# RECENT LITERATURE

Edited by Bertram G. Murray, Jr.

## BANDING AND LONGEVITY

(See also 25, 36)

**1. Recovery round-up.** Anon. 1972. *Austral. Bird Bander,* **10**(3): 63-65. —This regular feature of this journal lists recent recoveries of interest and should be of considerable value to those interested in maximum longevities attained in the wild as well as those who are interested in long-distance dispersal or migration. Among those listed in the present issue as the oldest recorded for the species are a Caspian Tern (*Hydroprogne caspia*) over seven years old, a Fuscous Honeyeater (*Meliphaga fusca*) retrapped over 13 years and 3 months after banding, and a White-naped Honeyeater (*Melithreptus lunatus*) retrapped over 10 years, 11 months after banding. It should be noted, however, that "oldest recorded for the species" apparently refers only to the records of the Australian Bird-Banding Scheme, since, of these species, much greater maximum longevities have been recorded for at least one, the Caspian Tern.—Roger B. Clapp.

**2. An eleven year old banded Greater Scaup from Cherokee Reservoir.** D. A. Etnier. 1972. *Migrant,* **43**(3): 72.—A male *Aythya marila* was shot by Etnier on 27 December 1970 near Stump Island, Grainger Co., Tennessee. The duck had been banded at an age of at least one year near Willard, Seneca Co., New York, on 18 January 1962. If the latest possible hatching date for this bird was in the spring of 1960, this bird, as the author states, was in its eleventh year but was not necessarily 11 years old.—Roger B. Clapp.

**3. Recoveries of Saskatchewan Common Terns.** C. S. Houston. 1972. *Blue Jay,* **30**(4): 216-217.—This report lists 12 recoveries from 3,552 *Sterna hirundo* banded by Houston and others. Six birds were recovered in Canada or the United States, four in the Mexican states of Colima and Guerrero, and one each in Costa Rica and the Cook Islands.—Roger B. Clapp.

**4. Recoveries of Silver-grey Petrels banded on Ardery Island, Windmill Islands, Antarctica.** M. D. Murray, M. N. Orton, and R. L. Penney. 1972. *Austral. Bird Bander,* **10**(3): 49-51.—From 1960 to 1963, 161 adult and 65 nestling *Fulmaris* (sic) *glacialoides* were banded. Forty were recaptured on Ardery Island during a visit there in January 1972. One incubating bird was banded as a nestling 12 years previously and the other 39 were banded as breeding adults 10 to 12 years previously. Two birds believed mated in December 1963 were again paired in January 1972.

Both U. S. Fish and Wildlife Service monel bands (series S565) and CSIRO monel bands ("160" series) showed little wear after 9 to 12 years but one of the CSIRO bands had been lost, apparently because the band had opened and fallen off.—Roger B. Clapp.

## MIGRATION, ORIENTATION, AND HOMING

(See also 1, 3, 26, 36)

**5. Smell and foraging in Shearwaters and Petrels.** T. C. Grubb, Jr. 1972. *Nature,* **237**: 404-405.—During daylight experiments significantly more Wilson's Petrels (*Oceanites oceanicus*) and Greater Shearwaters (*Puffinus gravis*) flew upwind toward a sponge soaked in cod liver oil than to a sponge soaked in sea water. Both were held above the water surface by buoys. Additional data indicate that petrels (*Oceanodroma leucorhoa* and *Oceanites oceanicus*) fly upwind toward the oil-soaked sponge more than to the water-soaked one even at night, but not enough nighttime data were collected for statistical analysis. The well designed experiments, performed in the Bay of Fundy, substantiate earlier claims that procellariiforms use olfactory cues to locate possible food sources.—Edward H. Burtt, Jr.

6. **On summer migration of Anatidae in the north Caspian.** (O letnikh migratsiyakh plastinchatoklyuvykh v Severnom Prikaspii.) A. Poslavskii. 1972. *Ornitologiya*, **10**: 288-296. (In Russian.)—Certain duck flights in Eurasia to particular localities in summer, presumably for molting, were noted as early as 1888 by the pioneer naturalist Zarudny (*Zapiskii Akad, Nauk*, **57**(1): supplement). Through observation and banding much detail has been added since, but a new point of controversy has arisen as to whether the now well-known decline in anatid numbers there is the result of either increased shooting or restriction of suitable molting areas due to human occupation. Following some discussion with notes on individual species, it is remarked that: for some populations, particularly male river ducks, the summer flights do not involve molting birds; no diving ducks are noted among these flights; the flights and sojourns are comparatively brief; the routes followed are not well known up to the present; yet the flights appear to follow distinctly marked courses rapidly, and in these respects resemble fall migration later on.—Leon Kelso.

