COMMENTARY

THE AMATEUR IN ORNITHOLOGY

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No branch of biology has felt the hand of the amateur like ornithology. Other branches have had amateur participation, but always more limited in scope. In botany interest has centered mainly on wildflowers, in entomology on butterflies and moths, and in malocology on shells, while in ornithology the influence has been pervasive.

From ancient times inquiring minds have found birds attractive subjects for study. Beyond all other creatures on earth, birds capture the eye with bright colors, the ear with music, and the imagination with the power of flight. Unlike many mammals and other forms of life, most of them are active in daylight in places where they can be seen and studied easily. For these reasons scholars long ago labeled ornithology the "scientia amabilis." Professional ornithologists usually have been captivated by birds long before they thought of themselves as biologists, and in this respect they differ from many of their colleagues, few of whom, for example, came to science through their love of fruit flies or rats.

Until the first quarter of this century, ornithology was mainly the province of amateurs in America as well as in Europe. Before the invention of prism binoculars near the beginning of the century, most field observation took place down the barrel of a shotgun. Not surprisingly, sport hunters and taxidermists were prominent among those people with more than a casual interest in birds. Physicians calling on patients in horse-and-buggy days, with a gun under the seat and dissecting instruments at hand, were well-situated to collect and preserve specimens. Clergymen and teachers, as the resident scholars in many communities, became also the bird experts. The Wilson Ornithological Society sprang from correspondence among teen-age egg collectors, and even the great professionals like Ridgway and Chapman often had no university training in biology.

In modern times the number of professionals, along with employment opportunities for them, has grown enormously, and the number of amateurs has fully kept pace. The literature has expanded accordingly and has reflected a widening spectrum of interests, from the superficial to the profound, loosely identified with "ornithology." To some professionals this brings a measure of embarrassment, lumping them with company they would prefer to disavow. Fieldwork is fun, and the public is not always able to distinguish what is purely recreational. In some quarters James D. Watson was dismissed lightly as a mere bird watcher before the elucidation of the double helix brought him the Nobel Prize in 1962. In the peck order of human society, indoor workers often look down on outdoor workers, and indeed, from the vantage point of controlled conditions in the laboratory, the outside world is deplorably untidy. Very recently "natural history" seemed headed for oblivion until restored to respectability in the name of ecology.

Although the scientist and the bird watcher may be hard to distinguish

from a distance, the importance of ornithology to biology can no longer be questioned. Birds are the best studied class of vertebrates, and ornithology has led in many of the advances of biology. Observation of birds helped Darwin put the pieces together in arriving at the concept of evolution, and many recent refinements in evolutionary theory have come out of field studies of birds. Widespread recognition of the importance of ornithology came in 1973 when Konrad Lorenz and Niko Tinbergen shared a Nobel Prize for their pioneering role in the new discipline of ethology. It was no accident that the first Recovery Plans submitted under the Endangered Species Act of 1973 dealt with birds. And now a public far beyond the scientific community has become alerted to the significance of birds as indicators of the quality of the human environment. May I suggest that much of the vigor of ornithology has come from the amateur infusion?

The force of the amateur component is expressed in many ways. Most obvious is the financial support to institutions, scientific societies, and their publications. Notable especially in times of crisis is their function in educating the public and the legislatures on such issues as conservation and the teaching of biology.

Although research in this field as in all others is steadily becoming sophisticated, amateurs continue to make major contributions to the advancement of knowledge. The Brewster Memorial Award for the "most important recent work on the birds of the Western Hemisphere" has been conferred 45 times beginning in 1921, and on one-fourth of those occasions it has gone to people not earning a livelihood as biologists. Although the last quarter of a century has brought a vast increase in the number of professionals and consequently a relative decline in the prominence of amateurs, Kenneth C. Parkes has calculated that 12% of the papers in the four leading American ornithological journals in 1975 were written by people not employed in biology (in J. R. King and W. J. Bock 1978, Workshop on a National Plan for Ornithology, Final Report, Panel on the Role of Ornithological Societies and the Amateur, Appendix vi). The size of this amateur element and the eagerness of its members are revealed in answers to a questionnaire addressed to "avian biologists" nationwide. In their responses 48% identified themselves as amateurs, and 90% of these expressed an interest in participating in research (King and Bock op. cit., p. 8).

