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RECENT LITERATURE

Edited by Jerome A. Jackson

BANDING AND LONGEVITY

(see 2, 4, 6, 9, 45, 46)

MIGRATION, ORIENTATION, AND HOMING

(see also 32)

1. **European Reed and Marsh warblers in Africa: migration patterns, moult and habitat.** F. Dowsett-Lemaire and R. J. Dowsett. 1987. Ostrich 58:65–85.—From banding records and specimen data the authors compiled information on the African movements of the European Reed Warbler (*Acrocephalus scirpaceus*) and the European Marsh Warbler (*A. palustris*). Reed warblers from western Europe migrate through northwest Africa to winter in west Africa. Eastern and some central European birds move through northeastern Africa and winter in central and eastern Africa, with some of these birds stopping in northeast Africa to molt into basic plumage first. Some reed warblers return north via the central Sahara. Marsh warblers were found to migrate entirely through the Middle East to northeast Africa, where they spend autumn before moving on to southeastern Africa, where they winter. Both species prefer dense scrub and tall grass in their winter range, avoiding competition through allopatry. Possible explanations for this shift in habitat preference by *A. scirpaceus* are offered. Timing of molt, migratory weight changes, and site fidelity are also delineated.—Malcolm F. Hodges, Jr.

2. **Migration of banded waders between China and Australia.** H. Weishu and D. Purchase. 1987. Colonial Waterbirds 10:106–110.—Waders (Charadrii) which breed in the northeastern Palaearctic region migrate in large numbers to wintering grounds in Australasia. They probably need at least one stopover enroute to build up fat reserves. Any conservation strategy for these birds requires a knowledge of migration routes and the migration feeding sites. The authors report on migration routes between China and Australia as determined by banding data. Between 1953 and 1981 nearly 44,000 waders of 49 species were banded in Australia. Nearly 3500 banded waders have been recovered inside Australia, and 20 outside. The number of individuals banded for each of the 49 species is presented in a table, and the details of the 20 outside recoveries are in an appendix.

The analysis by the authors suggests that many wader species may use different routes migrating north and south, and that coastal southeast China is the most important stopover area for waders migrating north from Australia. A map shows the recovery sites for nine species of Charadrii, along with the migration routes north for Grey-tailed Tattler (*Tringa brevipes*), Eastern Curlew (*Numenius madagascariensis*), Sharp-tailed Sandpiper (*Calidris acuminata*), and Curlew Sandpiper (*C. ferruginea*).

The authors conclude with a discussion of the Australian Wader Group census work and a plea for expanded collaboration among ornithologists in China and Australia.—William E. Davis, Jr.

3. **Synopsis of birds killed at the Coweta, Oklahoma, TV tower 1974–1984.** J. L. Norman. 1987. Bull. Okla. Ornithol. Soc. 20:17–22.—Records of kills of fall migrants at a 1900-ft high tower in Wagoner County, northeastern Oklahoma, are compiled. From 10 years' data, patterns of seasonality for many of the more common species can be seen.—Malcolm F. Hodges, Jr.

POPULATION DYNAMICS

(see also 28, 33, 45)

4. **Numbers, territory size and turnover of Short-eared Owls *Asio flammeus* in relation to vole abundance.** A. Village. 1987. Ornis Scand. 18:198–204.—From 1975–

1978, vole numbers (mostly *Microtus agrestis*) in southern Scotland peaked, crashed, and subsequently recovered. During this period, Village documented the influence of vole numbers on the breeding densities of Long-eared Owls (*Asio otus*) and European Kestrels (*Falco tinnunculus*) (see Bird Study 28:215–224, 1981; J. Anim. Ecol. 51:413–428, 1982). He also recorded numbers and territory sizes of Short-eared Owls.

Short-eared Owls are well-known "vole specialists" throughout their range. (Understandably, Village was too busy with the kestrels and Long-eared Owls to monitor Short-eared Owl food habits.) The number of Short-eared Owls seen during daytime in "young plantations" (the preferred vole habitat) was significantly positively correlated with vole numbers, and a regression analysis suggested that owls were unable to persist in this habitat when vole densities dropped below 50/ha. Mean territory size varied from 42–112 ha and was significantly negatively correlated with vole numbers. The rapid decline in owls following the vole crash seemed to be due to emigration from the study area: 2 banded birds were recovered 505 and 1730 km away, and 2 wing-tagged birds were seen alive 420 and 500 km away. Only 1 of 21 marked breeders returned to the study area the year following the vole crash, whereas 3 of 7 did so during the vole recovery year. These nomadic habits presumably allowed Short-eared Owls to exploit areas of local vole abundance.—Jeff Marks.

5. **Monitoring of Cape Barren Goose populations in South Australia.** A. C. Robinson and L. B. Delroy. 1986. S. Austral. Ornithol. 30:45–51.—The south Australian population of the Cape Barren Goose (*Cereopsis novaehollandiae*) included a minimum of 3000 birds by the summer of 1980. In 1985 numbers of eggs, chicks, and adults on the islands of the Sir Joseph Banks group were down by more than 50% compared to numbers in 1974 and 1979. This reduction in the breeding population was likely the result of a drought that preceded the breeding season. In spite of this drought, the summer population around lakes Alexandrina and Albert remains stable relative to the same population five years earlier.—D. J. Ingold.

6. **Population studies of Piping Plovers at Lake of the Woods, Minnesota, 1982–1987.** S. M. Haig and L. W. Oring. 1987. Loon 59:113–116.—Piping Plovers (*Charadrius melodus*) at Lake of the Woods Co., Minnesota were monitored to detect population trends, the extent of site fidelity, and reproductive success. Piping Plovers at this location represent a key link between Great Lakes Piping Plovers and prairie birds. Current data indicate a decline in the number of breeding pairs, and immigrants with returnees represent more than 90% of the total population of approximately 26 adults. In 1987, the number of plover fledglings increased. This may be attributed in part to better habitat conditions, trapping of mammalian predators, removal of Herring Gull (*Larus argentatus*) nests, and continued restriction of human activity at the breeding locations.—D. J. Ingold.

7. **Divorce in larids: a review.** V. H. Johnston and J. P. Ryder. 1987. Colonial Waterbirds 10:16–26.—This review, with more than 50 references, concerns the occurrence and nature of divorce (pair bonds are severed although both individuals are alive and at the same breeding colony) in larids. The authors place particular emphasis on the reproductive performance of divorced birds. In most cases divorce occurs between breeding seasons, but sometimes occurs during the breeding season following nesting failure. The reported percentage of divorce ranged from 5% in Silver Gulls (*Larus novaehollandiae*) to 29% in Caspian Terns (*Sterna caspia*). A major cause of divorce seems to be asynchronous arrival at the nesting colony. Divorce may also be related to nest-site tenacity, since a high divorce rate has been reported when the previous year's nest-sites were destroyed by flooding. Divorce also appears related in some species to poor reproductive performance in the preceding nesting season, and there is a lower divorce rate in older, more experienced birds. Birds tend to have later laying dates for a year or two after divorce, and reduced clutch sizes and number of fledglings, compared to non-divorced pairs. However, they often have better reproductive success than they did with previous mates. The authors present divorce and longevity data for other seabirds and make comparisons with larids.

The authors suggest that since larids are long-lived birds, divorce may be a mechanism which allows individuals to find more compatible mates, and thus, in the long run, increase their overall reproductive success.—William E. Davis, Jr.

