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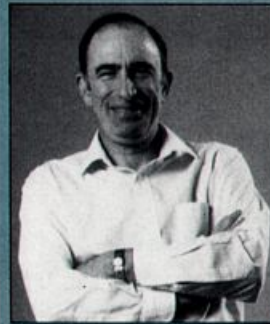
IT'S THE MIDDLE of winter, you're stuck in the city, and the most common bird on your block is the House Sparrow. You're in no mood to study its winter foraging behavior—especially in a cold rain. What should a dedicated birder do? One possibility is to read the latest copy of "*Birder's Bonanza*" or another of the magazines targeted at bird watchers. But the article on "Suet and feeders" reminded you of one you read this month in "*Feathered Friends*," and the one on "Birding south Texas" is much the same as "McAllen sewage pond adventure" that was in "*Avian World*" last month.

If you have a decent library near you, especially a university library, there's another possibility. You can introduce yourself to the literature. Notice that I didn't say just "literature" but "the literature." Of course, that's short for the scientific literature—what scientists call the journals that publish the results of scientific research. There is a great variety of magazines that contain articles about birds, and they're almost always fresh—each has been reviewed by scientists other than the authors to assure that it contains novel information.

But would the articles be comprehensible to a non-scientist? The answer is that many, if not most would be, at least in part. And, with a little practice, they can be much more fun to read than the recycled material that makes up a substantial