## NESTING AND REPRODUCTION

7. **The use of sawdust piles by nesting Bank Swallows.** J. S. Greenlaw. 1972. *Wilson Bull.*, **84**: 494-496.—Earlier notes on the same subject merely noted the locations of colonies in man-made substrates (e.g., Torrey, *Auk*, **20**: 436-437, 1903; Palmer and Taber, *Auk*, **63**: 299-314, 1946) or speculated on the unsuitability of man-made substrates for nesting (Gross, *in* A. C. Bent, *U. S. Natl. Mus. Bull.*, **179**: 404, 1942) Greenlaw not only discusses the location of two Bank Swallow (*Riparia riparia*) colonies in sawdust banks, but also describes the types of nesting cavities excavated by the swallows He suggests that the problems of erosion and slumping are not significantly greater in a sawdust bank than in a natural substrate (e g., riparian sand bank). No quantitative data are presented in support of the author's contention. His report that overall nesting was fairly successful says nothing about the number of burrows that are destroyed and must be replaced and therefore nothing about the possible energy budget differences of Bank Swallows nesting in natural vs. man-made substrates.—Edward H. Burtt, Jr.

8. **The shearwaters of Shark Bay, WA.** D. L. Serventy. 1972. *Emu*, **72**(4): 175-177.—Primarily using data obtained on surveys in 1965 and 1971, Serventy estimates a total breeding population for Shark Bay of about 1,200 Wedge-tailed Shearwaters (*Puffinus pacificus*). These birds are found on five islands: Friday (100 birds), Slope (300), Freycinet (500), Double (100), and Baudin (200). Some 20 to 30 per cent of the birds are the white-underbodied morph. The population on Slope Island has been adversely affected by a salt-working operation, and Serventy thought that foxes might also be causing some mortality. The foxes had evidently reached the island over a causeway built by the salt company.—Roger B. Clapp.

9. **Some features of Snow Goose and Arctic Fox relationships on Wrangel Island.** (0 nekotorykh osobennostyakh vzaimootnozhenii belykh gusei i pestsov na Ostrov Vrangelya.) E. Syroechkovskii. 1972. *Z. zhurn.*, **51**(8): 1208-1213. (In Russian, English summary.)—Most of the fox burrows occur near the margin of Snow Goose colonies. A goose pair protects only its own site, so nest density rather than their behavior has a protective effect. Foxes take eggs during incubation mostly from marginal nests of the goose colony, affecting the total population to but a limited extent and the colony density by restricting both its expansion and formation of new colonies. Survival of isolated nests is practically impossible. Small groups of 20 to 30 nests occur close to nests of Snowy Owls, which aggressively harrass and drive away foxes, but such small settlements do not persist through years of owl scarcity. The defended radius of an owl nest site is 200 to 250 m, yet it is so attractive to geese as to lure them to nesting on remote stretches of bare rock.—Leon Kelso.

**10. Comparison of the clutch initiation of Caspian and Common Terns at Lake Winnipeg.** K. Vermeer. 1972. *Blue Jay,* **30**(4): 218-220.—Mean dates of clutch initiation for *Hydroprogne caspia* and *Sterna hirundo* on Little George Island were respectively 22 and 15 June 1971. Over 90 per cent of the Caspian Tern eggs were laid between 8 June and 11 July with peak laying (ca. 35 per cent) occurring between 15 and 21 June. Laying by Common Terns was much more closely synchronized with at least 80 per cent of the eggs laid between 8 and 14 June.

Common Terns on Kaginaw Lake, at approximately the same latitude in Manitoba as Little George Island, initiated laying 10 days earlier. Vermeer suggests that later disappearance of ice in Lake Winnipeg caused a sufficiently great reduction in available food so as to account for the later initiation on Little George Island.—Roger B. Clapp.

## ETHOLOGY AND PSYCHOLOGY

### (See also 5, 9, 30, 34)

**11. The New Zealand Long-tailed Cuckoo: nest parasite or predator?** D. D. Dow. 1972. *Emu,* **72**(4): 179-180.—Dow followed a cuckoo and found it on the ground standing over a cold, undamaged, fresh egg of a Song Thrush (*Turdus philomelos*). This observation apparently inspired a short discourse on what is known (evidently very little) of nest-parasitism and predation by *Eudynamis taitensis.* The answer to the question posed in the title is evidently "both." —Roger B. Clapp.

**12. Use of tool by Orange-winged Sittella.** C. Green. 1972. *Emu,* **72**(4): 185-186.—Yet another species (*Neositta chrysoptera*) is added to the growing list of birds that use tools. In the Canberra Botanic Gardens in November 1971, Green and an associate observed several times sittellas using small twigs or sticks 30 to 70 mm long to probe for what were apparently wood-boring grubs in the branches of *Eucalyptus* trees. Twigs were held under the foot as the birds removed grubs with their beaks and were then picked up, carried along a branch, and used again. Twigs were discarded when the birds flew but Green does not record how the twigs were obtained.