8. Demographic study of a wild House Sparrow population by DNA fingerprinting. J. H. Wetton, R. E. Carter, D. T. Parkin, and D. Walters. 1987. Nature 327: 147–149.—The application of molecular genetics and biochemical techniques over the past 2 decades have yielded major insights in evolutionary biology. Molecular techniques have now been developed that allow the delineation of individual genetic identity (Jeffreys et al. 1985, Nature 314:67; see also Burke and Burford 1987, Nature 327:149). These techniques, involving the use of human minisatellite DNA probes, were successfully applied in a study of parent-offspring relationships in a population of House Sparrows (*Passer domesticus*). The mean transmission frequencies of fingerprint bands between parents and offspring was 0.47, and higher for incestuously produced progeny, close to ratios expected for Mendelian traits. Confirmation of parentage between adults and offspring included incisive demonstrations of "standard," incestuous, and extrapair copulation relationships. Analyses with DNA probes will be used to test hypotheses about the genetic relationships of free-ranging animals, which were heretofore inaccessible to scientific inquiry.—W. A. Montevecchi.

9. Local movements in the nuthatch *Sitta europaea*. B. Enoksson. 1987. Acta Reg. Soc. Sci. Litt. Gothoburgensis. Zoologica 14:36–47. (This paper is part of the Proceedings of the Fifth Nordic Ornithological Congress, 1985.)—Data presented in this paper are derived from a five-year study of a color-banded population of 60+ Eurasian Nuthatches (*Sitta europaea*) at three study areas near Uppsala, Sweden. Enoksson recorded 98 breeding attempts (4 in nest boxes), and documented shifts in home ranges, changes in pair composition, and seasonal movements of adults and juveniles of each sex. The bulk of the data and discussion presented here deal with changes in pair composition and seasonal movements of individuals. In general, neither sex was more likely to disperse and adult and juvenile dispersal involved only short distances. Dispersal was most likely to occur in late winter/spring. Data on natal dispersal were few (3 of 13 birds were relocated, and those were <1 km from their hatching site), but Enoksson argues that such a "recovery" rate is high and that it is unlikely that many more nestlings had survived. Nests of the same pair in subsequent years tended to be within 100 m of the previous nest. Enoksson attributes the high site tenacity and lack of prominent age/sex differences to the adaptive advantages of having familiarity with the area and of being near food caches.—Jerome A. Jackson.

NESTING AND REPRODUCTION

(see also 7, 23, 29, 30, 31, 34, 35, 44, 45, 46, 48)

10. The breeding biology of the African Scops Owl. C. J. Brown, B. R. Riekert, and R. J. Morsbach. 1987. Ostrich 58:58–64.—Observations at the nests of two pairs of African Scops Owls (*Otus senegalensis*) make up this study, done in Daan Viljoen Game Park, South Africa, in 1985. Owls in two nest boxes began laying after the first week of October, but hatching was almost synchronous, so incubation probably did not begin until the last egg was laid. Incubation (by females) lasted about 22 ± 2 d. The nestling period lasted from 25–28 d; brooding was by females alone. Males provided most of the food to nestlings, but female contributions increased from 8–30% of food brought over the nestling period. Insects made up 80% of the diet (by number), mostly moths; the rest were other arthropods (13%), reptiles (6%), and small mammals (1%). This was similar to the diet of *O. scops*. Growth and development of young, parental behavior, and foraging behavior are described.—Malcolm F. Hodges, Jr.

11. Breeding biology of Western Bluebirds in western Montana. A. Aylesworth. 1987. Sialia 9:135–136.—An extensive nest box program in western Montana has resulted in expansion of the breeding range of Western Bluebirds (*Sialia mexicana*). In 1986 shifts in numbers of Western and Mountain bluebirds (*Sialia currucoides*) were evident. Increased numbers of Western Bluebirds may have been the result of increasing entrance opening sizes of nest boxes to 1$\frac{9}{16}$ inches (4 cm).—Robin J. Densmore.

12. Reproduction and survival of polygynous and monogamous Blue Tit (*Parus caeruleus*). A. A. Dhondt. 1987. Ibis 129:327–334.—During a seven-year study in two plots in optimum habitat in Belgium, the author observed 45 polygynous broods involving

22 males out of 667 successful first broods in the Blue Tit (*Parus caeruleus*). Considering only confirmed cases, the estimated proportion of polygynous males was only 3.4%, but 10.8% if all possible instances are included. Only one male was found paired simultaneously to three females. In both sexes the incidence of polygyny was independent of age.

Did reproduction and survival differ between polygynous and monogamous Blue Tits? For primary females (females laying first with a polygynous male) reproductive success was equivalent to that of monogamously mated females. Secondary females (females laying second with a polygynous male) laid later, laid smaller clutches, and raised fewer young. Deserted females (females without an apparent mate) had reproductive success which was intermediate. Adult survival did not differ between monogamous and polygynous males. Among females, no effect of pairing status on survival was found in one locality, but in a second locality monogamous females survived better than others. Dhondt's previous studies indicate that Blue Tit polygyny is consistent with the polygyny threshold model, and here he concludes that in any study with this species in optimal habitat one could expect to find polygyny. The value of this work resides in its long-term nature and careful accounting of the survival and reproductive success for different monogamous and polygynous birds.—J. M. Wunderle, Jr.

13. Do Great Tit (*Parus major*) parents gear their brood defence to the quality of their young? E. Curio and K. Regelmann. 1987. Ibis 129:344–352.—Theories derived from studies of parental investment suggest that animals should increase their reproductive success by investing more heavily in higher-quality offspring than lower-quality offspring. This might involve investing more in older than younger offspring or in larger broods than smaller broods. Weight of nestlings might serve as an indicator of quality, because Great Tit (*Parus major*) nestlings of higher body weight have been shown to have a higher survival rate after fledging. Thus the authors test the prediction that Great Tit parents invest more heavily in heavier nestlings as measured by six defense variables against a caged Pygmy Owl (*Glaucidium perlatum*), which is a natural predator of both adults and nestlings.

Thirty-two pairs of adult Great Tits in woodlands in West Germany did not vary their antipredator behavior in relation to nestling weight. However, parental defense behavior did vary with the parent's sex and the number of nestlings (as found previously by the authors). The failure of the parents to vary their antipredator behavior with nestling weight was attributed to the possibilities that: (1) parents may be unable to detect differences in nestling quality; (2) quality differences among broods may have been too small for the parents to detect; and (3) parents might be using nestling mortality from starvation as a cue to judge the quality of their brood. The authors conclude that the negative results do not support their model of brood defense, yet also do not falsify it.—J. M. Wunderle, Jr.

14. A six year study of nesting Tree Swallows in Delaware State Park, Delaware, Ohio 1979–1984. R. M. Tuttle. 1987. Sialia 9:3–7, 34.—During the course of this study, the population of Tree Swallows (*Tachycineta bicolor*) on this 1273 ha park grew from 7 pairs to 71 pairs. In monitoring this population increase, objectives were: (1) to provide breeding data from this southern population that could be comparable to those of more northern latitudes, and (2) to describe competition for nest boxes between Tree Swallows and Eastern Bluebirds (*Sialia sialis*), since both species in the park nested exclusively in bluebird boxes. During the study, 1761 Tree Swallow eggs were laid, an average of 73.8% hatched, and 62.2% fledged. Over 86% of all clutches were of 5, 6, or 7 eggs, and nearly 70% of the broods fledged 3, 4, 5, or 6 birds. Bluebirds removed swallow eggs and built nests in the usurped boxes eight times between 24 May and 5 June. However, temporal differences in nest initiation dates probably prevented extensive nest box competition between the species. House Wrens (*Troglodytes aedon*) were responsible for 38.5% of the total failures of Tree Swallow nests. Each year nearly 60% of the breeding female Tree Swallows had either nested previously in the park or were raised there during the previous year.—Danny J. Ingold.

