abundance. Recent studies have shown competition may occur only intermittently in a variety of natural populations, so until the results reported in this paper are verified over at least one entire annual cycle, the conclusions drawn might best be considered tentative.—A. John Gatz, Jr.

23. Plover's Page turns into Plover's Parasite: a look at the Dunlin/Golden Plover association. I. Byrkjedal and J. A. Kalas. 1983. Ornis Fenn. 60:10–15.—The feeding "association" of Dunlins (*Calidris alpina*) and Golden Plovers (*Pluvialis apricaria*) on their Norwegian breeding grounds was investigated. The two species walk within a few meters of each other and when the Plover takes flight the Dunlin follows and resettles behind it, earning the name "Plover's Page." Data on the relative occurrence of the Dunlin/Golden Plover association were obtained by censuses early and late in the breeding season, 1977–1981. Observations were made of individuals of both species feeding together and with conspecifics only. These data were obtained on 23 May 1981, from one pair of Golden Plovers and 2–4 Dunlins.

The frequencies of associations of Dunlin and Golden Plover and Dunlin and Purple Sandpipers (*Calidris maritima*) were not significantly different from that expected on the basis of numerical abundance of each species. Dunlins associated with Golden Plovers flushed at a much greater distance than when with conspecifics, assumed fewer alert postures, and therefore fed more efficiently. The observed female Golden Plover fed with significantly fewer pecks per minute when in association with Dunlins, a difference not significant for the observed male. The authors hypothesize from these few observations that Dunlins benefit from the association by the direct anti-predator advantage conferred on them by proximity to the wary Golden Plovers, thereby increasing feeding rate and efficiency. Additionally Dunlins may adversely affect Golden Plovers by consuming their food, interfering with Plover feeding by disrupting the prey, and making the Plovers more subject to predation because of increased visibility of the large flock.

Virtually no data are presented to support the hypothesis of a parasitic relationship. Indeed much of the data do little to support the hypothesis of any relationship at all. The authors need to document the feeding efficiencies of Golden Plovers in the absence of Dunlins, then demonstrate quantitatively that food is reduced or feeding efficiencies affected when the Dunlins are present.—Lise A. Hanners.

WILDLIFE MANAGEMENT AND ECONOMIC ORNITHOLOGY

(see also 12, 53, 60)

24. Age-class determination of Canvasbacks. J. R. Serie, D. L. Trauger, H. A. Doty, and D. E. Sharp. 1982. J. Wildl. Manage. 46:894–904.—The authors used a reflection densitometer to obtain objective measures of white flecking on Canvasback (*Aythya valisineria*) wing feathers. The densitometer measured the amount of light reflected (reflection densitometry) or transmitted (transmission densitometry). The technique successfully separated 1, 2, and 3-year-olds by sex.—Jonathan Bart.

25. Ferruginous Hawk populations and habitat use in North Dakota. D. S. Gilmer and R. E. Stewart. 1983. J. Wildl. Manage. 47:146–157.—Detailed information is presented from a 2-yr study of density, productivity, habitat preference, nest site selection, and prey use of *Buteo regalis* in south central North Dakota. Average density was .06 nests/km². Pairs produced an average of 4.1 eggs/clutch with a mean of 2.2 fledged young/clutch (see review **29**). Nest success ranged from 64 to 76%. Pasture and hayfields comprised 77% of the land within 1 km of nests. Nesting pairs used, in decreasing order of preference: trees, ground, power-line towers, haystacks, rockpiles, utility poles, and shrubs. Richardson's ground squirrels (*Spermophilus richardsonii*) were the major prey item. The authors conclude that the species is healthy in central North Dakota, due to its "remarkable adaptability and flexibility in nest site selection."

This paper's value lies in its baseline data, which can be used to evaluate raptor population changes caused by energy development and intensive agriculture in the northern Great Plains. Large areas of prairie and other grasslands are "critical to the welfare of this species" and should be protected.—Richard A. Lent.

26. Avian response to habitat management for Northern Bobwhites in northwest Texas. W. M. Webb and F. S. Guthery. 1983. J. Wildl. Manage. 47:220–222.—The effect of habitat manipulation for *Colinus virginianus* on the management area's avifauna was monitored from 1978 to 1980. A 30-ha treatment area of rangeland was managed for quail in 1978 by disking five 6 × 600 m strips, half-cutting 120 mesquite (*Prosopis glandulosa*) trees, and constructing four 30 × 30 m grazing enclosures with a brush pile in each. Widening and planting of disked strips with native food plants, and placement of 50 additional brush piles, were done the following year. Birds were counted in the treatment area and in a 30-ha control area using line transects. Main conclusion: "The diversity of the avian population using the treatment area was higher than that of the control area in 7 of 11 months and the overall abundance and number of species seen were higher in 10 of 11 months." This type of study illustrates how game management can also improve habitat for nongame species, but I would have liked to have seen a little ecological data on how non-Bobwhite bird species actually used the treatment area (i.e., for nesting versus foraging), and some discussion of avian response to the different management practices done in each of the 2 years.—Richard A. Lent.

CONSERVATION AND ENVIRONMENTAL QUALITY

(see also 7, 11, 25, 50)

27. Counts of aerial-feeding birds in relation to pollution levels. A. K. Turner. 1982. Bird Study 29:221–226.—Numbers of swifts (*Apus apus*) and swallows (*Delichon urbica, Hirundo rustica*) in Central Scotland were better correlated with a subjective evaluation of habitat (e.g., availability of nest sites, vegetative cover) than they were with levels of smoke and sulphur dioxide pollution. When the effects of habitat were held constant in a partial correlation analysis, the number of *D. urbica* and mean winter concentration of smoke were significantly negatively correlated. Turner postulated that a reduction in pollution levels in southern Manchester during the 1960's may have contributed to population increases of the *D. urbica* between 1933 and 1975.—Stephen R. Patton.