Paul R. Ehrlich

BIRDING FOR FUN



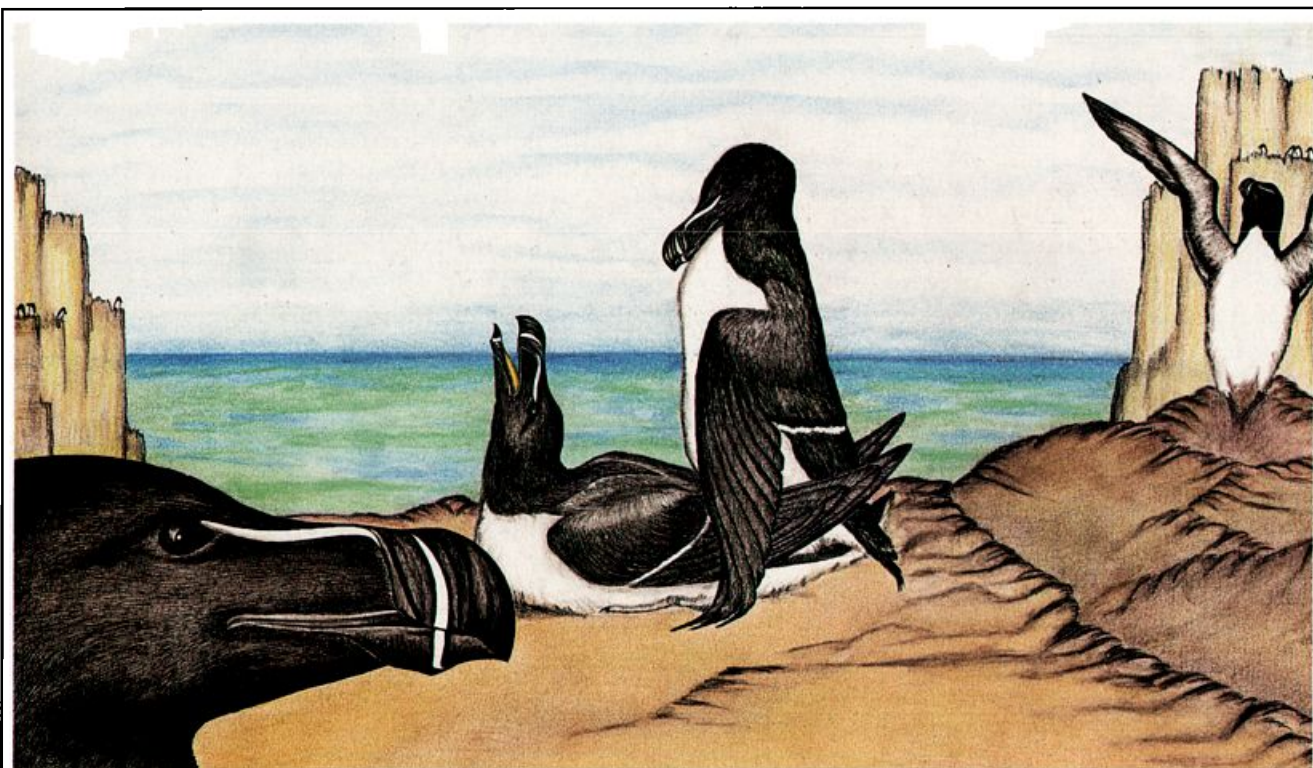
Birds and the Literature

Illustration by Darryl Wheye

portion of popular articles. Consider a recent issue of one journal, *Behavioral Ecology* (Vol. 2, No. 3, 1991). The first article to attract my attention was "The use of extrapair copulations for mate appraisal by Razorbills" by Richard Wagner of the National Zoo. Sex rears its beautiful head. It seems Razorbills mate even during the part of their breeding cycle when eggs can't be fertilized. Furthermore, these "monogamous" birds engage in extrapair copulations, copulations with individuals outside of the breeding pair. Remind you of any mammal you're familiar with?

Razorbills breed on coastal cliffs, rocky shores, and islands, using rocky outcrops for mating arenas. A pair rears one young, which the male accompanies to the sea. But, before the male and fledgling depart, most

Razorbill females studied by Wagner on an island off the coast of Wales once again visited the rock outcrops that were used as mating arenas. There, in most cases, males other than their mates waited and attempted to copulate with them. In one case, five males made ten attempts to mate with a female in three minutes. Furthermore, after their mates and offspring departed, females remained on the island, and more than half of the females consorted with new males. In one case, the consort was a male from whom the female had accepted extrapair copulations before egg laying. In another, a "divorced" male



who consorted with a female after the 1988 season, bred with the same female in 1989. Wagner concluded that female Razorbills use the late-season extrapair copulations as a device for appraising the quality of mates for possible future extrapair copulations during the next season when they will be fertilizable. He thought that both sexes used the extrapair copulations as a way of testing and acquiring future mates.

Wagner's study is especially interesting because it is the first to report female birds seeking extrapair copulations outside of their mating periods. It would be a good introduction to the scientific literature, since it is written in a straightforward way, contains relatively little jargon and no complex mathematics, and is about sex, a topic that interests most of us. Reading essays such as "Monogamy" and "Natural Selection" in *The Birder's Handbook* will give useful perspective on things covered such as copulation outside of the pair bond and "fitness."

Equally straightforward is Michael Kaspari's "Prey preparation as a way that Grasshopper Sparrows (*Ammodramus savannarum*) increase the

nutrient concentration of their prey." Kaspari, of the Department of Ecology and Evolutionary Biology of the University of Arizona, looked in detail at one aspect of the sparrows' foraging strategy—the choices they make in how they collect food. Birds must make many decisions related to foraging. They must decide what kind of habitat (say, fields or woods) to search, and where to look within the habitat (for instance, beneath bark or on the undersides of leaves). Then they must decide what sizes of food items to eat (e.g., common and small, or rare and large) and, often, what parts of the item to devour (swallow the seed whole, or remove the husk). It is the latter issue that Kaspari examined. Grasshopper Sparrows prepare their prey; they don't ordinarily swallow them whole. Kaspar studied which parts of a grasshopper are eaten and which are discarded by Grasshopper Sparrows—and why.

He compared two hypotheses, that is, two explanatory ideas worthy of testing, for why Grasshopper Sparrows prepared their prey. The "width reduction hypothesis" is simply that the grasshoppers are too large to

swallow the whole head-first safely. Birds, like human beings, can choke if they try to swallow an item that is too large. This hypothesis assumes that the benefits of eating larger prey compensate for the time spent reducing their width. The "nutrient concentration hypothesis" is that, by eating only the most nutritious portions of the prey, the bird can maximize its nutritional benefit and leave more room in his gut for another meal. It assumes a compromise between encounter rates (the time it takes to find additional prey) and the time involved in prey preparation (which cannot be spent searching). The width reduction hypothesis predicts that parts contributing most to the prey's width will be removed first. The nutrient concentration hypothesis predicts that parts high in indigestible bulk will be removed first.

