

## INTRODUCTORY REMARKS: SPECIES VARIABILITY

CAMERON B. KEPLER,<sup>1</sup> CHAIRMAN

This session on species variability marks an important shift in direction for the symposium, carrying it from a discussion of the methods used to assess avian populations, to a consideration of some of the important, often thorny, variables that stand between the biologist and an understanding of those populations. These variables affect the results of all the methods so far discussed, be they designed to generate indices of abundance or estimates of absolute density. They include the conspicuousness of the birds themselves, the physical and biological characteristics of their habitats, and variation inherent in the observers.

Birds vary enormously in their detectability. Not only is there an inherent diversity in conspicuousness between species (Mayfield 1981), there also exists considerable intraspecific variation that depends upon such factors as time of day, season, age, sex, stage in the breeding cycle, foraging strategy, dominance relations,

and many others. Biologists working with some groups, such as nocturnal birds or raptors, have had to devise unique sampling strategies that consider the peculiarities of their study animals (Fuller and Mosher 1981). Others, especially those sampling forest ecosystems, often simply exclude these birds from consideration. Raptors and nocturnal birds, however, only serve to illustrate in a dramatic way these universal problems in detectability.

As we seek to refine our methods in what is clearly an inexact science, we will increasingly confront these factors in avian conspicuousness. As species such as Ekman's (1981) tits, or Diehl's (1981) shrikes become better understood, we will be forced to include the known behavioral and ecological idiosyncracies of each of them in our experimental design before we attempt to sample them. And after our data is in hand, we will have to apply this knowledge, in the form of correction factors, to it. At that time we may finally procure a foundation of reliable information sufficient to understand the dynamics of avian populations and community structure.

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<sup>1</sup> U.S. Fish & Wildlife Service, Patuxent Wildlife Research Center, Maui Field Station, 248 Kaweo Pl., Kula, Hawaii 96790.