15. Autumnal breeding Acorn Woodpeckers in southern New Mexico. J. F. Cully, Jr. 1987. Southwest. Nat. 32:399.—On 26 Sep. 1983, two nests with nestling Acorn Woodpeckers (*Melanerpes formicivorous*) were located in Sierra Co., New Mexico. Each nest possessed at least two young approximately one week from fledging. Previously, Acorn Woodpeckers have been recorded to have fledged as late as 6 Sep. in the Magdalena Mountains 75 km to the north. An abundant supply of acorns may have stimulated breeding at this uncharacteristically late date in the season.—D. J. Ingold.

16. Humidity levels in the nests of incubating canaries (*Serinus canarius*). M. D. Kern. 1987. Comp. Biochem. Physiol. 87A:721–725.—Vapor pressure in the nest cups of Common Canaries varied considerably. Much of the variation was concurrent with fluctuations in ambient humidity. Canary eggs in the nest lost approximately the same amount of water they were predicted to lose in ambient air. Canaries do not appear to keep nest humidity constant by ventilating nest cups.—Charles R. Blem.

17. Effect of temperature on development of Mallee Fowl *Leipoa ocellata* eggs. D. T. Booth. 1987. Physiol. Zool. 60:435–445.—The eggs of the mound-building Mallee Fowl were successfully incubated in the laboratory at temperatures of 32–38° C. However, embryos required 74% more energy at 32° C than at 38° C. Eggs in the field tolerated 28° C for as long as four days. This tolerance is probably an adaptive development from the imprecision of regulation of mound temperatures by nest-tending adults. Egg temperatures were found to vary from 28 to 38° C during incubation, and 3–5° C variations in egg temperature were common.—Charles R. Blem.

BEHAVIOR

(see also 1, 7, 9, 10, 14, 16, 17, 31, 44, 45, 46)

18. Patterns of arrival and departure of Grey Herons (*Ardea cinerea*) at two breeding colonies. J. Van Vessem and D. Draulans. 1987. Ibis 129:353–363.—It has been suggested that bird colonies might act as centers for the transfer of information. Previous support for this hypothesis has come from studies of colonial breeders in which departures from the colony were clumped in time, suggesting that the birds were following each other to rich patches of food. In this study the authors examine spatial and temporal variability of flight patterns of Grey Herons (*Ardea cinerea*) to and from two colonies, which differed in reproductive success. They also analyzed interdeparture and interarrival intervals to test whether or not clumping occurs, and if so, whether this may be caused by birds following each other or not. Comparisons of the two colonies allowed a test of the information center prediction that flights would be more clumped in the less-successful (lowest reproductive success) heronry.

The results indicate that flights were highly clumped in space and time. Also, Grey Herons performed nocturnal flights, members of a pair tended to select similar flight directions, and first-year birds, more than adults, flew in less-frequently selected directions. While both departures and arrivals tended to be clumped, the authors suggested that clumped departures could easily result from synchronized arrivals. First-year herons were more likely to leave the heronry shortly after another bird than were the adults. The authors argue that synchronized activity may facilitate the finding of foraging areas through other mechanisms, aside from "following" successful birds, such as heading into frequently selected directions. Interestingly, their results suggested that information transfer, if it occurs, is more common at successful colonies when compared to unsuccessful colonies, which contradicts a prediction of the information-center hypothesis. Following from the study is their important suggestion that analysis of flight intervals is not necessarily the best way to test information-center models.—J. M. Wunderle, Jr.

19. Social behavior of the Vinous-throated Parrotbill during the non-breeding season. L. L. Severinghaus. 1987. Bull. Inst. Zool. Acad. Sinica. 26:231–243.—Vinous-throated Parrotbills (*Paradoxornis webbianus*) were studied from 1983 through 1986 in woods and grassy and sugarcane fields in central Taiwan. About 175 parrotbills occupied the 35 ha study site, and 85–95% were color-banded for individual identification. During the non-breeding season the parrotbills formed large flocks and spent most of each day foraging, with only brief periods of rest. Activity remained constant even during light rain. Individuals which foraged together tended to roost together, although neighboring flocks often joined together to roost. Flock sizes were small at the end of the breeding season, remained stable during the winter, and decreased in size at the onset of breeding in March. Little aggression was noted within flocks, and none between flocks. No intraflock social hierarchy was detected. Some exchanges of birds between flocks occurred in every month. This is a clearly written paper that provides a good deal of information about parrotbills. It will also be worth the attention of those interested in avian social behavior and territoriality (or lack thereof).—Jerome A. Jackson.

20. Behavior of territorial male and female Townsend's Solitaires (*Myadestes townsendi*) in winter. T. L. George. 1987. Am. Midl. Nat. 118:121–127.—Wintering Townsend's Solitaires were examined for two seasons to determine if females, like males, defend and maintain non-breeding territories. Since solitaires are sexually monomorphic, the advantages of territoriality should be similar for both sexes. The results indicated that both sexes maintained territories throughout the winter. No significant differences were observed in the proportion of time spent singing, calling, foraging, resting, flying, or preening between the sexes. Both males and females spent over 70% of their time perched on the tops of trees defending territories. No significant difference was detected in median territory size between the sexes. In addition, there was a significant positive correlation between juniper (*Juniperus*) density (wintering solitaires feed almost exclusively on juniper berries) and territory size for both males and females. The results of this study present no evidence of sex dominance among wintering solitaires in central New Mexico.—D. J. Ingold.

ECOLOGY

(see also 1, 4, 20, 32)

21. Ecological implications of intercolony size-variation in Jackass Penguins. D. C. Duffy. 1987. Ostrich 58:54–57.—After measuring culmen length, culmen depth, flipper length, and mass of members of courting pairs of Jackass Penguins (*Spheniscus demersus*) in colonies throughout southern Africa, the author found male culmen length to vary between colonies. Taxonomic distance computed from several characters correlated positively with distance between colonies. Population changes could not be related to body measurements, so the author suggests that size of adults cannot be used as an index of these changes at individual colonies.—Malcolm F. Hodges, Jr.

22. Observations of birds during winter in North Dafar, Sudan. R. Hollander. 1987. Bonner Zoologische Beitrage 38:209–219.—Observations on wintering birds were conducted from October to February 1984/85 and 1985/86 in North Dafar, Sudan. This region is a transitional zone between the desert and tropical savanna and serves as wintering grounds for birds from the northern Palaearctic region. An apparent change in species of birds present occurred since a similar study was done in 1924. The two studies combined had 97 species, 40 of which occurred only in the first study, and 38 in the second. This shift in species is attributed to intense hunting pressure and enlargement of the desert region.—Robin J. Densmore.

23. Habitat use by nesting Water Pipits (*Anthus spinoletta*): a test of the snowfield hypothesis. P. Hendricks. 1987. Arct. Alp. Res. 19:313–320.—Large quantities of arthropods are deposited as "fallout" in alpine areas. These invertebrates are especially conspicuous on summer snowfields, where they are consumed by a variety of scavengers and predators. The apparent ease with which such prey are detected and captured suggests that alpine-nesting passerines should forage selectively on snowfields. Here, Hendricks presents the first test of the "snowfield" hypothesis.

Six Water Pipit nests were monitored on northern Wyoming's Beartooth Plateau (elev. 3200 m). After eggs hatched, foraging habitats (alpine tundra, fellfield, snowfield, and "other") and foraging ranges were recorded for each pair member. Indices of food availability were derived by dividing pipit foraging rate by travel rate in each habitat. Nestling foods were sampled using the ligature method.

Based on the availability of different habitats within pipit foraging ranges, alpine tundra or fellfields were used more than expected, and snowfields less than expected, by all 6 pairs. This contradiction of the snowfield hypothesis occurred despite the fact that food availability was higher on snowfields than on alpine tundra or fellfields. Food types on snowfields generally were smaller than those on other habitats, however, and most of the arthropod biomass delivered to pipit nestlings consisted of food types not found on snowfields (e.g., lepidopterans, millipedes, and large spiders). Thus, pipits foraged in habitats that provided ". . . the greatest probability of encountering preferred sizes and types of prey."—Jeff Marks.