28. The influence of Dutch elm disease on bird population trends. P. Osborne. 1983. Bird Study 30:27–38.—The effects of Dutch elm disease (DED) on bird population sizes were studied at 44 census plots during the years 1971–1979. The Chiffchaff (*Phylloscopus collybita*) and Tree Sparrow (*Passer montanus*) exhibited a population decline over a 6-year period (1971–1976) on plots affected by DED relative to unaffected plots. Three other species, Robin (*Erithacus rubecula*), Dunnock (*Prunella madularis*), and Goldcrest (*Regulus regulus*), exhibited significant declines in population size over all 9 years. These population declines may be attributable to DED and the subsequent felling of trees, but Osborne warns of accepting postulated reasons for population size changes without experimental data. Nevertheless, Osborne concludes that DED will cause further reductions in bird populations in Britain.—Stephen R. Patton.

29. Tree-nesting raptors in Nevada. M. W. Perkins. 1982. North Am. Bird Bander. 7:105–106.—An inventory of nesting raptor species within the four million acre Egan Resource Area, White Pine County, Nevada was conducted in 1981. The species and numbers of nestlings banded were as follows: Ferruginous Hawk (*Buteo regalis*) 71; Great Horned Owl (*Bubo virginianus*) 12; Red-tailed Hawk (*Buteo jamaicensis*) 5; American Kestrel (*Falco sparverius*) 5; Cooper's Hawk (*Accipiter cooperii*) 3; Swainson's Hawk (*Buteo swainsonii*) 2; Northern Goshawk (*Accipiter gentilis*) 1; and Burrowing Owl (*Speotyto cunicularia*) 1. There were 76 fledgling Ferruginous Hawks (73 light phase and 3 dark phase) produced in 27 nests (mean = 2.81 per nest, see review **25**). Perkins suggests that changes in raptor populations in Nevada include increasing numbers of Great Horned Owls and decreasing numbers of Swainson's Hawks. Great Horned Owl predation of a ca. 3-week-old Northern Goshawk nestling was observed.—Richard J. Clark.

30. Mercury in feathers of the Peregrine Falcon *Falco peregrinus* in Finland. P. Lindberg, T. Odsjo, and M. Wikman. 1983. Ornis Fenn. 60:28–30.—Mercury levels in molted feathers of adults and feathers clipped from nestling Peregrine Falcons were measured in Finland during 1976–1977. Levels in adults were significantly higher than those of nestlings (2.8 times as high). The authors proposed that mercury concentrations were obtained from shorebirds that make up 52% of the diet of Finnish Peregrines. They suggested that the difference in levels for adults versus nestlings was attributable to a shorter time of exposure for nestlings. No difference in reproductive success was observed between polluted and unpolluted areas. The authors concluded that the mercury contamination during the investigation period had only minor effects on the condition of this population of Peregrines.—Lise A. Hanners.

31. Work on Golden Eagle and Peregrine in northeast Scotland in 1982. S. Payne and A. Watson. 1983. Scott. Birds 12:159–162.—The results of the Northeast Scotland Raptor Study Group are tabulated. Of interest are the fledging of at least 61 Peregrine Falcons (*Falco peregrinus*) from 52 adult pairs. Eggs disappeared "and were probably robbed from four nests and possibly three more; only three of these pairs relaid. . . Five complete broods of young were also considered to have been robbed, including two well-grown broods of three and four, and a sixth brood possibly robbed. None of these pairs relaid."

For the Golden Eagle (*Aquila chrysaetos*), 20–21 young fledged from 25–26 adult pairs. No losses from robbery were indicated nor suspected. In two breeding pairs the females had white wing patches and a conspicuous white base to the tail. Both laid fertile eggs and one raised two young. In at least three others, one of the pair had a prominent white base to the tail.—Richard J. Clark.

PARASITES AND DISEASES

32. Breeding biology of a Pennsylvania Tree Swallow colony: effects of the parasitic blowfly on growth rates. J. J. Stohura. 1982. North Am. Bird Bander 7:140–145.—This study of Tree Swallows (*Tachycineta bicolor*) was conducted at Montour Preserve, Montour County, Pennsylvania. While it started in 1975 "and has continued every breeding season since then," the bulk of what was reported dealt with 12 nests in the 1976 season. Nestlings were weighed and overall length and wing chord were measured. Infestation of the nest boxes by the parasitic blowfly (*Protocalliphora splendida*) was measured by counting the number of pupae in the box 4 days after the last swallow fledged from the box and dividing that number by the number of swallows that fledged. Of the 12 nests studied in 1976 the earliest 2 broods of swallows were not parasitized while mean larvae per young swallows ranged from 2.8 to 27 in the remaining 10 nests. While the author compares growth rates of the young from the most heavily parasitized nest with 4 or 5 "typical" nests, the reader cannot verify this because only the average of the 4 or 5 is given, e.g., on the average, from Day 9 through 15 the most heavily parasitized young weighed 23% less than the "normal" nestlings; from Day 7 through 19 they were 17% shorter and their wing chord was 29% less than that of the "normal" nestlings. No clue is given as to the amount of variation that was observed in the 4 or 5 "normal" broods.

Both parents cared for the young and mean numbers of feeding stops per hour were as follows: 11 for the first 5 days, 15 for the next 5 days, 22 for the next 5, and during the final days 17/h. The average fledging period was 19.8 days (19–22, n = 12). One adult female banded as a nestling in 1975 returned to nest in the 5 following consecutive years and fledged 26 young. More information might be gleaned from this study, but it lacks presentation of adequate raw data and statistical treatment of results.—Richard J. Clark.

PHYSIOLOGY

(see also 17, 56)

33. Diurnal and seasonal variation in liver glycogen and fat in relation to metabolic status of liver and *M. pectoralis* in the migratory starling, *Sturnus roseus*, wintering in India. B. Pilo and J. C. George. 1983. Comp. Biochem. Physiol. 74A:601–604.—Fat levels in the liver vary diurnally and seasonally and increase at the expense of glycogen toward migration time. Respiratory quotients of tissue slices indicate lipid use in liver and muscle at postmigration times, while towards migration, values indicate carbohydrate catabolism. This is one of the few attempts to investigate cellular phenomena in the metabolism of migrants.—C. R. Blem.

