RED DEER AND THE EVOLUTION OF NATURAL HISTORY[1]

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Almost 50 years ago F.Fraser Darling (1937) published what was to become a classic treatment on the natural behavior of a species, namely that of the red deer. Now Clutton-Brock, Guinness, and Albon have produced another treatment on the natural history of red deer that may well become a classic for different reasons. A comparison of these two books on the same species illustrates some of the ways that the study of natural history has changed in the last half century:

--Darling spent two years alone watching deer whereas Clutton-Brock had the help of two colleagues and many other observers during a ten-year study. Although many recent studies on the natural history of single species are still done by lone researchers over short periods of time, long-term studies by many workers are becoming more common and more valuable for evaluating theory. As with the laboratory, concentration on a few species has considerable value although it does not replace the diversity of more superficial studies.

--Darling did not quantify his observations to any great extent so we are left mainly with his impressions, whereas Clutton-Brock et al. quantify theirs to an extreme that will be useful for bioogists seeking other patterns but can be distracting for the reader attempting to gain an overall impression of the life of a red deer. As typical of many older books on natural history and even some relatively recent ones, Darling allots much space to direct quotation from his notebooks. This makes interesting reading but does not contribute much to a quantititive assessment of a behavior; one cannot tell what is usual and what is unusual, or understand the variation among individuals. Clutton-Brock et al. do quantify variation, so we know that their conclusions are usually based on the average behavior of the members in a population and not just a few that were singled out and which well may be atypical. Their observations on aspects of behavior are also more precise and detailed than those of Darling. For example, compare the treatments of the interaction of rutting males (pp. 170-177 in Darling and pp. 128-139 in Clutton-Brock et al.).

--Darling had no specific hypothesis in mind when he began his study but a feeling that such a concentrated study of behavior of a social species might lead to new advances in the study of behavior. Clutton-Brock et al. began their long-term study with a specific theoretical idea for which they consider red deer to be suitable. They consistently pose questions and attempt to answer them with the vast amount of data they accumulated during the study. Neither book arrives at a new theory of behavior but both fulfill their initial goals satisfactorily.

--Darling ventures into some general speculations on the evolutionary significance of the observed behavior but is not truly comparative in scope; we have tales of a single species without adequate information on related ones. One cannot really explain evolutionary significance in a vacuum, so the comparative biology of related species is helpful for postulating causes. Clutton-Brock et al. apparently directed their research to the answer of a particular problem of general evolutionary interest, that of the differential allocation of resources for

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[1]Clutton-Brock, T.H., F.E. Guinness, and S.D. Albon. 1982. Red Deer: Behavior and Ecology of Two Sexes. Chicago: University of Chicago Press. xxii + 378 pp. $37.50 (cloth); $12.95 (paper).

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reproduction among males and females. The data they collected could be compared to some extent to those existing for other species, to provide a basis for some evolutionary speculation, and they do so. However, because their study is the most detailed to date on the behavior of a cervid it may be many years before a truly comparative analysis can be made. In fact Clutton-Brock and his colleagues are modest in their interpretations of their findings. They ask more questions than they really answer, which is nice for a biologist in search of a research project but which will frustrate the general reader trying to gain an overall understanding of the species.

This latest volume in the 'Wildlife Behavior and Ecology Series', edited by G.B. Schaller, not only lives up to the standard of previous volumes but provides some novel features. Although many volumes in this series do not focus on a specific theme, all include a well-rounded account of natural history. For example, although Clutton-Brock and his associates were interested in sexual differences in diet, the information they present is useful for someone interested in other aspects of feeding biology. Nevertheless, the wealth of quantitative analysis to be found in these volumes may frequently fail to provide an answer to a question not addressed by the author because of a lack of some critical information not provided in the published summaries. The increasing tendency for natural-history studies of single species to be quantitative and more comparative has not yet produced the perfect natural history-- one which answers any question one wants; something is usually missing. However, most of the volumes in this series approach the ideal more closely than do other comparable books.

For a researcher, this book appeals because of the terseness of the writing and the density of factual information; for the general reader unfamiliar with the organism, putting together the overall story is difficult. More interpretation of each fact when presented would have been desirable. A lot of facts are summarized which seem to have little bearing on the overall story. Whereas these tidbits of information can be interesting, such as the chewing of bones and antlers when found, which seems typical of many herbivores, they do not really contribute to the general theme nor is their significance to the life of the species often made clear. Moreover, we are not given a general summary of the biology of this deer nor how its life compares with that of its relatives which would help a reader unfamiliar with cervids keep the detailed analyses in perspective. If one has a good memory, a reasonably complete picture emerges by the end.

The statistical summaries at the end of each chapter are a novel feature of this book. Analogous to the practice of using notes, these statistical summaries keep the text free of annoying information and yet provide an outlet for statistical analyses that do not fit comfortably into a table. However, the process sometimes is too repetitive and perhaps some tabular summaries would have been more convenient as well as space-saving.

Natural history, like all aspects of biology, has become more quantitative and focused over the years. As we learn more we can narrow our questions as well as conceive new ones. One danger in beginning to study a species with a particular question is that one might miss aspects of its biology of more interest than the original question. But if one starts looking at a species with no specific question, one might never observe anything of general interest. Clutton-Brock, Guinness and Albon began with a question they admirably answer but they also leave us with a lot of unanswered questions and a wealth of facts that will stimulate other questions. Despite the ten years of work, there is still much about the life of the red deer that can be explored, both in this single population and particularly in other areas with different ecological conditions. They have done a fine job and their book should serve as a model for others of its kind.

LITERATURE CITED

Darling, F.F. (1937) A Herd of Red Deer. London: Oxford University Press. 215 pp.