24. Vegetation structure estimated with figures of vertical section, and breeding bird species diversity. K. Ishida. 1987. Bull. Tokyo Univ. Forests, No. 76:267–278. (Japanese, English summary, table and figure captions.)—Ishida examined relationships of bird species diversity to measurements of foliage height diversity and crown patchiness. He also provides graphic depiction of vegetation structure similar to that employed by James and Wamer (1982. Ecology 63:159–171). Knowledge of species composition and age structure of the four forest types and details of the study must await an English translation of the text. The following comments are based on the summary and my interpretation of figures and tables.

In general, bird species diversity increased with foliage height diversity and decreased with increasing crown patchiness. Ishida suggests that crown patchiness can be used to distinguish the qualitative and large differences among habitats, and that foliage height diversity can be used to distinguish among relative differences in similar habitats.—Jerome A. Jackson.

WILDLIFE MANAGEMENT AND ECONOMIC ORNITHOLOGY

(see 5, 6, 11)

CONSERVATION AND ENVIRONMENTAL QUALITY

(see also 6, 32, 34, 38, 40, 46)

25. Breeding waders of blackland, moorland and agriculturally improved moorland in the Uists and Benbecula. M. W. Pienkowski, R. J. Fuller, D. B. Jackson, and S. M. Percival. 1986. Scottish Birds 14:9–16.—In 1984 breeding waders in sample areas of blackland, moorland edge, unimproved moorland, and agriculturally improved moorland were surveyed on North and South Uist and Benbecula. Though unevenly distributed, the overall density of waders in blackland habitat was notably higher than on moorland. Furthermore, waders recorded on moorland were restricted to either the edges of lochs or to areas immediately adjacent to blacklands. Bird densities on unimproved moorlands adjoining agriculturally improved moorlands were similar in all but one instance in which the latter region was strikingly richer in waders. Data from this limited survey suggest that improved moorland on North Uist can support larger numbers of birds, especially waders, at much higher densities than unimproved moorland. However, the particular conditions giving rise to the improved areas in the Uists which are particularly favorable to birds is unknown.—D. J. Ingold.

26. A current assessment of the Spotted Owl population in Oregon. E. D. Forsman, C. R. Bruce, M. A. Walter, and E. C. Meslow. 1987. Murrelet 68:51–54.—This report documents the land ownership, forest type, and stand age for all Spotted Owl (*Strix occidentalis*) locations recorded in Oregon from 1969–1984 (n = 1502). About 95% of the locations have been in old-growth (>200 yr) and/or mature (100–200 yr) forest. Spotted Owls will continue to decline as old-growth forest is harvested (see Review 35).—Jeff Marks.

27. Number of oil-killed birds and fate of bird carcasses at crude oil pits in Texas. E. L. Flickinger and C. M. Bunck. 1987. Southwest. Nat. 32:377–381.—A survey of bird losses was taken at oil pits along the central Texas coast and in northwestern Texas during the fall of 1981 and spring of 1982. Along the Texas coast, 312 carcasses were counted in 22% of the pits visited. Most of these (95%) were water birds (largely ducks). In northwestern Texas, 21 carcasses of ducks, mostly Blue-winged Teal (*Anas discors*) and Lesser Scaup (*Aythya affinis*) were found at 11 of 27 pits visited. The mortality at pits in both areas surveyed consisted of 92% ducks and 8% other waterbirds including Pied-billed Grebes (*Podilymbus podiceps*), unidentified herons, and shorebirds. To determine the rate of deterioration of birds in oil pits, 40 carcasses of 9 bird species were placed in two pits along the central Texas coast in October 1981, December 1981, and April 1982, and examined for five months. Many carcasses, after initially sinking, resurfaced. Length of time on the surface was positively correlated with carcass weight. Carcasses persisted longer during the winter months when temperatures were colder, and deteriorated more rapidly during the spring and fall when temperatures were warmer. Accurate counts of bird carcasses in oil pits largely depend on being able to distinguish old from fresh ones, and bird carcasses from other oil-covered floating material.—D. J. Ingold.

28. Thirty years of passerine breeding bird monitoring in a mixed wood. [Dertig jaar zangvogelinventarisatie in het Mastbos bij Breda.] P. B. Jensen and H. W. de Nie. 1986. Limosa 59:127–134. (Dutch, English summary.)—Between 1951 and 1981 numbers of 16 species of passerines on a 50-ha mixed woodlot were determined. A group of nine species decreased from a total of 89 to 48 territories/50 ha. Five species, with a combined total of 17 territories/50 ha, increased by a factor of 1.8 around 1965, but then in 1980 they decreased to 12 territories/50 ha. Two species disappeared and two species showed an overall increase. Important causes of decrease were human recreational activities, vegetation damage, and successional changes in the vegetation. Several species were also affected by severe winters during some years. The causes of increased populations were not determined.—Clayton M. White.

PHYSIOLOGY

(see also 44)

29. The male sex accessories in the annual reproductive cycle of the Pied Myna *Sturnus contra contra*. S. K. Gupta and B. R. Maiti. 1987. J. Yamashina Inst. Ornithol. 19:45–55.—Accessory sex organs in male Pied Mynas were studied from a gravimetrical, histological, and biochemical standpoint during their annual reproductive and nesting cycles. During the non-breeding phase (August to January) all accessory sex organs showed a narrow lumen lined by a cuboidal to low columnar epithelium of non-ciliated and non-secretory cells. The seminal glomus weighed less with low sialic acid content. The accessory sex organs became slightly enlarged with the weight and sialic acid content of the seminal glomus increasing during the pre-breeding phase (February and March). During the breeding phase (April and May) the accessory sex organs were conspicuously enlarged with noticeable histological changes in all organs except the rete testis. The weight of the seminal glomus regressed as did all the accessory sex organs during the post-breeding phase (June and July).

Data from this study reveal the existence of a close relationship between the activity of the accessory sex organs and the nesting cycle in the Pied Myna. A rapid development of the entire genital tract occurs as nest building begins. This development continues throughout the nest-building stage and peaks when nest construction is near completion. Regression of the accessory sex organs begins with egg laying and continues through the incubation and nestling stages. Changes in the sex accessories are considered to be the result of changes in ovarian steroid activity during the gonadal cycle of this bird.—D. J. Ingold.

30. Metabolic response of Mallee Fowl *Leipoa ocellata* embryos to cooling and heating. D. T. Booth. 1987. Physiol. Zool. 60:446–453.—In Mallee Fowl, the transition from pure ectothermy to endothermy takes 3–5 days, which is similar to the time required by many precocial species. In the Mallee Fowl, however, the changeover takes place before hatching, while in all other species, conversion to endothermy occurs after hatching. The increased oxygen consumption of Mallee Fowl embryos does not occur immediately with decrease in egg temperature. Oxygen consumption declines until a critical egg temperature is reached (28–30° C) and then a shallow rise in oxygen consumption occurs. The subsequent increase in metabolism is not enough to maintain egg temperatures if cooling persists. These questions persist: is this "real" endothermy? and what really is happening inside the Mallee Fowl egg?—Charles R. Blem.

31. Olfactory discrimination of plant volatiles by the European Starling. L. Clark and J. R. Mason. 1987. Anim. Behav. 35:227–235.—Many species of birds are known to incorporate fresh green vegetation into their nests. A possible reason suggested for such a practice is the release by the plants of chemicals with anti-parasite/anti-pathogen properties. Electrophysiological studies reported in this paper demonstrate that European Starlings (*Sturnus vulgaris*) may use volatile chemical cues to discriminate and choose between plants used in nest construction. The experimental design of the studies seems solid, the surgical and test procedures involved seem complicated and difficult. Sample sizes were understandably small. This is a nice study that furthers our knowledge of the sensory abilities of birds and helps validate our interpretation of this interesting behavior. (See also Clark and Mason, 1985, Oecologia 67:169–176, for results of field studies suggesting use of plants by starlings for their insecticidal and anti-pathogenic properties.)—Jerome A. Jackson.