34. Temperature regulation and metabolism in developing White-necked Raven. R. J. Mishaga and W. G. Whitford. 1983. Comp. Biochem. Physiol. 74A:605–614.—Shivering and panting responses appear in the White-necked Raven (*Corvus albicollis*) at 7–14 days of age, and at the onset of physiological thermoregulation, the V_{02} of nestling birds was nearly twice that of a hypothetical adult. This paper provides additional data for those students interested in the adaptation of black birds to hot environments.—C. R. Blem.

35. Rates of oxygen consumption in four species of seabird at Palmer Station, Antarctic Peninsula. R. E. Ricklefs and K. K. Matthew. 1983. Comp. Biochem. Physiol. 74A:885–888.—Measurements of oxygen consumption of the Adelie Penguin (*Pygoscelis adeliae*), Southern Giant Fulmar (*Fulmarus glacialoides*), Blue-eyed Shag (*Phalacrocorax atriceps*), and South Polar Skua (*Catharacta skua*) agree with some estimates of metabolism based on loss of mass during incubation. Standard metabolic rate of Adelie Penguins was much higher than that reported in other studies and higher than most values for other penguins.—C. R. Blem.

36. Digestion in the emu: low energy and nitrogen requirements of this large ratite bird. T. J. Dawson and R. M. Herd. 1983. Comp. Biochem. Physiol. 75A:41–45.—Metabolized energy values for emus (*Dromaius novaehollandiae*) are low when compared with data from other birds and appear associated with a low basal metabolic rate. Low nitrogen requirements may reflect some form of recycling of urinary nitrogen.—C. R. Blem.

37. Comparative growth rates and oxygen consumption in young Galliformes. K. K. Matthew. 1983. Comp. Biochem. Physiol. 75A:249–253.—The chicks of large species of Galliformes grow more slowly and thermoregulate earlier. Species' body weights at adulthood do not appear to influence growth rate before hatching.—C. R. Blem.

38. Development of homeothermy in the diving petrels *Pelecanoides urinatrix exsul* and *P. georgicus* and the Antarctic prion *Pachyptila desolata*. R. E. Ricklefs and D. D. Roby. 1983. Comp. Biochem. Physiol. 75A:307–311.—Effective endothermy at 5°C occurs after 9 days in *P. urinatrix*, 5–6 days in *P. georgicus*, and almost immediately in *Pachyptila desolata*. The period of thermal dependence of the chick is related to distance between feeding areas and nest sites.—C. R. Blem.

39. A continuum of sleep and shallow torpor in fasting doves. L. E. Walker, J. M. Walker, J. W. Palca, and R. J. Berger. 1983. Science 221:194–195.—Adult Ringed Turtle Doves (*Streptopelia risoria*) entered shallow torpor during nocturnal sleep while fasting. Body temperature fell each successive night by 1° to 3°C in conjunction with reduced rapid-eye-movement sleep until torpor consisted almost entirely of slow-wave sleep at a body temperature of 30° to 32°C. As found in mammals, shallow torpor in doves appears to lie on a continuum with sleep.—J. M. Wunderle, Jr.

40. Sound transmitting function of the middle ear in birds: 2. The middle ear muscle as a regulator of sound transmission (Zvukoperedaiushchie funktsii srednego ukha ptits: 2. Sredneushnaia myshtsa kak reguliator zvukoperedachi). V. D. Anisimov and V. D. Ilyichev. 1982. Zool. Zh. 51:747–754. (Russian, English summary)—This article includes results of a study of the inner ear of 5 owl and 4 corvid species. Part 1, "Structural adaptations of specialized systems," appeared in a 1980 issue of the same journal. For this study a new technique was developed in which the birds were closely confined and their heads immobilized so that pointed markers made of silver film could be affixed to their eardrums and columellae. The markers were then illuminated so that their movement which resulted from contraction of the muscle of the middle ear could be recorded photographically. (Presumably this technique is described in more detail in part 1.) Noise generators provided wide-band background noise at 43 and 60 dB, and another monotonal sound. The curves of the recorded threshold levels for reflex contractions of the muscle were found to depend on the intensity of the background noise and to correspond to the frequencies to which a particular species' auditory system was attuned.—Elizabeth C. Anderson.

MORPHOLOGY AND ANATOMY

(see also 9, 37)

41. Body proportions in adults and fledglings of the Little Auk. L. Stempniewicz. 1982. Acta Zool. Cracov. 26:149–158.—Measurements of body size in adult and fledgling Little Auks (*Alle alle*) were made. These included body weight, wing length (folded), tarsus length, and tail length. Other parameters studied included the area and shape of the wings and paddles and the weight of the excised heart, pectoral muscles, and leg muscles. The author infers that the body proportions and low body weight of fledglings enable more to survive.—R. W. Colburn.

42. Natural selection on body size and proportions in House Sparrows. R. C. Fleischer and R. F. Johnston. 1982. Nature 298:747–749.—Based on 14 skeletal measurements of autumn (first-year birds that had completed skeletal growth) and spring (all age classes) samples of House Sparrows (*Passer domesticus*), significant differences in size distributions were found and attributed to severe winter conditions in Kansas. Spring males were significantly larger than fall males, whereas spring females were significantly smaller than autumn females. Both sexes, however, showed increased core-to-limb proportions which reflect decreased surface/volume ratios. Such trends may be a consequence of winter mortality, inasmuch as birds with lower surface/volume ratios experienced a selective advantage associated with lower rates of heat loss and metabolism. Results are consistent with predictions from Allen's ecogeographic size trend predictions, though the authors contend that theirs is the first study to document a temporal change in body proportions. These findings are interesting. The overall presentation would have benefited from some explanations of why the authors chose to analyze *only* first-year fall birds and *not* to present their significant data on skull/body size ratios.—W. A. Montevecchi.