Green's paper and an editorial note mention two other papers dealing with tool-use in birds with which most readers might not be familiar. One deals with tool-use by the Eastern Shrike-Tit, *Falconculus frontatus* (*Austral. Bird Watcher,* **4**: 97-98, 1971); the other is a general discussion of tool-use with comments on this phenomenon in Sittidae and Neosittidae (*Austral. Bird Watcher,* **4**: 146-159, 1972).—Roger B. Clapp.

**13. The distribution of male and female Magnificent Frigatebirds, *Fregata magnificens,* along the Gulf Coast of Florida.** B. A. Harrington, R. W. Schreiber, and G. E. Woolfenden. 1972. *Amer. Birds,* **26**(6): 927-931.—Counts of roosting frigatebirds at Tarpon Key from July 1968 through August 1970 consistently revealed that most adults were males (68 to 99 per cent). In contrast, counts made at the Dry Tortugas between June 1968 and July 1972 showed that males comprised from 6 to 28 per cent of roosting adults. Immatures were relatively uncommon at both locations comprising eight and 14 per cent of roosting populations at Tarpon Key and the Dry Tortugas, respectively.

The authors offer an ingenious explanation of the difference in sex ratios at the two roosts based on wind speed and different wing loading of the sexes. Statistical tests revealed that significantly fewer females (which averaged 0.05 more g per square cm of wing area) were in flight at wind speeds of less than 9 to 10 knots but no difference was found in the numbers of males aloft at different wind speeds. At lower wind speeds significantly more frigatebirds were found roosting, and the roosting populations contained a considerably higher proportion of females.

The authors then suggest that the different sex ratios observed were related to the occurrence of slightly and more frequently stronger winds at the Tortugas. The difference in wind conditions at the two localities is perhaps not well enough established in this paper, nor is it really clear that the relatively slight differences between the two localities are sufficient to explain the marked difference in sex ratios.

The authors also hypothesize that the world distribution of this and other species of frigatebirds might be determined in part by wind conditions. Their ideas are intriguing and more work on this topic is surely desirable. I somehow doubt, however, that their explanation is a totally adequate rationale for the difference in the sex ratios. Whereas their argument might account for the paucity of females at Tarpon Key, I do not see that it explains the relative paucity of males at the Tortugas. If flying conditions were adequate for both sexes in the Tortugas one might have thought that the sex ratio would have been more nearly equal.—Roger B. Clapp.

**14. Tool-using by a Double-crested Cormorant.** A. J. Meyerriecks. 1972. *Wilson Bull.*, **84**: 482-483.—A secondary feather that fell from the wing of a preening, adult cormorant (*Phalacrocorax auritus*) was retrieved, held lengthwise in the bill, and first rubbed over the uropygial gland, then stroked across the upper wing surface. This is the first example in birds of tool-use for care of the body surface.—Edward H. Burtt, Jr.

**15. Recognition of nest, eggs, nest site, and young in female Red-winged Blackbirds.** F. W. Peek, E. Franks, and D. Case. 1972. *Wilson Bull.*, **84**: 243-249.—The ability of female Redwings (*Agelaius phoeniceus*) to recognize their own nests, eggs, and young was empirically tested in 1968 and 1969 on a marsh at State College, Pennsylvania. The birds found and accepted their own nest when it was moved less than 10 m within the territory. They showed a strong attachment to the original site because they returned to it first and then flew to the new site on numerous trips subsequent to the relocation of the nest. Exchanges of nests resulted in acceptance of new nests at original sites unless the original nest was moved only one or two m from the original site Exchanges of clutches and alterations of clutch size went unnoticed, but Brown-headed Cowbird (*Molothrus ater*) eggs were recognized as not belonging and were covered with nesting material. Young less than seven days old were not recognized, and exchanges were accepted by the females. Ten- and 11-day old young, however, were individually recognized, and females followed their young when the young were transferred to another nest. The authors postulate recognition of individual differences in the location call, given only by older young, as an important factor in parental recognition of specific young. This well-executed study identifies differences between the biology of this species and that of *A. tricolor* relative to individual recognition of young.—Paul B. Hamel.

## ECOLOGY

**(See 8, 9, 10, 26, 30, 35)**

## WILDLIFE MANAGEMENT AND ECONOMIC ORNITHOLOGY

**(See also 6, 8)**

**16. Ruddy Ducks colliding with wires.** W. R. Siegfried. 1972. *Wilson Bull.*, **84**: 486-487.—Sixty-seven per cent of all ducks killed by collision with wires near Minnedosa, Manitoba, were Ruddy Ducks (*Oxyura jamaicensis*). This species gains altitude slowly and flies during the night or twilight hours, thus making it more susceptible to fatal collision.—Edward H. Burtt, Jr.

