Condor, 80:251

PREDATION ON HUMMINGBIRD BY OROPENDOLA

GARY R. GRAVES

Predation on hummingbirds by raptors (Lowery 1938, Peeters 1963, Mayr 1966), roadrunners (Spofford 1976), flycatchers (Gamboa 1977), and orioles (Wright 1962) has been documented in temperate North America. Beebe (1950) reported Bat Falcons (*Falco rufigularis*) preying regularly on hummingbirds in Venezuela. Boat-billed Flycatchers (*Megarhynchus pitangua*) have been observed catching and eating hummingbirds that were concentrated at flowering *Inga* trees (Leguminosae) at Balta, Departo. de Loreto, Perú (John P. O'Neill, pers. comm.). The absence of other reports pertaining to avian predation on hummingbirds in the tropics prompts me to describe the following incident.

On 10 November 1976, I observed a flock of Dusky-green Oropendolas (*Psarocolius atrovirens*) in upper tropical zone forest on the slopes above the Río Huari Huari, Departo. de Puno, Perú, ca. 1,300 m (69°20'W, 14°00'S). The scattered group, composed of mature and subadult birds (three males and five females), passed through the area daily, foraging primarily in epiphytes on horizontal limbs and in leaf clusters near branch tips. Seasonally flowering trees interspersed in the forest attracted many Booted Racket-tails (*Ocreatus underwoodii*) and Sparkling Violetears (*Colibri coruscans*). I noticed a male Booted Racket-tail as it flew across a large opening in the canopy. A female oropendola swooped down from a nearby tree, caught the hummingbird in mid-air, and then landed in a tree across the clearing. After briefly mandibulating the fluttering hummingbird lengthwise in its bill, the oropendola flew off and joined the remainder of the flock lower down on the slope. Slow-flying hummingbirds such as *Ocreatus* are probably easily caught in open spaces by large flycatching birds and are not too large prey for Dusky-green Oropendolas. In November, at the beginning of the rainy season, the nests of Dusky-green and Crested oropendolas (*P. decumanus*) contained well-developed young. Concentrations of insects and hummingbirds around flowering trees could supply an additional source of protein for opportunistic species during this critical period.

LITERATURE CITED

BEEBE, W. 1950. Home life of the Bat Falcon, *Falco albigularis albigularis* Daudin. Zoologica 35:69–86.

GAMBOA, G. J. 1977. Predation on Rufous Hummingbird by Wied's Crested Flycatcher. Auk 94:157–158.

LOWERY, G. H., JR. 1938. Hummingbird in a Pigeon Hawk's stomach. Auk 55:280.

MAYR, E. 1966. Hummingbird caught by Sparrow Hawk. Auk 83:664.

PEETERS, H. J. 1962. Two observations of avian predation. Wilson Bull. 75:274.

SPOFFORD, S. H. 1976. Roadrunner catches hummingbird in flight. Condor 78:142.

WRIGHT, B. S. 1962. Baltimore Oriole kills hummingbird. Auk 79:112.

Museum of Zoology, Louisiana State University, Baton Rouge, La. 70893. Accepted for publication 2 July 1977.

Condor, 80:251–252

BEHAVIORAL ADJUSTMENTS TO FLIGHTLESSNESS BY MEADOWLARKS AND TERNS

MICHAEL GOCHFELD

Species of animals differ in the degree to which they can adjust their behavior in response to unusual situations. The following anecdotal observations illustrate two extremes in the ability of birds to adjust to a flightless condition.

In October 1971, while studying meadowlarks in Argentina, I captured an adult male *Sturnella loyca*, clipped one wing, and placed the bird in the decoy compartment of a live-trap. It quickly forced open the spring-loaded door, and hopped to the ground. As I tried to grab the bird, it jumped, flapped briefly, and fell to the ground less than a meter away. The bird immediately crouched and scuttled out of sight into the dense bunch grass (*Stipa* sp.). I searched for it and tried to flush it by beating the grass. I found it after nearly an hour, within two meters of where it had disappeared. After realizing that it was unable to fly, the bird had immediately adopted behavior typical of recently fledged meadowlarks before they are able to fly. I repeated this "experiment" with an adult male *S. defilippi*, clipping its wing and tethering it prior to release. It too made only a few flaps and then crouched and ran into the grass, until it reached the end of its tether. I tried to flush it, but it remained crouched. When I returned after an hour, it made a weak attempt to fly as I parted the grass, but then lay still, until I captured it when it began to struggle vigorously.

Contrasted with these rapid adjustments are many observations I have made on Common Terns (*Sterna hirundo*) on Long Island, New York. Before terns are old enough to fly (about age one month), they either crouch in vegetation or run from intruders. During the period when they are learning to fly, the birds jump up and down flapping their wings, before running. Once they are able to fly, in some cases immediately after their first successful flight, chicks cease running altogether, and immediately fly when approached.