43. Environmental component of morphological differentiation in birds. F. C. James. 1983. Science 221:184–186.—Clinal variation in avian morphological characteristics is widely believed to be a result of natural selection for phenotypes that reflect locally adapted genetic differences. Frequently correlative methods have been used to make inferences about the agents of selection. In previous work there has been little attention paid to the significance of shape variation that is allometrically associated with size variation or to the extent to which clinal variation is environmentally induced. This study was designed to estimate the extent and direction of environmental effects on geographical variation in morphology of the Red-winged Blackbird (*Agelaius phoeniceus*) by use of transplant experiments.

A reciprocal transplant of eggs between northern and southern Florida and a transplant from Colorado to Minnesota indicated that transplanted nestlings showed a shift from the phenotypes of the controls towards the phenotype of nestlings in nests of the foster population. Among reciprocal transplants in Florida, the ratio of bill length to tarsus shifted most and was in the direction predicted by differences among adults. Among nestlings transplanted from Colorado to Minnesota, the ratio of wing to tarsus shifted most and was also in the direction predicted by differences among adults. These results show that clinal variation contains directional, environmentally induced effects, and that individual characters may have geographic variation in levels of phenotypic stability. James concludes that if natural selection maintains clines of character variation as found in adult phenotypes, then both the genetic and nongenetic components of phenotypes must covary. In future studies of character variation, both genetic and environmental contributions to patterns of phenotypic variation must be considered.—J. M. Wunderle, Jr.

PLUMAGES AND MOLT

(see also 24, 30)

44. Preliminary studies on the molting of the House Swift (*Apus affinis subfurcatus*). Z. T. Kou. 1982. Acta Zool. Sinica 28:302–306. (Chinese, English summary)—The pattern of molt in the House Swift was determined by examining 124 individuals from a colony in Mengtse, Yunnan, during July 1963–December 1964. One to 4 (usually 2) specimens were collected at weekly intervals and the intensity of molt (1–5 feathers = "+," 6–10 feathers = "++," >10 feathers = "+++") was scored for the head, neck, back, belly, wing (coverts and flight feathers treated separately), and tail regions of the birds.

Molt was observed in the back, neck, and tail regions and in the wing [coverts] of birds collected during March–December. Leg and belly molt were observed in birds collected during June–December and the molt of flight feathers was observed in birds collected during May–December. Monthly molt scores were high for the head and back regions during August–October, the wing coverts during July–September, the neck during July–October, the leg during September–October, the belly during August and the flight feathers during August–October. Unfortunately, the author did not make clear whether the monthly molt scores represented the average of individual scores for the month or the highest score recorded for the month. Furthermore, it is not possible to determine what proportion of the birds sampled each month exhibited each kind of molt.

The 10 primaries and associated coverts molted gradually starting with the innermost feather and proceeded outwards. The 5 secondaries began molt one month later than the primaries (in June rather than May) and in contrast to the pattern observed in the primaries, the outermost secondary was shed first and molt proceeded inwards. The shedding of the left and right outermost rectrices marked the beginning of tail molt and the replacement of the central rectrices signaled its completion. Although primaries, primary coverts, secondaries, and rectrices generally molted in a symmetrical pattern, asymmetry in the length of corresponding left and right wing feathers was frequently observed. On the average, corresponding left and right primaries differed in length by 4.0 mm (range = 0–27), primary coverts by 2.9 mm (0–14.5), secondaries by 4.6 mm (0–22), and rectrices by 4.0 mm (0–27).—Marina Wong.

45. Sexual differences in the tail barring of Spotted Owls. C. W. Barrows, P. H. Bloom, and C. T. Collins. 1982. North Am. Bird Bander 7:138–139.—The number of complete bars on the central rectrices of the Spotted Owl (both *Strix occidentalis caurina* and *S. o. occidentalis*) were examined as a criterion for sexing this species in the field. A complete bar was defined as one that extended from the rachis to the vane margin on at least one side. Both live birds and skins were examined; 38 of the northern subspecies (*S. o. caurina*) and 34 of the California subspecies (*S. o. occidentalis*). Sixteen males of the former subspecies had 3 complete bars (the single exception had 4), while only one female had 3 and 20 had 4 to 6 complete bars. For the California subspecies all 14 males had 2 to 4 complete bars, while all but 4 of the 20 females had 5 or more complete bars. Thus 94% of 38 *S. o. caurina* fit the prescribed pattern (3 or fewer complete bars indicates a male and 4 or more complete bars indicates a female), whereas 88% of *S. o. occidentalis* conform to the pattern of 4 or fewer complete bars indicating a male while 5 or more complete bars suggest a female. No clear differences were found between adult and immature age classes, so individuals were grouped together. More field testing is called for and the method's applicability for other species is untested. The author suggests that the method may be applicable to the Barred Owl (*Strix varia*).—Richard J. Clark.

46. Probability method of ageing Passerine nestlings and its usage in breeding phenology investigations. W. Kania. 1982. Ring. 10:1–7.—This study documents the extrapolation of first hatching dates for European Starlings (*Sturnus vulgaris*) from data on wing-length and feather development stage. From collected data probability tables are set up for objectively estimating the day of life of nestlings (thus providing a first day of hatching for the oldest nestlings in a nest). The feather development stage uses the extent of eruption of nestling dorsal body feathers and the proportion of sheath versus vane of the remex with the longest and shortest vane. Conversion tables are presented for translating values for either of the above indices into age in days for nestlings. The proposed method convincingly (to this reviewer) argues that this method makes possible the following: (a) the use of simply gathered field data applicable to all Passerines; (b) the establishment of first hatching dates for populations; (c) allowing the establishment of conversion tables after the data have been collected; and (d) the prolonging of time periods within which a phenological index can be established.—Richard J. Clark.