## CONSERVATION AND ENVIRONMENTAL QUALITY

**(See, 9, 16, 20)**

## PARASITES AND DISEASES

**17. Seasonal abundance of *Dermanyssus hirundinis* and *D. americanus* (Mesostigmata: Dermanyssidae) in nests of the House Sparrow.** W. Phillis. 1972. *J. Med. Ent.*, **9**(1): 111-112.—The House Sparrow (*Passer* *domesticus*) is an important disease vector host because of its wide range and close association with man. Mites were studied from a colony in Ypsilanti, Michigan, throughout one year, a total of 71 nests being examined. The highest infestation was 74.5 per cent, in late summer broods, and the population peak occurred when nestlings were nearly grown. The lowest infestations occurred from early March to mid-April. In August seven nests contained 21,492 *Dermanyssus*. The greatest danger as disease vectors is probably during the mass migration of mites from nests after fledglings have departed.—Leon Kelso.

## PHYSIOLOGY

**(See also 24)**

**18. Light induced alterations in growth pattern of the avian eye.** A. B. Bercovitz, P. C. Harrison, and G. A. Leary. 1972. *Vision Res.*, **12**: 1253-1259.—Chickens raised under low intensity white or blue light develop abnormally enlarged eyes.—B. Dennis Sustare.

**19. Photopic spectral sensitivity determined electroretinographically for the pigeon eye.** P. M. Blough, L. A. Riggs, and K. L. Schafer. 1972. *Vision Res.*, **12**: 477-485.—Two techniques were used to elicit a photopic ERG from the pigeon, one presenting rapidly flickering light stimuli and the other utilizing an alternating bar pattern. The two methods produced similar spectral sensitivity curves, although the flicker data seemed to peak below 580 nm and the alternating bar data peaked above 580 nm. The curves agree well with the behavioral spectral sensitivity determined by D. S. Blough. Those results, however, showed greater sensitivity to short wave lengths than do the present results. —B. Dennis Sustare.

**20. Damage to pigeon retinae by moderate illumination from fluorescent lamps.** J. Marshall, J. Mellerio, and D. Palmer. 1972. *Exp. Eye Res.*, **14**(2): 164-169.—Until early in this century artificial light sources were insufficient to influence "the length of the illumination phase in the diurnal rhythm of the human environment." The current trend towards very bright lighting was precipitated by the introduction of "daylight type" fluorescent lamps, which, some think, should be run at daylight levels. Higher and higher illuminances are being recommended. Harmful effects on retinae of mammals from prolonged low level illumination have long since been demonstrated. The problem is: how close does the current lighting practice approach the threshold for eye damage in man? In this study, pigeons (strain or variety not stated) were exposed to light from common medium intensity fluorescent lamps, in a cage with uniformly illuminated sides. Inspection through advanced histochemical and ultramicroscopic techniques, including 25,000 X to 70,000 X magnification, revealed that retinal damage, to the cones only, occurred at merely six hours'exposure at a level of 3,000 units ("nits" the special term used here). This corresponds to the luminance of an overcast sky. Retinal damage was induced by only 600 nits for 48 hours, whereas 2,000 nits is only the luminance "of the cleaner parts of a London pavement on a sunny day." This, as in case of heat tolerance studies, is another instance of stress effect being more severe on caged than on outdoor birds. Factors to consider include: spectral power distribution (high in ultraviolet) and visual panorama. The absence of damage to rods is a new discovery. "*With regard to human vision, we cannot now say that a lighting installation must be safe merely because it resembles daylight. A daylight type illumination has definitely damaged pigeon retinae.*"—Leon Kelso.

**21. Localization of visual structure in the diencephalon of pigeon (*Columba livia*).** S. Yazulla and A. M. Granda. 1972. *Vision Res.*, **12**: 1933-1936.—Microelectrodes were used to record visual evoked potentials in the pigeon brain. These responses provided precise location of subcortical visual centers. This technique may be used in conjunction with the Karten and Hodos stereotaxic atlas of the pigeon brain for a refined localization of neural structures less subject to variation between individuals—B. Dennis Sustare.

## MORPHOLOGY AND ANATOMY

**22. Morphology and composition of leucocytes in birds.** (Osobennosti morfologii i sostava leukotsitov ptits.) V. Krivenko. 1972. *Z. zhurn.*, **51**(9): 1422-1425. (In Russian, English summary.)— Analysis of blood leucocytes of 24 species of shorebirds, gulls, and ducks found that, as in mammals, they are separable into granulocytic, lymphoid, and intermediate types, but the profiles or percentages thereof provide few data of evolutionary or systematic significance. The relative percentages of types are somewhat consistent within individual species but fail to characterize any order, family, or genus as a whole. Likewise their affinity to eosin-staining showed much variation, too random to be of significance.— Leon Kelso.

**23. Comparative analysis of caryotypes of 18 species of Turdidae (Aves).** (Sravnitelnyi analiz kariotipov 18 vidov semeistva Turdidae (Aves).) E. Panov and N. Bulatova. 1972. *Z. zhurn.*, **51**(9): 1371-1380. (In Russian, English summary.)—A similarity in chromosome pattern was found in genera *Oenanthe*, *Saxicola*, *Monticola*, and also in *Cyanosylvia svecica*. Within the genus *Turdus*, patterns are quite similar. That of the Bluethroat (*Cyanosylvia*) suggests it originated in western Asia rather than in eastern Asia. The so-called "microchromosomes" are discussed and found to be more constant and significant as a character in birds than previously supposed.— Leon Kelso.