MORPHOLOGY AND ANATOMY

(see 21, 29)

PLUMAGES AND MOLTS

(see also 1)

32. **Moult and moult migration in a transequatorially migrating shorebird: Wilson's Phalarope.** J. R. Jehl, Jr. 1987. Ornis Scand. 18:173–178.—Mono Lake, California is the terminus of a molt migration for tens of thousands of post-breeding Wilson's Phalaropes (*Phalaropus tricolor*) that winter in South America. Adult females begin arriving in mid-June, and adult males in late June or early July. Adults stay at Mono Lake for 3–6 wk, during which time they undergo an "exceptionally rapid" replacement of most of the body feathers, the rectrices, and several primaries (described in detail by Jehl). Remigial molt resumes in South America in November and is completed by January. Mono Lake's rich supply of aquatic invertebrates enables phalaropes to take on huge fat stores while molting much quicker than do other shorebirds. The arrested molt of Wilson's Phalarope is similar to that of the Wood Sandpiper (*Tringa glareola*), the only other shorebird for which a molt migration has been "convincingly documented."—Jeff Marks.

ZOOGEOGRAPHY AND DISTRIBUTION

(see also 2, 21, 22, 24, 25, 26, 40, 41, 47)

33. **The distribution and abundance of Sand Martins breeding in central Scotland.** G. Jones. 1986. Scottish Birds 14:33–38.—The distribution and abundance of Bank Swallows (*Riparia riparia*) in the Stirling area were investigated between 1982 and 1984 to determine the approximate size of the breeding population and to assess the use of sand and gravel quarries by this species for nesting. Colony sizes ranged from one to 920. Most colonies contained one to 100 burrows, with the number of colonies possessing more than 500 burrows declining from five in 1982 to one in 1983. Data collected in 1982, when peak numbers of Bank Swallows were recorded, suggest that approximately 3750 pairs attempted first broods. Of these, 84% nested in sand or gravel quarries, and 16% in river banks. The use of artificial sites for nesting by Bank Swallows is a relatively recent phenomenon, since sand and gravel quarrying began on a large scale only 50 yr ago. Larger breeding colonies of Bank Swallows have been recorded in central Scotland in recent years. However, it is not known whether large colonies represent an increase in the population of swallows in central Scotland, or simply a shift of birds which have moved from many natural colonies.—D. J. Ingold.

34. **The breeding distribution of the Loggerhead Shrike in Minnesota: a preliminary report.** B. L. Brooks and S. A. Temple. 1986. Loon 58:151–154.—As a result of dwindling Loggerhead Shrike (*Lanius ludovicianus*) populations throughout their breeding range in the southern ⅔ of Minnesota, this species was placed on the state's threatened species list in 1984. From 29 Apr. to 20 Aug. 1986, 10 counties in central and southern Minnesota were searched for nesting shrikes. A total of 29 nesting pairs was located, and 34 nest attempts were made. Three pairs renested after losing initial nests to predators or a spring storm, and two pairs were double-brooded. The distribution and numbers of breeding pairs of shrikes in Minnesota has remained stable during the past 10 years.—Danny J. Ingold.

35. Acadian Flycatcher breeding range extension in Minnesota. B. Fall. 1987. Loon 59:117–121.—Six Acadian Flycatcher (*Empidonax virescens*) nests were located in Scott Co., Minnesota during the 1986 and 1987 breeding seasons. Two of the six nests produced fledglings, including one second brood. This locality is the farthest north and west that this species has been reported breeding in Minnesota.—D. J. Ingold.

36. Richness and distribution of montane avifaunas in the White-Inyo region, California. N. K. Johnson and C. Cicero. 1986. Pp. 137–159 *in* C. A. Hall, Jr. and D. J. Young eds., Natural history of the White-Inyo Range, eastern California and western Nevada and high altitude physiology. University of California White Mountain Research Station Symposium, August 23–25, 1985, Bishop, California. Vol. 1:i–240.—This paper uses data from previous studies of the avifauna of the White Mountains and the authors' own field work in the Inyo Mountains to dispel the myth that the avifaunas of these two ranges are closely related. Tundra environment is absent in the Inyo Mountains, while it is extensive in the White Mountains. The boreal birds of the Inyo Mountains were found to be a depauperate subset of those of the White Mountains. The birds of five other nearby mountain ranges were quantitatively compared with the two present ones, and the resulting affinities placed the White and Inyo mountains in separate groups. The environment of the White and Inyo mountains is described, as are unique environmental adaptations for breeding species. Species accounts detail the abundance and distribution of breeding species of the White-Inyo region.—Malcolm F. Hodges, Jr.

SYSTEMATICS AND PALEONTOLOGY

(see also 8, 21, 47)

37. Hybridization between the Scarlet Ibis (*Eudocimus ruber*) and the White Ibis (*Eudocimus albus*) in Venezuela. C. Ramo and B. Busto. 1987. Colonial Waterbirds 10:111–114.—The authors reaffirm a previous proposal that Scarlet and White ibis be reduced to subspecific status, in the single species *E. ruber.* In the limited zone of sympatry in the Orinoco Llanos, the two ibises seem to occupy the same niche, since they feed and fly together, have similar diets, have common roosts and nesting colonies, and show no differences in reproductive behavior. The authors have recorded, from 1981–1984, 40 mixed breeding pairs in four predominately Scarlet Ibis colonies, as well as orange individuals and white birds with scattered orange feathers. In one colony there were 12 mixed pairs and only one white pair among about 200 pairs. The authors infer that hybridization is common and that a hybrid population exists. Hence, they conclude that the two ibises are best considered subspecies, with the Scarlet Ibis named *E. ruber ruber,* and the White, *E. ruber albus.*—William E. Davis, Jr.

38. The identity of the Hakawai. C. M. Miskelly. 1987. Notornis 34:95–116.—The dramatic recent extinctions of birds on many islands are now known to be associated with human occupation. For most islands the extinctions are known only from evidence in the subfossil record and are too ancient to have left any traces in human tradition. This is not so in New Zealand, however, where Maori traditions recall moas, a giant eagle, and other species whose identity or reality still remain unresolved.

One mysterious bird was the Hakawai, which lived on islets off Stewart Island. It was last reported as recently as 1961, and had even been encountered—or more accurately, experienced—by competent ornithologists. Known for its "loud, startling cry," given from high in the sky on calm moonlit nights, the sound of the Hakawai was sufficient to instill fear in listeners and to become the stuff of legend. What was this never-seen bad omen? Miskelly's studies on other islets off New Zealand indicate that it was a relatively small bird, the now-extinct Stewart Island form of the New Zealand Snipe (*Coenocorypha aucklandica iredalei*). Often considered flightless, this snipe has recently been found to have impressive aerial displays with both vocal and non-vocal components, which parallel those of the Hawakai.

I read Miskelly's sleuthing with mixed emotions, including approbation for good work and sadness that one more much-needed mystery had been revealed. The extinction of the

Hawakai represents yet another chapter in the familiar story of man, rats, wekas, and cats, whose impact on islands may be second only to that of missionaries.—J. R. Jehl, Jr.