ZOOGEOGRAPHY AND DISTRIBUTION

(see also 1, 5, 13, 54, 61)

47. Factors affecting the distribution of the Snow Petrel (*Pagadroma nivea*) and the Antarctic Petrel (*Thalassoica antarctica*). A. M. Griffiths. 1983. Ardea 71:145–150.—The Snow and Antarctic petrels were restricted to areas of sea-ice where other petrels were absent. Their abundance correlated poorly with meteorological and oceanographic variables. Air and surface water temperature affected the distribution of sea-ice rather than the petrels directly. Their unspecialized diets plus their other traits allow them to occupy areas of the antarctic that are unavailable to most procellariiforms.—Clayton M. White.

48. Factors influencing the distribution of Magpies *Pica pica* in an urban environment. P. Tatner. 1982. Bird Study 29:227–234.—The Magpie nested in most available tree species but exhibited a preference for the fairly dense canopy of Manchester poplar (*Populus nigra*). Tree number and diversity were positively correlated with Magpie nesting density, but these 2 factors contributed to only 35% of the variance in nesting density. Apparently other factors that were not investigated during this study have a greater influence on the nesting density of Magpies. The cessation of persecution following two world wars and an unspecialized diet are suggested as principal factors that have allowed the Magpie to colonize urban environments.—Stephen R. Patton.

49. On phenology and biometry of Rock and Water pipit *Anthus spinoletta*. F. J. Koning. 1982. Limosa 55:115–120. (Dutch, English summary)—The 2 subspecies *A. s. spinoletta* and *A. s. littoralis* that occur sympatrically on migration in the Delta of Holland are compared. They arrived at different times, nearly a month apart, and *A. s. spinoletta* remained through the winter. The sex ratio of the migrant *A. s. littoralis* was equal, but in *A. s. spinoletta* males dominated.—Clayton M. White.

50. Seabird populations of the Isle of May. M. P. Harris and H. Galbraith. 1983. Scott. Birds 12:174–180.—Numbers of Fulmars (*Fulmaris glacialis*), Kittiwakes (*Rissa tridactyla*), Guillemots (*Uria aalge*), Razorbills (*Alca torda*), Puffins (*Fratercula arctica*), Shags (*Phalacrocorax aristotelis*), Herring Gulls (*Larus argentatus*), and Lesser Black-backed Gulls (*L. fuscus*) have increased dramatically on the Isle of May. Since the turn of the century populations of these species have been increasing throughout the North Sea. Detailed censuses such as this will provide a valuable measure of the environmental impact of oil exploitation in the North Sea.—Edward H. Burtt, Jr.

51. Breeding waders of the Caithness flows. T. M. Reed, D. R. Langslow, and F. L. Symonds. 1983. Scott. Birds 12:180–186.—Caithness, in northern Scotland, harbors an unusually diverse and dense population of shorebirds in its peat and upland moor habitats. The report is based on 2 years of transect data from 18 sites, although not all sites were censused in both years. The paper includes a useful discussion of problems associated with population estimates of breeding shorebirds.—Edward H. Burtt, Jr.

52. Maps of distribution and abundance of selected species of birds on uncultivated native upland grasslands and shrubsteppe in the northern Great Plains. H. A. Kantrud. 1982. U.S. Fish Wildl. Serv. Biol. Serv. Program FWS-OBS, 31 p.—Surveys were conducted on 615 lightly to heavily grazed plots, most of which covered 65 ha. Plots were surveyed a single time between 0600 and 2100 during the 1974–1978 breeding seasons. Results are presented as pairs/min, but since surveyors walked at a constant speed, the index presumably reflects density. Maps for 20 species show relative abundance at each site. The numbers per site were ranked, and a different symbol is used to identify sites having high, medium, and low density. Unfortunately, the thresholds separating these 3 "terciles" are not given so that readers cannot compare the densities of different species.

The study area covers parts of 4 of the physiographic strata used in the Breeding Bird Survey (BBS) and thus provides a chance to evaluate how well the BBS strata delineate different avian communities. The border between 2 of the strata (38 and 39) does appear to separate density classes of the species Kantrud studied, but the change in density for many species is gradual and varies in rate between species. If the ranges of the species were defined objectively, their borders would rarely coincide with the BBS stratum borders. The 2 other BBS strata cover only small parts of the study area, but I could see no evidence that the 20 species studied acknowledge these strata.—Jonathan Bart.

SYSTEMATICS AND PALEONTOLOGY

(see also 43, 49)

53. Current status and management challenges for Tule White-fronted Geese. D. E. Timm, M. L. Wege, and D. S. Gilmer. 1982. Trans. N. Am. Wildl. Nat. Resour. Conf. 47:453–463.—Evidence is presented for recognizing Tule Geese as a subspecies of White-fronted Geese (*Anser albifrons*), and its breeding, migration, and wintering grounds are described. Population size is estimated at 3500–4000; annual survival is estimated at 80%. A decline in population size of up to 50% has led some to propose listing Tule Geese as endangered. The authors oppose this suggestion on the basis that it would lead to virtual cessation of hunting the nearly identical White-fronts, and this might sharply curtail funds for wetlands preservation and management flexibility in general. They conclude that "endangered status would . . . do little that is not already being done to protect the subspecies."—Jonathan Bart.

EVOLUTION AND GENETICS

(see also 9, 42, 43)

54. Niche shifts and competition in Darwin's finches: *Geospiza conirostris* and congeners. B. R. Grant and P. R. Grant. 1982. Evolution 36:637–657.—The authors continue their extensive series of ecological studies of Galapagos finches in this analysis of island distribution and beak size variation in *G. conirostris.* Indirect methods of inferring the nature and magnitude of competition were employed. For instance, bill sizes, diets, and foraging similarities were compared on islands with and without probable competitors. Some predictions of the niche shift/competition hypothesis were upheld; for example, *G. conirostris* was shown to have an unusually broad feeding niche, consistent with its postulated role in excluding *G. magnirostris, G. fortis,* and *G. scandens* from certain islands. However, other predictions were not upheld. The authors conclude that competition plays a major role in the patterns of distribution of *Geospiza* species on the Galapagos Islands. However, the situation is complicated and the problems of the effects of occasional severe dry seasons and the detailed nature of the process of inter-island colonization remain to be investigated.—George F. Barrowclough.