**24. A correlated light and electronmicroscope study of the pecten oculi of the Domestic Fowl (*Gallus domesticus*).** A. Seaman and H. Storm. 1963. *Exp. Eye Res.*, **2**(2): 163-172.—In the absence of notice elsewhere in ornithology, this paper is recommended for study even at this late date for its text and excellent illustrations, some in color. Again the authors suggest that due to the presence of well-developed microvilli and of infoldings of the endothelium of the pecteneal capillaries, the pecten serves as a pathway for active fluid exchange from the vascular lumina into the liquid in the eyeball.—Leon Kelso.

## PLUMAGES AND MOLTS

(See also 6, 27)

**25. Identification of wintering orioles in the northeast.** J. P. Hubbard. 1972. *Delmarva Ornithol.* **7**(2): 10-12.—Female and nonadult male Baltimore Orioles (*Icterus galbula*) and Bullock's Orioles (*I. bullockii*) are best identified by the coloration of certain parts of the head and upper parts. In the Baltimore Oriole the auriculars and often the forehead and superciliary areas tend to be gray to brown whereas in Bullock's Orioles these areas are usually yellowish to orangish. Above, Baltimore Orioles are darker, greenish to darker gray or brown whereas Bullock's Orioles tend to be buff to pale shades of gray or brown. Hubbard's paper goes into considerably more detail on how to distinguish these similar birds and concludes that "in the Northeast no bird should be identified as Bullock's Oriole unless it is ultra-typical in its characters and observed under ideal circumstances." This paper should be useful to both birders and banders, but it seems unfortunate that it appeared in a journal with such limited availability to those who might be interested in reading it.—Roger B. Clapp.

## ZOOGEOGRAPHY AND DISTRIBUTION

(See also 13, 30, 36)

**26. Ornithogeographic zonation of the world ocean.** (Ornitogeographicheskoe delenie mirovogo okeana.) V. Shuntov. 1972. *Z. zhurn.*, **51**(10): 1535-1546. (In Russian, English summary.)—In the pattern of seabird distribution seven major latitudinal zones are recognized: Arctic, Boreal, North subtropical, Tropical, South subtropical, Notal, and Antarctic. This zonal pattern is correlated to dependence of bird dispersal on ocean currents, watermasses, and climatic zones. It is believed that ranges and migration of seabird families developed on the background of climatic zones prevalent during the Tertiary. Only about 25 to 30 per cent of marine bird species have a very wide range. About 70 per cent of maritime bird species are limited to a definite portion of one of the oceans. Thus, for about 20 per cent of such species the breeding range is confined to one or several small islands. The restricted distribution of these species suggests a sharper zonality in oceanic conditions than is usually recognized.—Leon Kelso.

**27. On avifauna of Franz Josef Land.** (K avifayne Zemli Frantsa-Iosifa.) S. Uspenskii. 1972. *Ornitologiya,* **10:** 123-129. (In Russian.)—With the exception of Ellsmere Land and Greenland, this is the northernmost land area, 79° to 82° N, so its variously estimated 15 to 17 species of breeding birds are of interest. Of these, eight species are annotated here with the Ivory Gull (*Pagophila eburnea*) occupying most attention. It is again stated that according to the author's knowledge no one has seen the latter alight on the water. When in sight after emerging from the polar night, its association with polar bears as their scavenger for seal remnants is reconfirmed. At bait set out to attract this bear for study, the approach of one would be heralded by a convoy of one to six flying gulls. It is believed that their molt is gradual through most of the year, interrupted only in the nesting period.—Leon Kelso.

## SYSTEMATICS AND PALEONTOLOGY

**(See also 22, 23, 30, 35)**

**28. The affinities of *Halcyornis* from the lower Eocene.**—C. J. O. Harrison and C A. Walker 1972. *Bull. Brit. Mus. (Nat. Hist.),* **21:** 151-169.—*Halcyornis toliapicus* is known from a cranium found in British lower Eocene (London Clay) deposits. The systematic position of this species has been uncertain, and the authors have restudied the specimen. They conclude that the fossil is most closely allied with the Coraciidae of the Coraciiformes, and they place it in a new family, the Halcyornithidae, within that order. The paper is especially well illustrated with both line drawings and stereophotographs.—Joel Cracraft.