39. DNA fingerprinting in birds. T. Burke and M. W. Burford. 1987. Nature 327: 149–152.—Research on human parentage and its forensic applications has recently been given a quantum boost by the development of DNA probes that can be used to generate genetic fingerprints (Jefferies et al. 1985, Nature 314:67). These human probes constructed from tandum repeats of short core sequences in minisatellite regions, which have been demonstrated to be highly variable in humans, cats, dogs, and mice, can be used to detect individual genetic identity and biological relationship in birds (see also Watton et al. 1987, Nature 327:147). The technique was used to indicate 9 correspondences and 2 mismatches between the fingerprint bands of a breeding pair of House Sparrows (*Passer domesticus*) and their 4 broods. The mismatched offspring sets are taken as evidence of extra-pair copulations. The mean transmission frequencies for 61 parental bands was 0.52, consistent with Mendelian segregation for heterozygous loci. The probes were also used to demonstrate that avian DNA banding patterns were similar in complexity to those of humans, i.e., useful for detecting individual identity, for 3 other passerine species and a nonpasserine, indicating that DNA fingerprinting will be widely applicable among avian groups. The technique did not work with Japanese Quail (*Coturnix coturnix japonica*), this failure being attributed to the species' origin from inbred laboratory stocks. The DNA fingerprint is about to make an indelible mark on evolutionary biology.—W. A. Montevecchi.

40. Radiocarbon dates on bones of extinct birds from Hawaii. H. F. James, T. W. Stafford, Jr., D. W. Steadman, S. L. Olson, P. S. Martin, A. J. T. Jull, and P. C. McCoy. 1987. Proc. Natl. Acad. Sci. 84:2350–2354.—This paper provides further evidence that colonization by prehistoric man was directly or indirectly the cause of massive extinctions of birds on oceanic islands. This paper reports the late Holocene extinction of 19 species of birds from Maui. The direct radiocarbon dating technique used (using amino acids extracted from bones weighing as little as 450 mg), in conjunction with identification of species dependent on man for their dispersal, is providing an effective tool that is revealing the catastrophic influence of prehistoric man on his environment and is shedding new light on human prehistory in Oceania. This is exciting work, but it must be terribly frustrating too—to realize the magnitude of the extinctions that man has caused. There are lessons here to be learned and applied to modern conservation problems.—Jerome A. Jackson.

41. Fossil evidence of a tapaculo in the Quaternary of Cuba (Aves: Passeriformes: Scytalopodidae). S. L. Olson and E. N. Kurochkin. 1987. Proc. Biol. Soc. Wash. 100:353–357.—A single humerus from cave deposits from the Isle of Pines (now = Isla de Juventud) and a tibiotarsus from a cave in Camaguey Province, Cuba, provide the first evidence of a tapaculo away from South America. The fossils are tentatively placed in the Genus *Scytalopus*—photographs of the specimens with corresponding bones of *Scytalopus unicolor* show remarkable similarity. Because modern tapaculos are ground dwellers and poor fliers, their presence in Cuba presents a most unusual zoogeographic anomaly, since there is no convincing evidence of a land connection between Cuba and North or South America. The authors suggest rafting as the mode of dispersal to Cuba and suggest that tapaculos must have once been widespread there, since the fossil localities are on different islands nearly 500 km apart.—Jerome A. Jackson.

EVOLUTION AND GENETICS

(see 13, 39)

FOOD AND FEEDING

(see also 4, 10, 18, 23, 32, 45)

42. Diet of Swift Tern chicks in the Saldanha Bay region, South Africa. C. B. Walter, J. Cooper, and W. Suter. 1987. Ostrich 58:49–53.—The diet of Swift Tern (*Sterna bergii*) chicks was studied on the basis of collected regurgitations on the west coast of southern

Africa from 1977 to 1986. Fish formed 86% of all prey items. The remaining percentage included crustaceans, cephalopods, and insects. The importance of pelagic shoaling fish was of particular interest. These fish formed 75% of the fish diet, of which Cape anchovy (*Engraulis japonicus*) was the most abundant.—Robin J. Densmore.

43. Barn Owl prey selection: 1938 and 1984. R. H. Baker. 1986. Southwest. Nat. 31:401.—Common Barn-Owl (*Tyto alba*) prey were identified from pellet samples taken from the same area nw of Eagle Lake, Colorado Co., Texas in 1938 and 1984. In 1938, 74.2% of the mammalian remains were from the insectivore *Cryptotis* and the largely insectivorous *Reithrodontomys*. In 1984, 85.3% of Common Barn-Owl prey consisted of the predominantly herbivorous *Sigmodon* and *Oryzomys*, with less than 10% consisting of the former two species. This diet variation could be explained by naturally fluctuating *Sigmodon* populations over time, or simply by changes in agricultural practices creating environments more conducive to small herbivorous mammals.—Danny J. Ingold.

SONGS AND VOCALIZATIONS

(see also 38, 45)

44. Sexual response of female Great Tits to local and distant songs. M. C. Baker, P. K. McGregor, and J. R. Krebs. 1987. Ornis Scand. 18:186–188.—Song structure varies locally in Great Tits (*Parus major*), and circumstantial evidence suggests that it influences mate choice by females. To test this, Baker et al. implanted 10 females with estradiol and recorded their response to playbacks of male songs from their own population (Wytham Wood) and from a population 8 km away (University Parks). Females gave significantly more copulation solicitation displays in response to Wytham Wood songs than to University Parks songs, supporting the notion that song structure is an important factor in mate choice by Great Tits. Baker et al. speculate that females learn the song "environment" of a local area and are predisposed to select males that sing local song types.—Jeff Marks.

BOOKS AND MONOGRAPHS

45. Causal and evolutionary aspects of the determination of bird numbers with special reference to hole-nesting birds. D. J. Cave, J. G. Van Ruijn, R. M. Teixeira, J. M. Tinbergen, J. Veen, and K. H. Voous. 1987. Ardea 75:1–142. This entire volume of *Ardea* represents the proceedings of a workshop held 7–11 Oct. 1985 in Wageningen, The Netherlands. The issue was dedicated to the memory of Huib Kluijver in recognition of his pioneering studies of the Great Tit (*Parus major*). While 28 papers were presented at the workshop, only 14 appear in this issue of *Ardea,* as some of the presenters had already published the greater part of their presentation, or planned to publish elsewhere. Of the 14 papers, 9 dealt directly with the Great Tit, 1 with several members of *Parus*, 1 with nuthatches (*Sitta* sp.), and the remaining 3 with other aspects of bird ecology but related to the theme of the conference. The sequence of papers starts with population studies and what can be learned from them in general terms, including genetic aspects. These papers are followed by more detailed ones dealing with breeding strategies, including costs of brood defense and incubation, morphological effects on foraging, and nestling diet. Finally, the effects in the long term, of decisions on breeding parameters, such as annual number of broods and brood size, were discussed.

The 14 papers in this number of *Ardea* are: J. H. Van Balen, A. J. Van Noordwijk and J. Visser, *Lifetime reproductive success and recruitment in two Great Tit populations,* pp. 1–11; A. J. Van Noordwijk, *On the implication of genetic variation for ecological research,* pp. 13–19; J. Blondel et al., *Population studies on tits in the Mediterranean region,* pp. 21–34; E. Curio, *Brood defense in the Great Tit: the influence of age, numbers, and quality of young,* pp. 35–42; M. Lambrechts and A. A. Dhondt, *Differences in singing performance between male Great Tits,* pp. 43–52; E. Matthysen, *Territory establishment of juvenile nuthatches after fledging,* pp. 53–57; P. J. Drent, *The importance of nest boxes for territory settlement, survival, and density of the Great Tit,* pp. 59–71; J. A. L. Mertens, *The influence of temperature on the energy reserves of female Great Tits during the breeding season,* pp. 73–80; R. J. Cowie and S. A. Hinsley, *Breeding success of Blue Tits and Great Tits in suburban gardens,* pp. 81–90;

A. Gosler, *Sexual dimorphism in the summer bill length of the Great Tit,* pp. 91–98; J. D. Boer-Hazewinkle, *On the cost of reproduction: parental survival and production of second clutches in the Great Tit,* pp. 99–110; J. M. Tinbergen, *Costs of reproduction in the Great Tit: intra-seasonal costs associated with brood size,* pp. 111–122; R. Mace, *Why do birds sing at dawn?,* pp. 123–132; and J. Colbert, J. D. Lebreton and D. Allaine, *A general approach to survival rate estimation by recaptures or resighting of marked birds,* pp. 133–142.