55. Synchrony in the Lesser Snow Goose (*Anser caerulescens caerulescens*). II. The adaptive value of reproductive synchrony. C. S. Findlay and F. Cooke. 1982. Evolution 36:786–799.—In an earlier paper, these authors have shown that there is heritability for relative date of clutch hatching in the Lesser Snow Goose. Having established the necessary genetic basis of the trait, the authors now address the question of the adaptive value of breeding synchrony. Nest failure is clearly shown to be at a minimum for clutches completed on the mean completion date. Clutches completed earlier were larger than average, but also suffered from dramatically higher brood mortality due to predation. Clutches completed later than average were smaller, and, in the authors' opinion, may suffer from mortality problems associated with the fledglings' not being ready for the early migration enforced by the short summer season at high latitudes. Most of these late nesters appear to be young individuals. The fact that there is heritability for an adaptive trait such as hatching date may seem paradoxical: one might expect the selection documented by these authors to have eliminated genetic variation for the trait (Fisher's Fundamental Theorem of Natural Selection). However, the heritability could be due to a balance between selection and new mutations, or to environmental fluctuations favoring early clutches in some years. The authors suggest this latter idea as a realistic possibility.—George F. Barrowclough.

FOOD AND FEEDING

(see also 21)

56. Alcohol accumulation from ingested berries and alcohol metabolism in passerine birds. K. Eriksson and H. Nummi. 1983. Ornis Fenn. 60:2–9.—Experiments were conducted to determine the extent to which fruits ferment to alcohol in nature, and to determine if intoxicating concentrations of alcohol accumulate in waxwings (*Bombycilla garrulus*) and Bullfinches (*Pyrrhula pyrrhula*) eating a diet of rowan berries (*Sorbus aucuparia*). Rates of alcohol metabolism in Waxwings with a berry diet, Starlings (*Sturnus vulgaris*) with a mixed animal and plant diet, and Greenfinches (*Carduelis chloris*) with a seed diet were compared.

Rowan berries, hawthorn haws (*Crataegus monogyna*), and rose hips (*Rosa rugosa*) were analyzed monthly for alcohol and sugar content from September through February. Feeding experiments were conducted in October and January on birds housed in outside cages. Blood samples were obtained over 4 daily time periods and average daily caloric intake of waxwings was determined. Alcohol metabolism rates were measured by injection of a high and low ethanol dose and blood samples were collected at subsequent time intervals. Livers of birds given the low ethanol dose were used to determine alcohol dehydrogenase activity, protein concentration, and isozyme activity.

Alcohol levels in rose hips and rowan berries peaked in January and February while sugar concentrations generally decreased. Little blood alcohol was found at dawn and midnight for birds feeding on berries; all birds had alcohol in their blood at noon and sunset. Waxwings metabolized alcohol 3.3 times faster than Starlings and 7.2 times faster than Greenfinches. The ADH activity of the waxwing livers was 15 times higher than that of Starlings and 6.2 times higher than that of Greenfinches. The waxwing liver constituted 4.9% of the total body weight; in both Starlings and Greenfinches it composed only 2.8%. All 3 species demonstrated differences in isozyme activity. The authors suggested that these physiological differences among species are related to the relative quantity of ethanol-containing food in the diets of these birds.

This paper begins to address physiological adaptations for diet and proposes a number of interesting avenues for further research. Behavioral observations were not conducted on birds injected with alcohol and the authors recognized that they could not quantitatively address whether these experimental alcohol levels were intoxicating enough to affect flight. The authors were cognizant of the influence of using caged birds and addressed the limitations for comparison with freely foraging birds. Levels of alcohol used in testing were within the range found in nature, providing a basis for further realistic physiological research.—Lise A. Hanners.

SONGS AND VOCALIZATIONS

(see also 40, 58)

57. The changing song patterns of the Great Tit (*Parus major*). L. Lehtonen. 1983. Ornis Fenn. 60:16–21.—Lehtonen has recorded the song patterns of Great Tits in the Helsinki region since 1947. He made phonetic descriptions of the phrases, noted number of themes, and made relative estimates of pitch, tempo, and tone. Until the 1950's Lehtonen found that a 3-syllable phrase was the dominant song in Finland, with a 2- and 4-syllable song heard occasionally. During the 1950's the 2-syllable song increased in frequency and by the early 1970's it comprised nearly 90% of the song types. Since the 1970's a new 1-syllable song has become more frequent, and is particularly common in sparsely wooded, noisy, urbanized areas. Lehtonen proposes that the noisy environment has caused changes in the Great Tit's daily and annual rhythms, and also in the liveliness and phrase structure of their songs. He proposes a number of possible explanations for the change, but remains uncertain why the songs have shortened.—Lise A. Hanners.

BOOKS AND MONOGRAPHS

58. The Barn Owl. D. S. Bunn, A. B. Warburton, and R. D. S. Wilson. 1982. Buteo Books (U.S.) and T. and A. D. Poyser Ltd. (Great Britain). 264 p. $32.50.—This book reports the results "of almost 40 years" of field work, as well as "complementary observations" from other workers, dealing with *Tyto alba* in Britain. It deals also, but to a much lesser degree, with the Barn Owl in Europe and the U.S.A. There are 9 chapters titled as follows: Descriptions and Adaptations, Voice, General Behaviour, Food, Breeding, Movements, Factors Controlling Population, and Possible Conservation Measures, Distribution in the British Isles and Folklore, followed by 3 appendices entitled: Vertebrate Species in the Text, Development of Young Barn Owl, and Watching the Barn Owl. There are 6 pages of references and a 5½ page index. Illustrations include a color Frontispiece, 11 figures, a number of pen-and-ink vignettes, and 31 high quality black-and-white plates. Finally, 39 tables list data.

I find this book a curious mixture of scientific and popular aspects. For example, the chapter on Voice details 15 vocal displays and two non-vocal, auditory displays (i.e., Tongue-Clicking and Wing-clapping) and describes the behavioral context of them, yet the authors do not subscribe to the ethological convention of referring to all of these as displays (and indicate this with upper case letters) and repeatedly refer to them as Call-four, Call-six, etc.