**29. On the status and prospects for development of systematics in the USSR.** (O sostoyanii i perspektivakh razvitiya sistematikii v SSSR.) A. Takhtadzhyan. 1972. *Uspekhi sovrem. biol.,* **73**(2): 163-173. (In Russian.)—"But all these (projects and plans for future progress)," the author writes, "are just something hanging in the air so long as we provide no preparation for systematists at both student and graduate levels." This is a serious matter for Turner (*Taxon,* **20**(2): 123, 1971) sees four main trends: (1) classic systematics, (2) cytogenetic, (3) chemical, and (4) numerical systematics. Takhtadzhyan continues: "There is a real danger in that many systematists persistently refuse to recognize new work in their fields, and I already know of more than a few such cases. Those prepared in past traditions will fall far behind by the close of the century. I am sometimes asked, will not the development of new trends lead to weakening of classic lines which will yet be requisite for a long time in future study of flora and fauna? I do not think so. Actually, as often shown, there is in science an element of healthy conservatism, without which it could not have had any stability. Would not this conservatism, or rather, homeostasy, be amply critical and yet allow development of new ideas? A good example is the so called 'numerical taxonomy.' If systematists had immediately accepted this new but very controversial trend it would have harmed systematics undoubtedly. But since most workers received numerical systematics very warily it underwent severe criticism, as a result of which it has been much modified in recent years, as Sneath recognized (*Biol. J. Linnaean Society,* **3:** 147, 1971). In principle the same should apply to all other new trends and methods. They should be examined critically and not accepted too hurriedly. A good strategy is not to go too slowly either."—Leon Kelso.

## EVOLUTION AND GENETICS

**(See also 26, 35)**

**30. Interspecific hybridization and fate of hybrid populations as exemplified by two species of shrikes: *Lanius collurio* L., and *L. phoenicuroides* Schalow.** (Mezhvidovaya gibridizatsiya i subda gibridnykh populyatsii, na primere dvykh vidov skoroput-zhulanov.) E. Panov. 1972. *Zh. obshchei biol.*, **33**(4): 409-426. (In Russian, English summary.)—In a study of 529 specimens it was found that the two species intergrade over a broad area of Kazakhstan, Iran, and elsewhere, particularly in an area of about 500 sq. km. There is a stabilized hybrid population known as *L. phoenicuroides karelini*. Such hybrid elements usually occupy xerophytic habitats not typical of the parent species. As a result, the hybrids exploit additional areas free of parent species and avoid competition. The main reason suggested for hybridization is similarity of courtship displays.—Leon Kelso.

## FOOD AND FEEDING

**(See also 5)**

**31. Food habits of the Great-tailed Grackle in Brazos County, Texas.** W. R. Davis, II, and K. A. Arnold. 1972. *Condor*, **74**: 439-446.—Davis and Arnold collected 129 grackles (*Cassidix mexicanus prosopidicola*) within one mile of the Texas A & M University campus in 1968 and 1969. Gizzard and proventriculus contents were preserved, sorted, analyzed, and tabulated according to age and sex and season of the year. On a volume basis, analysis revealed a greater proportion of animal materials than plant material for all age and sex categories. Comparison of numbers of food items yielded opposite results from the volumetric analysis. The most common foods, by volume, were orthopterans, grass seeds, coleopterans, araneids, and hemipterans. Plant materials comprised essentially constant amounts in the diet throughout the year, whereas the amount of animal matter consumed was considerably greater during the aestival than the hibernal period. Different age-sex classes evidenced different feeding habits, which the authors attribute to variable morphology and intraspecific competition. Highly mobile adult females consumed maximum amounts of animal material (81 per cent of annual diet), whereas adult males, presumably somewhat inhibited by the bulky tail, consumed the smallest amounts of animal matter (52 percent). Immature, and therefore inexperienced, males and females ate intermediate proportions (66 and 58 per cent). The usefulness of this study is tarnished by the authors' failure to mention any possible relationship between the volumes of various foods and their energy potential after consumption.—Paul B. Hamel.

**32. Notes on nectar feeding by orioles.** L. H. Fisk. 1973. *Auk*, **90**: 208-209.—A case of serendipity in Hooded Orioles (*Icterus cucullatus californicus*) visiting hummingbird feeders. Fisk's primary objective was to study color preferences of hummingbirds but his observations provide evidence that orioles may visit blossoms specifically to feed on nectar. The author notes "communication with others who have observed additional species" yet fails to mention any other species.—Paul B. Hamel.

**33. On food storage by the Rock Nuthatch.** (O sapasanii kormov skalistym popolznem.) E. Gavrilov. 1972. *Ornithologiya*, **10**: 332-333. (In Russian.)—The insertion of insects, cicadas, in chinks and cracks among rocks by *Sitta tephronota* was observed in western Tyan-Shan in June, October, and December.—Leon Kelso.

## SONG AND VOCALIZATIONS

**34. Territorial and courtship songs of birds.** M. R. Lein. 1972. *Nature*, **237**: 48-49.—The author begins by stating that "it is possible to criticize Morse's hypothesis" that the Black-throated Green Warbler (*Dendroica virens*) sings separate songs for territorial defense and courtship (Morse, *Nature*, **226**: 659, 1970). While some interesting points are made about bird song, and an alternative hypothesis is offered, I can see nothing in this paper that offers a criticism of the original hypothesis.

