

## INTRODUCTORY REMARKS: DATA ANALYSIS

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This, the final regular session of the symposium, belongs almost exclusively to the statisticians. You will hear why some time-honored methods should be junked, why some should be retained and improved. You will be introduced to modern approaches to density estimation. And you will be led beyond the problem of finding one estimate of density to discussions of what to do with these estimates and how to do it—all under the heading, "Data Analysis."

To display the value of a statistician, we conducted an actual experiment in habitat modification. During the last coffee break, while you were outside, we went through the rows of the left side of this hall, placing candy canes on the floor next to every other chair. The right side of the hall was left as control, and we wanted to see if you folk are attracted by the candy. After break, I counted 147 of you sitting on the control side and 134 on the candy side. This result was so disappointing that I would not have men-

tioned it, had it not been that a gentleman in the balcony told me that there are actually 216 people seated on the candy side. Unfortunately, I couldn't see them all because many were bent over . . . picking up the candy!

The moral of this story, as David Dawson (1981) has told you before, is: simple counts of detections measure both abundance and conspicuousness, and it is not possible to separate the two without some additional measurement. Thomas Kuhn (1962) argues that a science is *not* determined by what it studies—ornithologists, ecologists, biologists, aeronautic engineers, architects, and painters all study birds; rather a science is determined by what *measurements* it takes. If our aim in this conference is to find ways to estimate abundance—absolute abundance, relative abundance, density, or derivatives such as diversity—then statisticians will be of little use unless we begin by taking the right measurements. Get hearing tests. Study bird songs. Determine how birds respond to observers. Measure detection distances! But don't rely on counts alone for scientific work.

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