There are a number of examples of anthropomorphisms, e.g., referring to the "masculinity" of males rather than their sexual drive, and talking about emotions rather than drives or tendencies. There are references drawn from secondary literature when the primary literature should have been available. *Tyto ostologa* is described (p. 32) but no credit is given to Wetmore and Swales (U.S. Natl. Mus. Bull. 155:1–483, 1931) who were responsible for the original work on this extinct Giant Owl.

On page 33 the authors talk about the "specialisations that combine to make the sight of an owl so efficient in the dark." Defining dark as the absence of light, I know of no information available suggesting that they have any visual sight whatsoever in the dark. The authors also speculate on the ability of the Barn Owl to see in poor light. Speculation is unnecessary because Dice (Am. Nat. 79:385–416, 1945) demonstrated that the Barn Owl can "see very well" (secured 6 mice in 10 20-min trial periods) with .000,002 foot-candles of illumination. A Barred Owl (*Strix varia*) was able to "pounce directly upon or near a dead mouse, and also did so repeatedly" with .000,000,73 foot-candles of illumination.

The authors discuss the assessment movements of the head by young Barn Owls (p. 35) in relation to vision but no mention is made of Norberg's (Yrbk. Swed. Nat. Sci. Res. Council/Svensk Naturvetenskap 26:89–101, 1973) statement that this turning of the head about its longitudinal axis in young (of *Aegolius funereus* "makes possible binaural judgement of the vertical direction of a sound source." The authors speculate that the Short-eared Owl (*Asio flammeus*) is "apparently, less efficient in catching its vole prey" than are Barn Owls (p. 43). Unfortunately the authors passed up an excellent opportunity to quantify the efficiency of day-hunting Barn Owls and tended to impune the ability of the Short-eared Owls whose efficiency is known to be a minimum of 20.7% for 682 observed attempted pounces (Clark, Wildl. Monogr. 47:1–67, 1975) without comparable data to support their speculation. There are other cases of pertinent literature not being addressed, but the above should suffice to make my point.

The chapter on Voice is generally very good, but I believe sonograms would have made a further contribution to our knowledge of this topic. The chapter on Distribution in the British Isles adds about 12% to the bulk of the book and adds to the price, but I question that it adds to a balanced account of *Tyto alba* on a global scale.

In spite of the shortcomings I see in the book, it adds considerably to our knowledge of the behavior and ecology of this cosmopolitan owl species. For example, it points out that the Barn Owl was probably once a cliff-dweller. The authors mention that the eggs of the Barn Owl are "more elliptical than those of most other owls" but make no suggestion that this may have been a characteristic that was selectively favored in that the eggs tended to roll less and in a circular path when they did roll. They also show that the Barn Owl is an inhabitant of open areas and its populations were probably favored by the clearing of the forest for agriculture. They usefully differentiate between short-term trends and long-term fluctuations in Barn Owl populations in Britain. They document the probable adverse affects of both severe winters and drought on the Barn Owls and their food supply in Britain. There are occasional regionalisms in terms that will cause American readers to hesitate, e.g., referring to female owls as hens and males as cocks.

While this book contributes to our knowledge of the Barn Owl, making it a must for larger libraries and serious researchers of Barn Owls, its extensive content on Barn Owls in Britain and its high cost will probably result in few others adding this book to their libraries.—Richard J. Clark.

59. The La Parouse Bay Snow Goose (*Anser caerulescens caerulescens*) project—a 13-year report. F. Cooke, K. F. Abraham, J. C. Davies, C. S. Findlay, R. F. Healey, A. Sadura, and R. J. Seguin. 1983. Dept. of Biology, Queen's University, Kingston, Ontario K7L 3N6, Canada. 194 p.—This is a report, not an analysis or synthesis, on the largest intensive study of a breeding population of birds in existence. The purpose of the report is to document salient results for other researchers in avian population ecology; analysis of the major points will follow in individual papers over the next 5 years. Too many points are addressed to even list here, but workers interested in breeding synchronization, the effects of weather and age on clutch size, the efficacy of capture/recapture techniques, philopatry, or waterfowl in general will be interested in this report.—George F. Barrowclough.

60. Handbook of census methods for terrestrial vertebrates. D. E. Davis (ed.). 1982. CRC Press, Boca Raton, Florida. 397 p. $155.—Despite being a worthwhile subject, this is a disappointing book, particularly considering the numbing price. It is composed mainly of 160 accounts, written by nearly as many authors, of methods for use with one or a few species; 60 of the accounts concern birds.

Most authors provide a brief description of their species' range, habitat, or behavior and then recount how they have surveyed the species. Only a few authors include a comprehensive review of survey methods others have used. Many of them make specific recommendations regarding sample sizes and sample selection, but these are best regarded as examples of how one might conduct the field work rather than as instructions for how it ought to be done in every case. The book thus resembles a collection of methods sections from previously published papers. A critical review or synthesis of the information in the book might have been useful, but there is no such summary. Davis comments in his introduction that "this handbook cannot answer all your questions, but it can answer some" of them. I doubt, however, that the researcher who knows the literature on his species will find many new, reliable answers in this book.—Jonathan Bart.

61. A distributional checklist of the birds of Michigan. R. B. Payne. 1983. Misc. Publ. Mus. Zool. Univ. Mich. No. 164. Univ. of Michigan, Ann Arbor. 71 p. $9.50.—This recent report on the birds of Michigan updates a similar checklist published by the University of Michigan's Museum of Zoology in 1959. It is a highly readable, thoroughly documented, yet brief annotated list of Michigan's avifauna through early 1982. It is based on study skins from various repositories in and out of the state (nearly all in-state specimens were examined by Payne personally), published and unpublished field notes, tape recordings of songs, photographs, and distributional and nesting records, including those that appeared in the *Jack-Pine Warbler* between 1956 and 1982. Species are classified as transients, summer residents, regular or irregular residents, and forms that appear in Michigan during "irruptive years." By abundance, they are designated as vagrants, or those that are seen occasionally, uncommonly, and commonly. Introduced and exotic species that have established feral breeding populations in the state are included. Payne begins with a map showing the counties in Michigan and ends with an index of the species, which are listed both by their common and scientific names (according to the 1982 revision of the AOU Checklist of North American birds, except in the case of herons, for which Payne uses his own nomenclature).

