

Spreading the Words

Author: Beardsley, Timothy M.

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BioScience

Organisms from Molecules to the Environment

American Institute of Biological Sciences

Spreading the Words

In the Forum article that begins on page 699, Stephen R. Carpenter and 18 distinguished coauthors argue for a national program focusing on synthesis in environmental sciences. This influential group, representing an array of specialties, argues that ecologists and scientists in closely connected disciplines—the biological, computational, atmospheric, hydrological, geological, oceanic, and social sciences—can, by working together better, accelerate discovery and research in basic and applied environmental science. The article urges spreading the culture of synthesis more extensively to undergraduate and postgraduate education and toward management and governance.

BioScience is a hybrid biology magazine and journal that publishes mainly synthetic overview articles, so it should be no surprise that we endorse this call. By and large, science has proffered professional recognition for meritorious research regardless of how well the work unifies prior studies. Although the importance of interdisciplinary research and synthesis has become more widely recognized over the past decade, much remains to be done. The Internet has made it easier to find scientific articles, but specialized journals proliferate, making it an ever-steeper climb to keep up with even one field. Synthesis enables more people to understand and build on key insights, enhancing the capability of the scientific enterprise to inform policy. At the risk of sounding Machiavellian, synthesis increases power.

There are several notable examples of successful synthesis efforts in biology: As well as the National Center for Ecological Analysis and Synthesis discussed by Carpenter and colleagues, the National Evolutionary Synthesis Center comes to mind (see the article by Kevin Winker on page 657 for an insightful discussion of one cutting edge of evolutionary biology). The Long Term Ecological Research program has fostered cross-site synthesis for almost 30 years, and influential university departments have carried forward the message that researchers should look beyond their narrow specialties.

Still, synthesis often seems risky, and young academics feel professional pressure to generate publications in high-impact journals, as François Brischox and Timothée R. Cook lament in their Viewpoint on page 638. Publishing data in a hot field might be an easier way to add a high-impact article to one's résumé than building bridges to scientists who work and think differently.

Comparing and combining findings from separate fields is indeed challenging, as articles published in *BioScience* have documented. Researchers from disparate communities are likely to employ unique terminology, and they may even have different understandings of supposedly shared concepts. Yet the effort to break down disciplinary barriers is vital. As Carpenter and his coauthors observe, efforts such as the Millennium Ecosystem Assessment, which have led to products useful to policymakers, are limited more by a shortage of experts trained in synthesis than by knowledge from the contributing disciplines.

Last October, a survey of *BioScience* readers found that our emphasis on articles that synthesize biological insights and explain them to a broad spectrum of readers is appreciated. Whatever changes we might make, our mission of improving communication among biologists generally—and so increasing their influence—will persist. Authors occasionally chafe at our limits on the length of articles, and they may be taken aback by our distaste for jargon. But the effort of writing for nonspecialists is the price of allowing synthetic conclusions to be widely understood.

TIMOTHY M. BEARDSLEY

Editor in Chief

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