Overall, the proceedings provide a good summary of Great Tit biology and population data for passerines in general.—Clayton M. White.

46. The sparrowhawk. Ian Newton. 1986. Buteo Books, P.O. Box 481, Vermillion, South Dakota 57069. 396 pp., 48 half-tones, 90 figures, 4 appendices, 63 tables, bibliography, index, and 44 drawings by Keith Brockie. $35.00.

Newton's long-term study of the Eurasian Sparrowhawk (*Accipiter n. nisus*) began during his boyhood days of egg collecting. First the eggs then the bird became the primary objects of his intent. Working with the Nature Conservancy Council embarked Newton on a 14-yr study of the sparrowhawk in two areas of southwest Scotland. This book is based primarily on his long-term studies as well as those of others in Britain and abroad.

Much of the methodology is detailed in appendices and includes trapping, banding, acquiring morphological and morphometrical data, and radio telemetry. The style of writing is naturally British including spelling and sentence structure, and the overall format is very similar to Newton's "Population Ecology of Raptors," published in 1979 (Buteo Books, P.O. Box 481, Vermillion, South Dakota 57069).

The opening statement reads "This book is about the ecology of the Sparrowhawk *Accipiter nisus*: about its habitat and food needs, its breeding, movements and mortality." Actually, Newton has presented an expanded natural history with some ecological insight provided in particular sections. Most of the 25 chapters deal with the sparrowhawk's breeding cycle in Britain, and considerable discussion centers around food habits. Occasionally, discussions are not referenced adequately. For instance, in an early section dealing with sex ratio, Newton discussed the theoretical chance of all young being male and female with mention that sparrowhawks did not differ from the prevailing situation in human families. However, no reference was given for such data on human families. Six races of the sparrowhawk are briefly discussed, and a map is provided which outlines probable ranges for each. Ominous question marks appearing over the map of Africa stimulate one to consider a study of the hawk's winter range in that part of the world.

Apparently, sparrowhawks are quite selective in choice of nesting habitat (Chapter 3), and the choice of which woodlot will be used is dependent upon age of the woodlot and degree of management to which the woodlot has been subjected. Additional considerations were not discussed, however, such as fidelity to nest sites once established in relation to woodlot age or management. A more thorough comparison of nests in managed and unmanaged stands would have been useful. Further, Newton discussed the occurrence of sparrowhawks in particular areas as representing a preference for certain habitat variables. However, preference is not adequately tested. Terms such as "sub-standard" appear under nesting habitat, but no indication is given as to what is "standard." One is left to assume that "standard" represents managed woodlots. The same criticism applies to discussions of nesting within cities or near human habitation. Urban nesting also occurs with some North American accipiters, primarily *A. cooperii,* but comparisons in general are lacking. "Preference" again surfaces in discussions of nest tree species based on predominance of occurrence of nests. No indication of overall availability of different tree species is given. Terms such as "somewhat more" appear in discussion of nest aspect, a topic which should have been presented more quantitatively. Placement of nests with respect to predator avoidance is briefly mentioned in Chapter 3, but only one potential predator is indicated there. The reader must wait until Chapter 12 to find more information on potential predators. Newton introduces the idea in Chapter 3 that cannibalism and predator avoidance are two possible reasons why sparrowhawks place their nests in areas of poor prey availability. Later, in Chapter 11, however, Newton states that prey availability is high in the vicinity of nest sites, which facilitates female hunting later in the breeding cycle. No further discussion of cannibalism appears, especially with reference to mortality of nestlings.

Further attempts at ecological quantification appear in Chapter 4 on nest spacing and breeding density. Actually, nest density is more adequately discussed than breeding density, and comparisons are consistently made with Peregrines (*Falco peregrinus*) and other large falcons rather than to other accipiters. Perhaps Newton was trying to limit his discussions to Great Britain, which has only one other nesting accipiter species, but much more insight would have been gained through comparison with congeners; one brief comparison with coexisting European Goshawks (*A. gentilis*) being the only exception. Spacing of nests was reportedly based on woodland availability, but woodlot characteristics such as variation in height, predominant tree species, and occurrence of predators or potential predators, were not discussed until later chapters. Considerable discussion was presented, however, on how nest trees were spaced, but no further indication as to why. Additionally, testing was conducted only on "occupied" places, with the assumption that testing of all places would have had little affect on nearest-neighbor distances. No indication was given as to how many nests are maintained within a sparrowhawk breeding territory.

Ranging behavior discussed in Chapter 5 was based on radio-tracking of hunting sparrowhawks. Point-count prey surveys were conducted in the study areas, but time only allowed counts to be made in woodland habitats (see Appendix 3). Throughout the text mention was made of the disparate hunting techniques between males and females which suggested that females preferred open habitats to wooded habitats for prey acquisition. In addition prey availability was determined based on habitat preference of hunting sparrowhawks, thus excluding many other factors. Home range calculations actually represented hunting ranges.

Further attempts at ecological interpretation of data appeared in Chapter 6 on Population Trends. Population fluctuations were documented, but little indication as to why populations fluctuate could be found. Later chapters discuss the lingering effects of pesticides and other detrimental influences, but otherwise discussions were lacking. Natural enemies and competition were given as primary influences on population trends, but the reader must wait until later chapters to discover what natural enemies were present, excluding man, and I could find no convincing argument that competition was actually operating within the study areas. Perhaps the most extensive approach to ecological interpretation occurred in discussions of "density-dependent" factors. The foundation for Newton's argument appears to be with recruitment of females. However, density-dependence is not fully demonstrated, because females were in excess and bigamy occurred, though rarely. Further, nesting did take place outside of "preferred" woodlots. In my estimation such situations do not immediately imply a density-dependent relationship in the strictest sense, and the entire affair has little to do with competition. Perhaps the answer could be found by saturating an area with males and documenting what ensues. Again, availability of predominant habitats could lend much to the discussion, and weather was the only density-independent factor tested. Further discussions relative to habitat suitability included such terms as "good" and "less good" with little quantification. Further interest would have been generated by asking how predators and disease organisms affected population levels, and by providing further indication of fidelity to nest sites. Recruitment differences between study areas should have been further addressed, as well as differential mortality of males in the two study areas. Newton's conclusion that population stability was achieved by competition seems paradoxical.

Chapters 7 through 18 are almost entirely devoted to the natural history of the breeding cycle. Diets were assessed from remains at nests and plucking posts, and biases to such an approach are mentioned and briefly discussed. Birds were the primary prey, but little quantification of availability by categories was presented and prey biomass was essentially ignored. Some aspects of prey quantification were concerned only with prey availability near active nests. Comments on prey vulnerability were based primarily on conspicuousness and abundance. Mention of potential sparrowhawk predators appears within the text, but only the Tawny Owl (*Strix aluco*) and man are eventually discussed.

Although the Sparrowhawk is non-migratory in Great Britain, Chapter 20 on Dispersal should have actually dealt with dispersion of individuals. No indication is given that the range of the species is increasing in Great Britain and most birds moved fewer than 20 km from natal locales. More extensive quantification of movements outside the breeding season would have been a welcome addition.