Three-hundred and seventy species of birds have frequented Michigan at one time or another and 232 of them have nested there successfully. One (the Passenger Pigeon [*Ectopistes migratorius*]) is extinct. Many others (e.g., Common Goldeneye [*Bucephala clangula*], Piping Plover [*Charadrius melodus*], Eastern Phoebe [*Sayornis phoebe*], Thick-billed Murre [*Uria lomvia*], Bewick's Wren [*Thryomanes bewickii*], Eastern Bluebird [*Sialia sialis*], and Greater Prairie-Chicken [*Tympanuchus cupido*]) have become uncommon or have disappeared from the state altogether. Still others, such as the House Finch (*Carpodacus mexicanus*), are recent additions to the state's avifauna. Several species that were previously absent from the islands in Lake Michigan now commonly nest or at least reside there in the summer (e.g., Merlin [*Falco columbarius*], Ruffed Grouse [*Bonasa umbellus*], Wild Turkey [*Meleagris gallopavo*], and Evening Grosbeak [*Coccothraustes vespertinus*]).

Declines in the abundance of several raptors, linked in some cases to the formerly widespread use of pesticides, have been more or less arrested in Michigan. Ospreys (*Pandion haliaetus*) are up to 131 breeding pairs. Cooper's Hawks (*Accipiter cooperii*) are more numerous now. Bald Eagles (*Haliaeetus leucocephalus*) again nest successfully on the edges of Lake Superior. Yet, the numbers of Red-shouldered Hawks (*Buteo lineatus*) have dwindled even further; and Peregrine Falcons (*F. peregrinus*) have not nested in the state since the early 1970's.

The breeding ranges of species, such as the Blue-winged Warbler (*Vermivora pinus*), Evening Grosbeak, and Northern Cardinal (*Cardinalis cardinalis*), have expanded, while those of species such as Bewick's Wren have contracted. Breeding populations of Lark Sparrows (*Chondestes grammacus*), Common Barn-Owls (*Tyto alba*), and Loggerhead Shrikes (*Lanius ludovicianus*) are virtually gone. Kirtland's Warblers (*Dendroica kirtlandii*) are still in trouble: 232 males were reported in 1981, but only 207 in 1982. In contrast, the breeding densities of Double-crested Cormorants (*Phalacrocorax auritus*) and Caspian Terns (*Hydroprogne caspia*) have increased sharply. Wild Turkeys, an introduced species, are now widespread and plentiful; and so, unfortunately, are Brown-headed Cowbirds (*Molothrus ater*), which parasitize at least 40 species of birds in the state.

Demographic and abundance changes such as these occur for a variety of reasons, to which Payne alludes in this checklist. Eastern Bluebirds are less abundant because of loss of habitat, harsh winters, and competition with European Starlings (*Sturnus vulgaris*) for nesting cavities. Piping Plovers are endangered because of human disturbance to the beaches along Lakes Huron, Michigan, and Superior. Yet, the removal of forests and increased use of winter feeders have enabled the Northern Cardinal to become a common permanent resident of Michigan. And, winter feeders may also account for the northerly spread of Tufted Titmice (*Parus bicolor*) and Northern Mockingbirds (*Mimus polyglottos*) in the state.

To the above, Payne has added information about species (including warblers, ducks, and kingbirds) that hybridize and patterns of habitat use, migration, and distribution delineated by banding recoveries. For example, Barn Swallows (*Hirundo rustica*) hatched in Michigan usually don't nest in their natal colony; nor do the adults return to the same areas to nest in successive years; but, Indigo Buntings (*Passerina cyanea*) and Red-winged Blackbirds (*Agelaius phoeniceus*) commonly do that.

Payne's compilation includes 26 "hypothetical" species that may occur in Michigan and 11 "rejected" ones that have been reported in the state, but probably don't occur there. Examples of hypothetical forms are Greater Flamingos (*Phoenicopterus ruber*), Rufous Hummingbirds (*Selasphorus rufus*), and Western Tanagers (*Piranga ludoviciana*). Rejected forms include Smooth-billed Anis (*Crotophaga ani*), Red-cockaded Woodpeckers (*Picoides borealis*), and Curve-billed Thrashers (*Toxostoma curvirostre*).

This is a succinct, but comprehensive summary of the present state of birdlife in Michigan.—Michael Kern.

Notes and News

Louis Agassiz Fuertes, Margaret Morse Nice, and Paul A. Stewart Awards.—The Wilson Ornithological Society announces the availability of the following awards which are intended to assist ornithological research:

Louis Agassiz Fuertes Awards are available to all ornithologists, although graduate students and young professionals are preferred. Any kind of avian research may be funded. One or two awards of at least $200 may be presented.

Margaret Morse Nice Awards are limited to independent researchers without access to funds and facilities available at colleges, universities, or governmental agencies. They are thus restricted to amateurs, including high school students. Any kind of avian research may be funded. One, rarely two, awards of at least $200 may be presented.

Paul A. Stewart Awards are available to any ornithologist. Preference will be given to studies of bird movements based on banding, analysis of recoveries and returns of banded birds, or economic ornithology. Several awards of $200 are presented.

Applicants for any of the above awards **must** use the Research Awards Application Form, which can be obtained by writing: W.O.S. Research Awards, Museum of Natural History, The University of Michigan, Ann Arbor, MI 48109. Deadline for 1984 applications is 31 March. A condition of all the awards is willingness to report the results of the research as either an oral or poster presentation at one of the Society's annual meetings. Winners of the awards will be announced at the annual meeting of the Wilson Society, 30 May–4 June 1984, in Wilmington, North Carolina.