In research the amateur brings to ornithology additional richness through diversity. Not seeking government grants nor academic status, the amateur is free to tread the byways of inquiry, without pressure for immediate results or conformity to current themes. In ornithology important problems are still accessible to the individual using his own resources. Discoveries are still possible without profound knowledge or elaborate equipment. The very complexity of biology has left unsolved mysteries within reach of any imaginative person. Compare, for example, mathematics, where basic simplicity and clarity has allowed centuries of progress to be piled layer on layer until the structure is so elaborate that mere comprehension of relevant questions is beyond the novice, or atomic physics and astronomy, where the equipment is so far beyond the reach of the individual that even the largest of institutions acquire it only through consortia.

Although solid work is performed by some amateurs on their own, the full

potential of the whole group will not be developed without professional collaboration. This will become more important in the future as increasing specialization and depth threatens to move the frontiers away from the avocational ornithologist. In field observations many amateurs have skill few professionals can match, and their forte is the gathering of data, but the full value of their work will not be realized without professional assistance to see the facts within the larger conceptual framework of biology. Thus, the professional touch is often vital in pinpointing the information needed, planning the studies, and analyzing the results.

Some aspects of ornithology would seem to depend on amateur assistance indefinitely. It is difficult to imagine large-scale investigations of populations, migration, or reproductive success without the help of volunteers. The annual Christmas bird counts of the National Audubon Society have 30,000 people taking part and paying for the privilege. Selected volunteers work nearly 2,000 routes for the Breeding Bird Surveys coordinated by Chandler S. Robbins of the U.S. Fish and Wildlife Service. The greatest data bank on avian reproductive success in America is accumulating at the Cornell Laboratory of Ornithology mainly through the work of amateurs. These are some of the more conspicuous American examples, but the potential of amateur mobilization has been demonstrated best by the British Trust for Ornithology, whose projects already have included preparation of an atlas of breeding birds, coordination of all bird banding in the country, special censuses of farmlands and estuaries, and the accumulation of vast amounts of nesting data.

Perhaps the most important contribution of the amateur, and assuredly one that will not dwindle in the years ahead, is the nurture of young scientists. Nearly every scientific career in ornithology has been strongly influenced by early association with an enthusiastic amateur. Birds catch the imagination of the susceptible child and then the spark is fanned by an adult hobbyist. In each locality amateurs usually lead the bird hikes, prepare the check-lists, organize the bird clubs, and write for the newspapers. Not all of them contribute to the scientific literature but nearly all of them read some of it. A case in point is a small-town biology teacher who proudly counts among her former students five Ph.D.'s in biology, including at least two fellows of the American Ornithologists' Union.

The opportunity represented by amateurs was the subject of discussion in February 1978 when about 30 invited people met at Ithaca, New York, under the auspices of the National Audubon Society and the Cornell Laboratory of Ornithology. These people were unanimous in believing this was a great and growing resource that had scarcely been tapped for its potential value. Although a few amateurs carry out independent research of professional caliber, everyone agreed that most of this energy and enthusiasm could be harnessed and enhanced only with professional leadership.

A similar view was supported and amplified by the Workshop on a National Plan for Ornithology reporting to the National Science Foundation and the American Ornithologists' Union in March 1978 (King and Bock op. cit.). This group urged that the professional societies become prime

movers in raising the participation of amateurs, local bird clubs, and nature centers. The recommendations pressed for new initiatives, with attention to better communications, training, and cooperative projects. To move in this direction, leaders of the ornithological societies in editing their journals and planning their meetings should give more thought to the breadth of the audience and accordingly direct a proper share of communications to the interested layperson. This calls for selecting a balanced fare and minimizing jargon and obscurity in presentations. All of this will require special effort in the face of forces pushing in the opposite direction.

In ornithology a symbiotic relationship has existed between the amateur and professional. Societies in the field, increasingly dominated by professionals, should recognize in the amateur segment a beneficial force. To preserve a fruitful relationship, they must continue to serve this portion of their constituency also. No other branch of science has this rich resource.

In arguing that ornithology is fortunate never to have drawn a clear line between the amateur and professional, I draw support from the view of science expressed by Jacob Bronowski in "A Sense of the Future" (1977, Cambridge, Massachusetts, MIT Press, p. 4): "Let no one tell you again that science is only for specialists; it is not. It is no different from history or good talk or reading a novel; some people do it better and some worse; some make a life's work of it; but it is within the reach of everybody."

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