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Frank N. Egerton
Department of History
University of Wisconsin-Parkside
Kenosha WI 53141
E-mail: frank.egerton@uwp.edu

Why Are My Brilliant Research Findings Not Utilized in Ecology Textbooks?

You and your colleagues have worked diligently for several years to complete an important ecological study. You have published the results in a high-impact ecology journal, and have received favorable comments from other scientists in your discipline, and good feedback when you have given talks at national and international meetings. But when a new ecology textbook comes out, your research is not highlighted as an example to students of the next generation, and you are disappointed. Why might this happen?

I have just finished revising my *Ecology* book for the fifth edition. In the process, I have read or scanned about 6000 articles in the ecology

literature. Of these I have selected 425 articles published since 1995 to illustrate and explore ecological concepts in population, community, and ecosystem dynamics. From this experience, I can give you a partial and biased answer to your question: Why was my research not selected for use in this particular ecology textbook?

There are at least three hypotheses to explain this lack of selection: (1) This ecology textbook is clearly hopeless and should not be adopted by any right-thinking college professor. This hypothesis may well be correct, but it suffers somewhat from the “shoot-the-messenger” syndrome, and I will have to evaluate it later when the market reports of book sales come in. (2) Your research is clearly hopeless and ought not to be included in any textbook because it does not illustrate any ecological concept clearly, or its results were inconclusive. I will reject this hypothesis because if you have read this far, the explanation clearly does not apply to your research. And, in general, there is much excellent research that is not reported in textbooks. (3) Your research is excellent, but was not reported in a way that will attract the attention of textbook writers. It is this third hypothesis that I wish to explore here, and I propose that it is, in most cases, the explanation for your problem.

A textbook writer has at most one or two paragraphs, or one figure or one table, to report your findings. Often it may be less: one sentence and one table or figure. I suggest an exercise to illustrate the textbook writer's dilemma. Read a paper in *Ecological Monographs* (for example) that is not directly in your field of expertise, and try to extract a 1–2 sentence summary of findings reported in this paper, along with one figure to illustrate the key results. You will find you cannot do this for most papers because the authors have not provided a succinct abstract or a summary diagram to illustrate their findings. Now go back and look at *your* key papers and see if you have done the same thing.

You may well argue that scientific papers are written to impress one's peers and associates, not to communi-

cate results to third- and fourth-year undergraduates. You may be right, but perhaps a dose of natural selection will bring home the point that, if there are two studies on the same general topic, one with a good summary and one without, you can predict which one a textbook writer will use.

My challenge to ecologists is to spend more time writing the abstract and summary of your paper. Ask yourself how you would explain your major results to Martha Stewart, George Bush, or someone else not versed in ecological sophistication. Graphical summaries or flow diagrams are particularly economical ways of communicating research findings, yet very few papers use them to encapsulate the discussion and synthesis of results.

Two negative responses to this suggestion are, first, that your research is too complex to be summarized in a simple diagram or a few words that George Bush could understand. If this is true, I congratulate you, but must regretfully report that such research can never make it into undergraduate textbooks. If you cannot summarize it, a textbook writer who is much less of a specialist in your particular area will be unable to report it without distortion. Second, you may complain that I am asking you to do a job that should really be done by the textbook writer: synthesis and presentation of ecological concepts and data. This is indeed correct, and would be a good rejoinder in an ideal world with unlimited time and resources.

A textbook writer weighs many factors in deciding whether or not to include findings from a particular study. Of these, the worst is that he or she is unaware that the study was published. This problem is being reduced by the ability of electronic search engines to locate references on any topic. But once a study is noted, I go through the paper with a series of simple questions:

1) What is the main ecological concept or hypothesis under study?

2) What have the authors found out, and how do their findings relate to the original ideas?

3) How can these results be summarized in a table or graph?

4) Do the results supplement or complement previous studies on the topic?

5) Is there a new idea that would connect to other concepts and lead to further work?

In some areas of ecology, there are so many good studies that not all of them can be reported in a textbook, lest it become an encyclopedia. Nevertheless, you can still increase the probability of your study being included by summarizing your results clearly.

I advise young ecologists to write clearly and summarize succinctly. This is relevant to communication of ecological results in any form to the general public, and we ecologists need to improve our communication skills, as many have recommended (Ehrlich 1993, Abel et al. 1998, Lubchenco 1998, Watson 1999). Without a clear summary, your valuable research may not make the impact it should.

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Charles J. Krebs
Department of Zoology
University of British Columbia
Vancouver, BC
Canada V6T 1Z4
(604) 822-4595
Fax: (604) 822-2416
E-mail: krebs@zoology.ubc.ca

Education for Conservation: We Need to Do More

Seven a.m. of a bright, sunny day. I don't bother to decipher the cacophony of the simultaneous talking of five excited and eager people snugly packed in my jeep. They are volunteers recruited by Earthwatch Institute, a NGO that supports environmental field research. We head for our field site in search of bees in the Rio de Janeiro State countryside. As I turn a sharp curve and approach the bridge over the dusty road, I see three kids on the riverbank. They are stalking something, and I soon spot the trap on a dead branch a few meters away. For a split second, I hesitate. Let it go, I say to myself, you're in care of five people, you have work to do, mind your own business. I hit the brakes—can't help it!—and stop the jeep in the middle of the clumsy wooden bridge.

The three faces sticking out from the tall grasses stare at me, waiting. I signal to them to come to the car. The chubby kid, taller and apparently the leader, approaches the jeep slowly, a surly look on his face. The volunteers stop talking. "Whose trap is that?" I ask. "It ain't mine," the kid says. With a firm tone I say: "Tell you what. I'm dropping these people off and I'll be back soon. If this trap and you three are still here, I will call the police with my radio" (which is nonexistent). The kid looks at me for a second trying to decide whether I'm bluffing or the gringos in an official looking jeep are for real. I stare at him until he growls an "OK" and turns back to his buddies, shooting me hateful looks a couple of times.

I engage the car and start moving away slowly, staring back at them. Immediately the volunteers, who watched the exchange in silence, ask me that was about. I explain that the boys were trapping songbirds, an illegal but widespread practice in rural Brazil. I tell them almost everyone in the countryside has caged wild birds, and that a good singing bird can fetch a high price in town. Because of over-