Studies in Avian Biology No. 6:326, 1981.

INTRODUCTORY REMARKS: OBSERVER VARIABILITY

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The topic of this session—observer variability, the contribution to variability of census results attributable to variability within and among the persons conducting the census—is clearly an important issue. In other sessions of the symposium the vexing problem of observer variability was mentioned a number of times, and the papers in this session, if they do not collectively deal with all of the parameters and modes of observer variability, certainly allude to and actually document a sufficient degree and number of types of such variability to prove that it should not be taken lightly in our efforts to improve methods of estimating numbers of birds.

Without taking a careful census of the sources of observer variability mentioned in the various contributions, I can think of at least the following: age, innate endowment, and past and present accident or illness as they affect observer vision and hearing; amount of experience with the techniques being employed and with the avifauna of the area and time of year of the census; and levels of physical condition and attentiveness during the census. Variation in these several sources may result in variation in at least the following abilities: detection of birds, species identification, and estimation of locations of birds, including their distance from the observer or line of transect. This multiplicity of both sources and modes of observer effects points up the complexity of the problem. One of the contributions of this session, it seems to me, is in illuminating that complexity; if we did not before, we now know at least the character of the problem.

That a large part of what several of the contributors to the session were able to say about observer effects was based on intuition, logic, and a minimum of quantitative observations, is an indication of the neglect that has been given to study of the subject. However, Scott et al. (1981) have led the way toward more systematic, statistical studies in their paper on observer variability in distance estimation. Obviously, more studies of this type are needed. But who will conduct them? They appear to require data that are difficult and expensive to obtain, namely comparable observations by a sizeable number of observers. A federal agency sponsoring a large censusing program provided the data for the studies of Scott et al. (1981) and of Kepler and Scott (1981), and it seems likely that any similar studies in the future will also perforce originate with such large organizations, or at least with data that they have collected and/or paid for.

In his summarizing remarks at the end of this session, McDonald points out that observer effects are all part of what statisticians have termed "measurement error" and that it is generally assumed that this type of error should be small relative to "sampling error" (error due to inherent variability of the system being measured). As indicated above, it unfortunately does not appear that measurement error is small in very many bird counts. McDonald gives some suggestions of ways to reduce it somewhat, and the papers of Emlen and DeJong (1981) and Kepler and Scott (1981) deal with other ways. None of these ways takes the form of a panacea. At least most of McDonald's suggestions would appear to result in no greater than minor improvements. The proposal of Emlen and DeJong (1981) is for a method not yet fully developed; it was received with what seemed a considerable amount of reservation, judging from the oral discussion following the presentation. The type of training program described by Kepler and Scott (1981) is probably practical only for a small number of well-funded large-scale census programs. These comments are not meant to derogate any of those suggestions and plans for potential partial solutions to the problem; all of them are beneficial and worthy of pursuit. The comments are merely an attempt to attain a realistic perspective on the problem; that this turns out to be a somewhat pessimistic perspective is only a reflection of the complexity of the problem.

The present situation, then, as regards observer effects seems to be that the problem has been identified and described qualitatively, but only a few of its aspects have been measured satisfactorily and only limited solutions have been proposed. My impression is that prospects for greatly reducing observer variability in the near future are poor. The sources of the variability are too many and too difficult to control. For the present and the immediate future, the actual design and practice of counts obviously should feature as many as feasible of the suggested ways of reducing observer variability, while research should be continued and expanded to explore quantitative aspects of the variability, so that rational comparison may be made of results of different observers. In this context, McDonald's suggestion of the possible applicability of the theory on "interviewer bias" is an intriguing possibility that will surely be explored.

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