

APPENDIX VI

REPORT OF THE WORKING GROUP TO IDENTIFY FUTURE RESEARCH NEEDS¹

JARED VERNER²

The conference brought into focus many challenging research needs related to the counting of birds. Our purpose here is to itemize some of the more important ones and to place them in some sort of priority. We agree that before any research related to assessment of bird numbers is begun, investigators have an obligation to decide where they are headed and why—that is, goals must be precisely defined. This involves a determination of what is meant by “bird population” and what properties of that population we must estimate. There can be no excuse for using any but the most parsimonious methods and sampling designs.

The following list is not exhaustive but should serve to convey the magnitude and scope of the tasks remaining. We have identified four broad areas for consideration, and for the first we have itemized a number of more specific research needs. Questions pertaining to this research area must be answered before we can have confidence that we are estimating with reasonable accuracy the actual numbers of birds of various species in a community. We take this opportunity to thank those who voluntarily participated in our committee’s discussions. Their thoughtful contributions were invaluable to us as we prepared the following list.

LIST OF RESEARCH NEEDS

- (1) Quantify the magnitude of the bias and variance in estimating real numbers of birds for the various counting methods, species-by-species, by habitat condition, by time of day, by season, by sex and age class, and so on.
 - A. Expand our research to include the whole year.
 - B. Quantify seasonal activity budgets of birds, particularly as they affect production of cues used to detect them.
 - C. Determine the accuracy of distance and direction estimates.
 - D. Determine species-specific and individually-specific song intensities in relation to effective detection distance.
 - E. Evaluate the effects of floaters on count results and their interpretation.
 - F. Devise census methods that are sensitive to movements of locally settled birds within and between territories.
 - G. Develop research methods for counting special groups, such as raptors, flocking species, and roost aggregations.
 - H. Apply a variety of standard methods to populations (preferably banded) for which the total numbers are known so that errors in estimation can be evaluated and biases can be understood.
- (2) Study the statistical distribution of the counts, so that suitable methods of analysis can be performed.
- (3) Determine effective and realistic standardized methods for quantifying habitats and other environmental factors in relation to avian communities. This could include examination of the possibilities of aerial photo interpretation and remote sensing data, in addition to on-the-ground measurements.
- (4) Assess the kinds of questions that can be addressed with data from extensive indexing surveys, such as the Christmas Bird Counts, Breeding Bird Surveys, Atlases, and Migration Counts.

¹ Working Group members: David Hussell, Frances James; Frank Pitelka; and Robert Szaro.

² USDA Forest Service, Pacific Southwest Forest and Range Experiment Station, 2801 East Sierra Ave., Fresno, California 93710.