Kaspari describes feeding experiments with captive Grasshopper Sparrows in which preparation of grasshoppers by the birds was carefully observed and recorded. The experiments supported the nutrient concentration hypothesis; the parts with the most indigestible skeletal material—ends of legs, wings—were

most frequently removed. In contrast, the midlegs, which contribute most to grasshopper width, were not removed nearly as frequently as wings which fold back along the body and don't significantly widen the prey. Kaspari includes an interesting discussion of other possible hypotheses to explain prey preparation; the paper contains some statistical analysis, but should be easily understandable overall to readers without technical backgrounds.

A more complex paper, by Peter Dunn and Susan Hannon of the University of Alberta and Queens University in Ontario, deals with "Intraspecific competition and the maintenance of monogamy in Tree Swallows." One explanation of monogamy in birds is that a female choosing to mate with an already-mated male will get less help from that male and thus will be less successful reproductively. Natural selection therefore favors females that choose unmated males as partners. Only when an already-mated male has a territory (or other attributes) that are so superior as to compensate for reduced aid in rearing the young will polygyny (one male mating with more than one female) occur.

But in birds ranging from bluebirds to Tree Swallows, it has been shown that there is little or no penalty to the reduced assistance of polygynous males. Unaided females fledged as many young as monogamous females. Why then, Dunn and Hannon ask, was polygyny relatively rare (8 percent of males were polygynous) in the population of Tree Swallows they studied? In a careful investigation featuring nest boxes (that allowed the clutches to be examined) and color-marking of the birds, they found an answer: intraspecific competition—that is, competition among members of the same species. During nest-building and laying, females chased other females away, lessening the chance of a second female nesting in their male's territory. Dunn and

Hannon suggest that the selective basis for this behavior of females does not lie in the reduction of polygyny (which does the first female little or no harm). Rather, it serves to reduce the chances that another female will usurp the nest box or parasitize the first female and her mate by laying eggs in their nest.

If you are interested in how birds choose mates, there are three other interesting papers dealing with that subject in that issue of *Behavioral*

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Ecology. If you'd like a change of pace, you might wish to peruse the latest issue of one of the other journals that reports research on birds. Four, exclusively dedicated to birds and published in the United States, are *The Auk* (the journal of the American Ornithologists' Union), *The Condor* (Cooper Ornithological Society), *The Wilson Bulletin* (Wilson Ornithological Society), and *Journal of Field Ornithology* (Association of Field Ornithologists). And, of course, our own *American Birds* publishes original research in addition to more popular articles.

The July 1991 issue of *The Auk* has articles on topics ranging from the classification of dabbling ducks and the social life of Harris' Hawks to the nighttime microclimate of Bald Eagle nests and changes in habitat use by Bachman's Sparrows following Hurricane Hugo. *The Auk* also has very informative reviews of books, a feature of great value to anyone wanting to build a library about birds. The August 1991 issue of *The Condor* explores issues like the role of aspen flower buds in the dynamics of Ruffed Grouse populations and the importance of choosing a nest site to the Black-throated Blue Warbler. I was especially interested in an article by Howard Sakai and Barry Noon on nesting habitat differences between Hammond's and Pacific-slope flycatchers. They showed that Hammonds depend more on old-growth forests and would thus likely be more seriously affected by their clearance.

I won't belabor the point by listing articles from *The Wilson Bulletin* and *Journal of Field Ornithology*. The latest issues contained write-ups of interest to birders on such diverse subjects as the "body-ruffing" display of Black-capped Chickadees and the diets of Turkey Vultures. The basic point is that there is an abundance of interesting information in those four ornithological journals alone. The four issues I surveyed had a total of 115 articles. Many other biological journals also print interesting articles about birds: *Behaviour*, *Animal Behaviour*, *Behavioral Ecology and Sociobiology*, *Ecology*, and *Animal Ecology*, just to name a few with an ecology-behavior orientation. Getting to know them could greatly increase your knowledge of birds and your birding fun. ♪

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