

## Guest Editorial

### *About Not Knowing Everything*

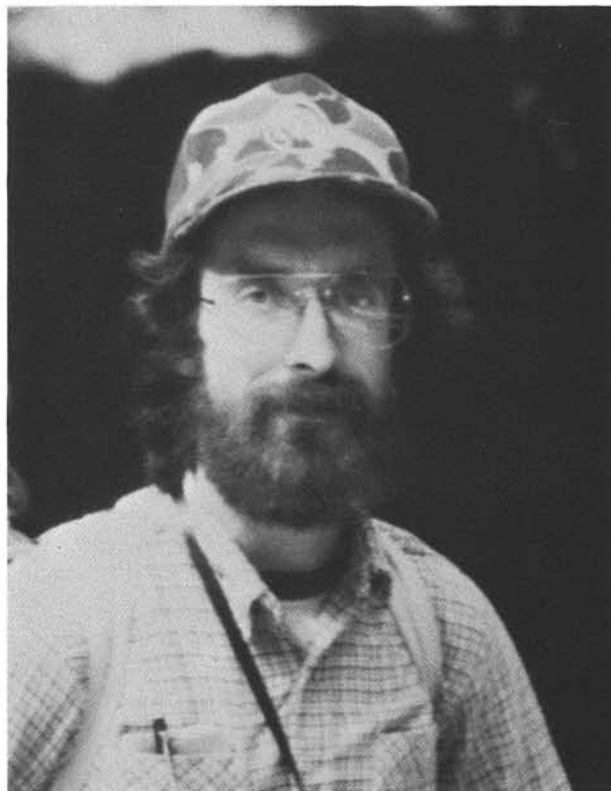
When do we have enough information to manage nature wisely? Some might say never. Yet man-dominated landscapes now covering more and more of the globe cannot be left to manage themselves. And the remaining fragments of natural area are usually too small and isolated to support the disturbance regimes that normally perpetuate them. Under these circumstances, natural area managers can only apply the best available techniques, however imperfect, to mimic the natural regime.

But when do we have enough information to *develop* nature wisely? That is another question entirely. And I believe that to this question *too few* managers say never. Whereas resistance to ecological management may reflect antiscientific bias and ignorance, resistance to haphazard recreational and facilities development is simply good stewardship. It is the rare quality of ecological prudence and humility.

I know several natural area administrators in the midwest who, when planning facilities development, reject cries of caution from ecologists because the ecologists cannot scientifically *prove* that a given development will disrupt a particular ecosystem. They tend to dismiss as "speculation" warnings based at least on sound ecological principles, and often on empirical results from comparable systems. And they tend to dismiss those offering the warning as "elitists" who are trying to keep the masses out of natural areas so that they will be open only to the scientific in-group.

There is today a significant debate in community ecology over what constitutes good scientific method. (See, for example, the November 1983 issue of *The American Naturalist*.) In this debate, one school contends that real science is synonymous with hypothesis testing, and must conform to principles of falsifiability and repeatability. The other side takes a broader view and is more enamored of theory and natural experiments.

I will not attempt to resolve this issue here (or anywhere). But legitimate concerns about ecological research protocol aside, when it comes to managing natural areas, we need all the information we can get, falsifiable or not. It's nice to have all the facts, but usually an intelligent guess will have to do. Those who would develop our natural areas into playgrounds may ask for hard scientific data before they will listen to ecologists' warnings. But nature is not a chemistry set. Confronted with the almost limitless complexity of nature, ecologists must often rely on the indirect evidence of natural experiments, on results from studies in comparable systems, and on logical inference. Manipulative experiments, performed on large areas and watched for decades or more, are probably the only means of testing ecosystem- and landscape-level processes with anything like the rigor demanded by some critics. And although managed natural area systems provide a unique opportunity to conduct long-



Reed F. Noss

term research and monitoring (an opportunity we must seize with enthusiasm!), large-scale manipulative experiments are usually inappropriate where preservation is a primary management objective.

We live in a time of life-and-death crisis for the world's remaining natural areas. Ecologists must not hesitate to state their informed opinions on management, complete data sets or not. We can be certain that the other parties in land management arguments will not hesitate. "To embrace the purist's motto of 'insufficient data' is to abandon the bleeding patient on the operating table" (Soulé and Wilcox. 1980. *Conservation Biology: An Evolutionary-Ecological Perspective*, page 168). We know enough now to demand management strategies that, whenever possible, preserve habitats large enough to constitute functioning ecosystems, concentrate on species and communities least likely to survive outside of refuges, and limit human intrusions. The key is prudence: Where data are equivocal or non-existent, take the strongest protective stance. But whenever data on natural systems can be gathered to test specific hypotheses without sacrificing naturalness, we must make the most of the opportunity. There are a lot of questions that need answering if we want these natural areas to survive.

**Reed F. Noss**  
The Nature Conservancy  
254 E. Sixth Avenue  
Tallahassee, FL 32303