Summarizing, Morse found that song A was given in the presence of neighboring conspecific males, and that song B was given in the presence of conspecific females, or when no conspecifics were present. The B song is also given more often during the incubation period when territorial encounters are infrequent. Lein finds that song A is given to conspecific males, or when the bird is alone at its territorial boundary, and as the first song in the morning and the last in the evening. Song B, Lein notes, is given near the center of the territory and during the nest-building and incubation periods. Therefore, as far as I can see, his data do not disagree with Morse's, although they are more complete in specifying the situations in which the song types are most common.

Lein's interpretation is that song B is spontaneous, and given when there are no "conflicting" external stimuli, but song A is elicited by another male, darkness, or the "insecure ground" near the boundary of the territory. This hypothesis concerns the immediate (proximate) factors eliciting the song types, and is in no way contradictory with Morse's evolutionary (ultimate) hypothesis concerning the functions of the two songs.

Lein does, however, state another hypothesis, concerning function, although it is difficult to separate from his first kind of hypothesis, since the introductory background to it (quoting W. J. Smith's work) appears near the beginning and the hypothesis itself appears near the end. The functional hypothesis is that both songs simultaneously serve to repel males and stimulate females (which is hardly a new interpretation of bird song). The argument favoring this hypothesis over Morse's is that since the songs lie on a "motivational continuum" they must have similar functions.

The difficulty with the arguments, as they are now being raised, lies in trying to determine function by studying the dynamics of behavior. Since the "function" of any characteristic is ultimately assessed by showing its selection within populations, no amount of argument over proximal factors is ever going to solve the issue. It is interesting that Lein first criticizes Morse on these grounds, and then ends up committing the identical error himself. Furthermore, he ignores Morse's data showing that the absence of neighboring territorial males on small islands yields nearly pure B-type songs, as well as other contextual data from Morse's several papers on the subject, while citing as the only evidence for his own quite conventional hypothesis some obscurities about "motivational continuum" coupled with a logically fallacious jump to similarity in function.

Lein may indeed ultimately prove to have the correct functional hypothesis. In any case, his added data strengthen Morse's case as much as they do his own, and Lein's hypothesis about the stimuli controlling the response provides a nice mechanism for the application of Morse's functional hypothesis. In setting up his straw-man, Lein seems to have missed the major point: if his hypothesis (that the two song types mean the same thing) is correct, then why do these warblers have *two* songs when one would suffice?—Jack P. Hailman.

## BOOKS AND MONOGRAPHS

**35. A symposium on ecosystematics.** R. T. Allen and F. C. James (Eds.). 1972. *Occas. Pap. Univ. Arkansas Mus. No.* 4: 1-235.—In celebration of the first century of the University of Arkansas a symposium was organized with the intent of considering the role of ecological theory in systematics. Major papers covered a wide range of subjects, and each was followed by a short discussion from two additional participants. The principal contributions were "The systematics of biological species" by W. Frank Blair, "Ocean-floor spreading in relation to ecosystematic problems" by Daniel Axelrod, "The role of environment in the evolution of life history differences within and between lizard species" by Donald Tinkle, "Ecologic differentiation in North American birds" by Richard Johnston, "An uncertainty principle in ecological evolution" by Herbert Ross, "The role of phenolics in plant defense" by Donald Levin, and "Origin and classification of viruses and mycoplasmas" by Karl Maramorosch. The entire symposium was followed by a brief round-table discussion.

In this writer's opinion very little new is in these papers, most of the information and ideas having been published elsewhere For example, Blair's short contribution (only 7 p.) merely argues for a multidisciplinary approach to the study of species. Johnston's paper constitutes a review of all the recent studies by students of the University of Kansas on geographic variation using multivariate techniques. Ross's contribution seems to attempt something new in considering the question of shifts in ecological adaptation within broad taxonomic groups. Yet, he fails to cite a single paper from an important symposium (*Syst. Zool.*, **14,** 1965) on the origin of major groups, some of whose papers are directly pertinent to his subject. Although his discussion is informative as to how one might recognize how many times species of a group have made ecological shifts, he does not consider the important question as to *why* some species colonize new habitats and others do not. In this regard, another relevant symposium, "The genetics of colonizing species" (H. B. Baker and G. L. Stebbins, eds. 1965. Academic Press) was not mentioned. Finally, Levin's paper is a modified and updated version of one that already was published in the *American Naturalist.*

The papers by Axelrod and Tinkle are both informative and among the most interesting of the symposium. Much of Axelrod's contribution has been discussed in his previous papers, but he does provide a nice review of a field that is growing in interest and puts forth several new ideas on the origin of island floras and on the paleoclimatology of Africa. Tinkle's work on population biology of lizards has consistently been of excellent quality, and his comparative approach to interspecific differences in life history phenomena is very nearly the best example in this symposium of the systematics-ecology interface.

