

SUMMARIZING REMARKS: ENVIRONMENTAL INFLUENCES

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My assignment is to comment on some biological highlights of papers in this session. But, without asking the organizers' permission, I'm going to do something quite different in the few minutes that are allowed me. You know, in university systems, we have the business of promoting faculty members, and when one is to be considered for tenure, we talk about a "mid-career evaluation." As a matter of fact, at this moment we are literally midstream or "mid-career" in this symposium, and it is coincident that I happen to be in this time slot. I'm going to take advantage of this coincidence to comment in a more general way on the drift of papers to now and on related things which I think it is important for us to bear in mind for the remainder of the symposium. The complex of motivations and methods in census work and the compartmentalization of the different elements and procedures that go into census work seem to have brought on an interval that I would like to call an orgy of cautionary noises about methods. We are wasting time, we are wasting a considerable amount of time, doing analyses which I will not deny are edifying to a certain degree, but which are really detours from the mainstream of effort that brings us together in the first place. This morning, for example, we had an excellent analysis of the degree to which one can depend on song signals in order to estimate the number of birds present. I hope that there is no censuser surviving this symposium who will go into the field and do work depending entirely on song signals. I never have. I was taught by Kendeigh not to do this in aught thirty-nine, and I don't know why we're worrying now about the consequences of depending simply on this source of evidence. That's one of several possible examples provided at this symposium of what I mean about analysis of a narrow methodology (in this case, counts of singing males) and the resulting cautionary noises. The data are subjected to statistical analysis that dignify them and command our attention when in fact one can never seriously depend on that class of data alone for conclusions about densities. And anyway, why aren't we talking more about objectives in the use of census data—what are the questions, what hypotheses are we testing? This is perspective obviously essential for the assessment of method, ultimately. And so we seem to be in

something of a trap. First, there is a historical bit: ornithologists early were inspired by and took over techniques from plant ecology for density and abundance estimation. Plant ecology deals comfortably with stationary organisms, while we apply them to hilariously mobile organisms and then suffer the consequences of that mobility undercutting our efficiency and accuracy in data gathering. Second, there has been, of course, a tremendous increase in the diversity of analytical techniques that we can apply to field populations, and this has led to a preoccupation with the study of methods for their own sake. It appears now that we run the risk of exploring methods without adequately asking what the data do for us, or we run the risk of not presenting the full scale of data that one needs in reading a paper in order to evaluate the effectiveness of a prescribed method. There are examples both ways among papers coming into this symposium. So, because of difficulties due to mobility and the diversity of techniques used to cope with those difficulties, we are preoccupied with methodology without giving adequate time to *why* we are so preoccupied. It is a dilemma which arises out of the fact that we are gathered to discuss methods, and were we to discuss their utilities and merits adequately, we would of course have a symposium several times longer than this one. Nevertheless, it is quite clear now (as it was in several comments gently making the same point earlier), that we should repeatedly ask ourselves, why this or that critical study of method? By the end of yesterday I had the feeling we were sort of coming to a stage of self-immobilization, with criticisms of this method, that method, and with a growing inventory of methodologic shortcomings, all augmented to an alarming degree by the skepticism and pessimism of the statisticians. Are we to give up? Obviously not. Plot work and transect work will continue notwithstanding all the difficulties, the study of population phenomena in the field will continue. So, the point at issue is, why discuss methods without more attention to the biological utility of the resulting data? The published proceedings should include some sort of terminal assessment of methods and recommendations from this standpoint. There is another reason why this is important, beyond the basic study of avian populations. The committee involved in this symposium has recognized that the symposium volume when it appears is going to be an item of particular interest

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to all environmental assessment agencies because of the degree to which birds figure in such work. They function very usefully as indicator organisms, and compared to other classes of animals, data on birds are relatively easy to gather. In this connection there is the fact that we are, these days, faced with formal court challenges to some of the data we gather and the ways we gather them. This may be the chief reason, ul-

timately, why we are here this week. For the reason, therefore, of the importance of this symposium to the environmental impact field as well as to basic avian ecology, the proceedings should include a strong terminal synthesis that will focus on both applied and basic aspects of our overall effort, and in particular on the fit of methods to objectives explicitly stated.