Chapter 21 on Territory and Mate Fidelity would have been better presented earlier in the text and combined with perhaps Chapter 10 or Chapter 11. Males were more faithful to nest sites, but fidelity in general was low. Chances were essentially 50/50 that any given pair would return to a previous year's nest site. Chapter 22 on migration was an overview of the phenomenon in general, and some mention was made of migratory behavior of conspecifics outside Great Britain. Newton's discussion of the ultimate reasons for migration seems to ignore the physiological basis for the phenomenon. Cautionary statements should have been included concerning interpretation of long-term trends based on migration data. Mortality was higher in males for the first year of life, but higher for females after the first year (Chapter 23).

Chapter 24 presents an exhaustive discussion of the effects of various chemical pollutants on sparrowhawks and a literature review of influences on other species. Pesticides have had a major impact on sparrowhawk populations, primarily due to high intake from dietary sources. Presence of chemicals not usually considered in other studies, such as mercury, were also discussed. Mercury was found in all sparrowhawks examined, and concentrations paralleled use of organo-mercurials in agriculture. Similar parallels have been documented with other European raptors, but the overall impact of organo-mercurials in Britain is uncertain. Breeding success could have been affected during periods of peak use. My unpublished data on the occurrence of mercury in Nearctic Peregrine populations reveal similar trends.

Newton attempted to summarize the ecology of the sparrowhawk as related to evolutionary theory, but virtually the entire text represents a natural history of the Eurasian Sparrowhawk breeding cycle in Britain. As Newton stated, many of the conclusions are based on circumstantial evidence, which forces the reader to await further study. Even with shortcomings as to documenting the ecology of the sparrowhawk, I applaud the book and Newton's efforts. Certainly the raptor literature is depauperate of such long-term studies, a situation in desperate need of remedy. I further applaud Newton's call for field work to dominate the biologists' activities. In addition to the considerable data presented on sparrowhawk breeding behavior, Newton briefly discussed feather patterns as being variable and a viable source for individual identification. Recommendation that similar patterns be studied with other raptor species is noteworthy for those seeking thesis or dissertation projects.

Brief discussion was made of reversed sexual size dimorphism in the sparrowhawk, a species with extreme size differences. However, as too often appears in the literature, comments stem from selective factors operating during the breeding cycle, a discussion somewhat outdated in my opinion. Until the phenomenon is studied outside of a breeding cycle context and additional study conducted on dominant prey species of dimorphic raptors, further discussions can only be considered much to do about little.

A 220-entry bibliography includes 32 of Newton's earlier papers on the sparrowhawk in Great Britain, some of which are coauthored with colleagues. Much of the text was taken from these earlier accounts. The drawings of Keith Brockie are truly "evocative" and add much to the book's overall content. I highly recommend the book to any ornithologist and particularly to those studying raptors. Newton's efforts have set the example for future generations documenting the natural history of relatively unknown species and provide a basis for more sophisticated ecological studies which are embarrassingly absent in the raptor literature.—Jimmie R. Parrish.

47. Type localities of birds described from Guatemala. R. W. Dickerman. 1987. Proc. West. Found. Vert. Zool. 3(2):51–107. $9 (softcover, available from Western Foundation of Vertebrate Zoology, 1100 Glendon Ave., Los Angeles, California 90024).—This monograph represents a considerable amount of "sleuthing" to uncover the true collection localities of some of the 234 avian taxa that have been described from Guatemala by 51 authors and to clarify the origin of some taxa, such as *Xanthoura guatimalensis,* which include "Guatemala" as part of their name but which came from other countries. A species list includes literature references, collection localities, location of specimens, and taxonomic synonyms. A geographic list summarizes taxa by localities, and a map provides a general picture of where the localities are. I was disappointed in the quality of the map—in part because it was reduced too much, but in part because of the lack of helpful geographic detail. There is obviously a lot of work in this effort and a good deal of taxonomic, biogeographic, and historical clarification as a result.—Jerome A. Jackson.

48. The parasitic cowbirds and their hosts. H. Friedmann and L. Kiff. 1985. Proc. West. Found. Vert. Zool. 2(4):226–302. $10 (softcover, available from Western Foundation of Vertebrate Zoology, 1100 Glendon Ave., Los Angeles, California 90024).—This monograph provides a summary update of our knowledge of the host relationships of the Brown-headed Cowbird (*Molothrus ater*), Shiny Cowbird (*M. bonariensis*), and Bronzed Cowbird (*M. aeneus*). Total numbers of species now known to be parasitized by these birds are 220, 201, and 77, respectively. In short, almost any species within the range of each cowbird and capable of rearing cowbird young have been reported as victims—along with a number of species which obviously couldn't raise cowbird young (such as Common Tern, *Sterna hirundo*). Introductory discussion of the nature of cowbird parasitism and discussion within various species accounts (such as the potential impact of parasitism on the Dickcissel *Spiza americana*) make this essential reading for anyone interested in brood parasitism, the cowbird species, the breeding biology of any of the host species, or the conservation problems associated with excessive cowbird parasitism on some species.—Jerome A. Jackson.

49. A bird watchers's handbook: field ornithology for backyard naturalists. L. O. Socha. 1987. Dodd, Mead and Co., New York. viii + 182 pp. $16.95 (hardcover), $7.95 (paperback).—The book is a treasure trove of ideas for bird watchers who wish to do more than identify the bird and add its name to a checklist. The book opens with a discussion of bird-watching, what to look for, where to look, what equipment you will need, and the joys of bird-feeding. Even in this first chapter Socha suggests activities such as the Thanksgiving Bird (feeder) Count that add depth to the watcher's experience. The second chapter introduces the reader to North American bird observatories (e.g., Point Reyes Bird Observatory, Manomet Bird Observatory) where volunteers can learn about ornithology through participation in research and community education. Here also the reader is introduced to bird banding, its joys, challenges, and demands. Whereas the first chapter is informative, Ms. Socha's enthusiasm becomes evident in this chapter as she recounts her many experiences as a volunteer at Raccoon Ridge Bird Observatory and the new world of observation that banding opened to her. In chapter three the author describes atlases, surveys, and counts, providing abundant reasons for participating. Her enthusiasm peaks in chapter four where she discusses projects. Her many suggestions are excellent. Her discussion of behavior calls attention to the diversity of behavior, to the need for behavioral study and the important role amateurs can play in the study of behavior, but her descriptions of behavior are too cursory and her recommended references fail to list any books on behavior. The last major chapter deals with care for injured and orphaned birds and contains much practical advice as well as wise counsel on the difficulties of caring for wild animals.

The book deals briefly with aviculture and concludes with an inadequate listing of North American ornithological and conservation organizations. Not mentioned are the Ornithological Societies of America, Association of Field Ornithologists, regional and state bird banding associations, the many state ornithological societies, or the existence in many communities of local naturalist or bird clubs. The smaller organizations need not be mentioned by name, but their existence should be called to the reader's attention.

The book's strength is the intimate, personal style of the author. The reader can easily imagine that this is a pleasant afternoon discussion with an enthusiastic Ms. Socha. As an amateur herself, Ms Socha has a fine sense of the interests and questions of other birders. The breadth of topics is impressive, from a comparison of bird feeders to use of computers for organizing and maintaining records. She emphasizes the importance of accurate records not only as a basis of understanding, but also as the basis for greater enjoyment of birds. She provides recommended references and addresses of all organizations mentioned.

The book needs more careful editing; I found the number of misspellings and misplaced hyphens distracting. Some illustrative examples are wrong, the Least Flycatcher (*Empidonax minimus*) is not a bird of "dry, open fields," but a bird of "open woods, aspen groves, orchards, shade trees" (Peterson, A Field Guide to the Birds, Houghton Mifflin Co., Boston, 1980). The black-and-white illustrations are poorly reproduced, are not referred to in the text, and have no legends, often leaving the reader to puzzle over what is shown and why. Happily the wealth of ideas and the author's evident enthusiasm overwhelm these problems.—Edward H. Burtt Jr.