

INTRODUCTION

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Counting birds has a long tradition. Since early in human history, man has noted and recorded the presence, absence, and abundance of birds.

This long, and presumably honorable, pursuit that we all engage in, to a greater or lesser extent, is the common currency of many ornithological studies. These studies range from multiple regression analyses of habitat variables to life history studies.

Counts have been the raw material of many discoveries in ornithology and its lineal descendent, ecology. Bird counts have been seminal in our knowledge of bird migration, competition, community ecology and structure, population dynamics, environmental adaptation, impact of human alterations, and island biogeography.

Interest in estimating bird numbers is extremely high today, but many questions relating to sampling methods remain unasked or unanswered. Increasingly, workers are finding that the sophisticated questions asked of the data and the precision required in the data analysis are at odds with the methods of data collection and the behavior of the birds being sampled. It was felt that a symposium bringing together all those interested in the problem would facilitate the communication of solutions to some problems, perhaps lead to some novel solutions, and at least clearly define other problems.

Thus we gathered together biologists and statisticians to assess critically the methods and assumptions we use in data gathering and analysis. We hope that this effort will lead to a better understanding of what can and cannot be done with data sets, and of ways to increase the sophistication and accuracy of our analytical and sampling methods.

There are many methods now used to estimate bird numbers. The methods vary considerably in their preciseness and accuracy. However, there are three things common to all: observers to count, birds to be counted, and habitats to be surveyed.

How variations in methods, observers, training of observers (or lack of training), species, habitats, and other environmental variables all affect the accuracy and precision of bird counts must be known and assessed if the field is to progress.

Bird numbers are used in many discussions of biology today. If these discussions are to have validity, we need to consider seriously the reliability of their data base. Far too often, biologists have given little attention to their counting methods, yet have made sweeping statements based on rather fragile numbers. If these numbers are to have any validity, then we as researchers and fields workers have to:

(1) be more precise in defining the questions we want answered;

(2) determine whether we need numbers per unit area or only an index of relative abundance to answer those questions;

(3) determine which method best meets our needs and recognize that each has its own advantages, disadvantages, and assumptions;

(4) pay careful attention to sampling design; and

(5) recognize that observers are important and spend more time and money improving their quality and performance through selection, training, and modification of data gathering methods.

In reading the papers in these proceedings, you will find a good many differences of opinion. It was our intent to bring together diverse points of view. You will also find a large gap between the state of the art and actual field practices. It is our hope that the papers in this book will serve to highlight these differences and motivate the field biologists to close the gap.

ACKNOWLEDGMENTS

Two years of planning and work went into this symposium. During that period we received much help and encouragement from our agencies and many individuals. Our ten session chairmen edited manuscripts, conferred with authors, and generally made our work much easier. We are deeply indebted to all these talented individuals who gave their valuable time to seeing the symposium through to its conclusion. Dr. Robert Z. Callaham and Paul Guilkey of the U.S. Forest Service, and Dr. David L. Trauger of the U.S. Fish and Wildlife Service provided impetus and support at every stage. Ralph Raitt, Frank Pitelka, and Joe Jehl of the Cooper Ornithological Society provided active help, encouragement, and support. John T. Emlen provided helpful suggestions during the developmental stages of the symposium.

In the planning and organization, Richard Hubbard (USFS) and Susan DeTreville did much of the work with the meeting arrangements. Betty Lusk, Ann Tuscany, and Jonette Kaapana provided much clerical help, organizational talents, and insight at all stages. Clearly, our work would have been impossible and

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these proceedings much delayed without their constant effort and good humor in face of impossible demands from us. During the symposium itself, Anthony Gomez (USFS) ran a tight ship, coordinating poster presentations, social events and projecting sharp and upright slides.

Finally, we are grateful to our wives, Carol Pearson Ralph and Sharon Scott who provided help and encouragement. We trust that the thousands of hours on the part of the authors, summarizers, session chairmen, and ourselves will, in small part, be repaid through these proceedings.

Volcano, Hawaii
June 1981