Young terns are frequently rendered flightless by trauma, feather damage, or abnormal feather loss (Gochfeld, Wilson Bull. 85:236, 1973). Observations of banded birds known to have flown prior to becoming flightless, revealed that they jumped up

and down flapping vigorously when approached by an intruder. Some birds were easily captured while others ran at the last moment, but in general they did not revert to the effective running behavior characteristic of the pre-flight period. Chicks that had lost feathers sometimes ran from danger, but these may have been birds that had never flown successfully. Birds with fractured wings seldom ran from me when I approached. Even two weeks after young banded terns lost their ability to fly, some of them would again jump and flutter rather than run, although others seemed to "relearn" how to run from danger. The terns were much slower than the meadowlarks in adjusting to a flightless condition. The successful escape of the flightless *loyca* attests to the adaptive value of such quick behavioral adjustment, although in nature it is probably infrequent that an adult bird is rendered flightless yet survives. I am tempted to speculate that the difference in adjustment somehow reflects a more general difference between some non-passerine and passerine groups, or at least oscines. It may be that some species or higher categories have been selected for a general ability of the central nervous system to adjust to new situations. Alternatively, a crouch-and-hide strategy may be realized more easily in some avian taxa than in others. Adult meadowlarks are cryptically patterned on the back; they frequently rest crouched beside vegetation against which they are well-camouflaged. This is less true for juvenile Common Terns and not at all true for adult terns. C. H. Blake (pers. comm.) suggests that adult Common Terns run less well than young birds because they have proportionately smaller feet and legs. Hence, juvenile terns, whose legs are growing in a negative allometric relation to body growth, may be less likely to revert to running than, for example, the meadowlarks.

I have used here the term "adjustment," rather than "adaptation." The latter has a particular meaning in ecology and evolution referring to attributes of species or populations, while "adjustment" is here used to refer to changes on the individual level which are relatively short-term. However, the ability to adjust is itself an adaptation, often referred to as "plasticity." In view of increasing interest in environmental changes, a systematic investigation of adjustment capacities among species, would be of interest.

I made these observations during field studies supported by the Frank M. Chapman Memorial Fund and Sigma Xi Grants-in-Aid.

Field Research Center for Ecology and Ethology, Tyrrel Road, Millbrook, New York 12545. Accepted for publication 20 September 1976.

Condor, 80:252–253

RECENT PUBLICATIONS

The California Quail.—A. Starker Leopold. 1978. University of California Press, Berkeley. 301 p. $14.95. This book concerns the distribution, habitat relations, natural history, and management of the California Quail. Clearly written and crammed with information, it conveys an appreciation for the bird and its relationship with the land. Illustrated with many charts and attractive drawings by Gene M. Christman, and photographs (which suffer in reproduction). Three appendices treat quail in aboriginal California (by K. M. Nissen), foods of the species (by B. M. Browning), and effects of rainfall on breeding (by M. J. Erwin).

Granivorous birds in ecosystems.—Edited by Jan Pinowski and S. Charles Kendeigh. 1978. Cambridge University Press, New York. 452 p. $41.00. Birds that eat weed seeds and grain are a component of man-made ecosystems, being associated with mankind's main food crops. This urgent problem became the subject of a multi-faceted investigation under the International Biological Program in 1966. The outcome of that project is this volume, a synthesis of articles by 12 contributors. The editors deserve much credit for organizing the work and for expertly integrating its parts. The chapters cover the evolution and distribution of granivorous birds, their genetics and population dynamics, biomass and production rates, energetics and food consumption, impact on ecosystems, control, and the ecological significance of granivory. Ten appendices tabulate abundant data on reproduction in *Passer* species and on metabolic rates in many avian species. Although the book is of primary importance to those who are concerned with the biology and management of granivorous birds, its concepts and procedures are equally applicable to species with other food habits. Furthermore, it is a model of large-scale international collaboration in ornithology and the application of basic research to practical problems.

Breeding Birds of Elephant Butte Marsh.—Charles A. Hundertmark. 1978. New Mexico Ornithological Society Publication No. 5. 17 p. Paper. $1.35. Available: Secretary, N.M.O.S., 223 Morningside Drive NE, Albuquerque, NM 87108. Elephant Butte Marsh is in the floodplain of the Rio Grande, south of Bosque del Apache National Wildlife Refuge, in southwestern New Mexico. It supports the largest rookery of nesting water birds in New Mexico, including three species not known to nest elsewhere in the state. This pamphlet reports the status of 94 species of birds (64 nesting) seen there during six summers of field work.

Revised Check-list of the Birds of New Mexico.—John P. Hubbard. 1978. New Mexico Ornithological Society Publication No. 6. 110 p. Paper. $2.50. Available: as above. This check-list incorporates new information on New Mexico birds since Hubbard's 1970 list was published. The species accounts concisely give frequency of occurrence, status, range, numbers, habitats and elevations. Bibliography and index of place names used in text. In view of the size of the state and the relatively small number of its people who study birds, it is impressive that its large (476 species) avifauna is known as well as it is.