All in all, some interesting papers are included in this symposium, and they do review a wide range of problems. That they say little new is probably not so much a reflection of the participants themselves, but of the nature of symposiums in general.—Joel Cracraft.

**36. The Palaearctic-African bird migration systems.** R. E. Moreau. 1972. London and New York, Academic Press. *xv* + 384 p. $24.—This posthumous masterpiece is certainly the most important ornithological volume of 1972. Working on the manuscript from his hospital bed until the end in May of 1970, Moreau delivered to the world as close an approximation as we shall have of his fantastic knowledge of the migratory avifauna of Africa. Thanks to the careful attention of his family, Moreau's unfinished work was delivered to J. F. Monk for completion—although as Monk points out in his Foreword the work is incomplete compared with Moreau's own visions of it. We are missing in particular his projected chapter on the physiology of migration and his final conclusions. Like Schubert's symphony, this work stands well above so many others considered "complete" by their authors.

Perhaps the heart of the volume is the individual species' accounts in Part III; these constitute the data from which the synthetic generalizations are drawn. Moreau meticulously assembled and summarized such a vast amount of published and unpublished information that he is unlikely to be rivaled soon. For each species, Moreau corrects current incomplete and incorrect information on winter range, habitats, and other relevant aspects of the species' biology, adding data on banding recoveries and repeats, on migration dates, and on migrants' locations for accumulation of fat reserves necessary for long treks across the Old World. The individual maps compiled by Monk in the way Moreau had planned will provide a wealth of geographical information to serve as our present best hypotheses concerning the zoogeographical relations of Palaearctic-African migrants.

Attention has certainly been given to the birds that breed in Europe and migrate to Africa, but no one heretofore has considered the entire Palaearctic avifauna wintering in Africa. A surprising number of eastern north-Asia birds spend the winter in Africa south of the Sahara, preferring the long trip to the arduous one over the Tibetan Massif into India and Pakistan. A number of species (a swift, shrike, swallow, rail, wagtail, warblers, etc.) even come to Africa from eastern Asia, some crossing more than 140° of longitude to reach wintering grounds below the equator and even as far south as the Tropic of Capricorn. (Most of the east Asia birds go south into southeastern Asia, or even to the Philippines or Malaysia.)

Moreau charts the hospitality of the Palaearctic since the nadir of the glaciation about 18,000 years ago. If the number of birds breeding there then is N, then the number reached about 10N by 5,000 years ago, but has fallen to about 2.5N today because of man's destruction of habitat in the temperate Old World.

The migration from and to Africa is a most strenuous one, European birds having to cross probably the most inhospitable large area of land in the world, the Sahara desert. Yet, Moreau finds that opportunistic doves have arrived in large numbers (7,000 to 8,000) in green areas of the eastern Sahara created by oil operations, and large numbers of herons are appearing at new sewage treatment beds. The incredible flexibility of the migrants and their rapid development of new migratory patterns since the glaciation lead Moreau to state that these recent adaptations produce a "shattering (of) much current evolutionary theory." (This strikes me as drama, but the facts are surely impressive.)

In a fascinating chapter Moreau calculates that something like 3,750 million birds (exclusive of waterbirds) invade Africa from the Palaearctic each winter. The physiological capacities of these birds must exceed our previous guesses by something like an order of magnitude, and it is regretted that Moreau did not live to provide us with his speculations on this problem. We only know that he considered "perhaps we must conclude that current ideas, admittedly sketchy, about the energetics of the fat consumed in flight are wrong."

Moreau considers Africa as a "reception area" providing some 20 million square kilometers of hospitable area after the Sahara (size of the United States) has been subtracted from the continent's area. He reviews the habitats, the food, and the competition in Africa, and he goes on in another part to review the energetic requirements of the wintering birds. The shorter days reduce the energy requirement by about 17 per cent over the breeding days of the Palaearctic, and the warm African temperatures knock off another 16 per cent or so. When the maintenance of the bird is compared with the physiologically more stressful breeding conditions, Moreau's final calculations yield an overall reduction of about 40 per cent of the daily energy requirements.

Banders will be particularly interested in the crucial role played by a virtual handfull of dedicated ringers in Africa. Migration routes and times due to their efforts are reviewed by Moreau, and I found the retrap data particularly interesting. One Yellow Wagtail (*Motacilla flava*), for instance, was trapped in the same place on seven successive winters in Africa!

A work such as this, stretching one's knowledge and imagination beyond their present states, suggests many new questions. How does the physiology of migrants really work? Where did these migrants speciate, in Africa or the Palaearctic, and what role do migratory patterns have on speciation? By what landmarks, celestial clues, and other sensory data do birds possibly find their way over such incredible distances? We can lament that Moreau did not tell us, but we cannot fault him for failing to answer questions that could not have been asked properly without his work. There is no way to sum up this extremely valuable synthetic contribution to ornithology: it is already a true "classic."—Jack P. Hailman.