

To The Editor:

I was able to attend the symposium and workshop held in Washington, D.C. in August on "The Application of Genetics to the Management of Wild Plant and Animal Populations" because of the note on the advance brochure which stated that the NPS considered it appropriate training for individuals with resource management responsibilities. As a result, I benefited from the best training session or conference I have attended in 12 years as an NPS Research Biologist. I found the organization to be superb, the speakers excellent, and the subject matter highly relevant to my interests. The key to success was attracting speakers from among the top scientists in the field. Although the organizers filled the 5-day schedule with a potentially exhausting array of speakers and workshops from 8 A.M., to 6 P.M., I was rarely, if ever, bored. And I have never attended a conference where reaction from my colleagues was so positive. My NPS colleagues and I felt a mixture of pride and amazement that our agency had played a major role in putting on such a high-quality and useful session.

NPS research biologists are usually expected to carry out a research program related to managing park resources and to advise park superintendents on a wide range of natural resource topics, such as (in my experience) species reintroductions, management of rare species populations, control of exotic species, etc. Resource managers encounter an amazing variety of topics, many of which they may be ill-prepared to handle. Most of us had fairly broad biological training in graduate school, but have since been barely able to keep up with the rapidly proliferating literature in our own often narrow fields of expertise. When asked to give advice on some topic outside our field, we often don't even know whom to approach for help or what questions to ask. Highly specialized training such as that provided in this genetics conference can go a long way toward getting us up to date and reestablishing and maintaining credibility for the NPS in the field of resource management.

I don't mean to imply by my praise that the field of conservation genetics is sufficiently well-developed that we were spoon-fed solutions to problems. Any conference trainees expecting easy solutions must have been sorely disappointed. Actually, much controversy was brought to the surface. Conflicting statements by proponents of contrasting schools of thought were commonplace. Eminent scientists often seemed shocked that solutions were expected without years of research, and experienced some frustration that lack of sufficient data often makes it necessary to offer an educated guess if one offers a solution at all. All that could be offered were the

elements that should go into decision making. Even though new sophisticated and expensive research (e.g., electrophoretic analysis of allozyme variation) to provide more information for high-resolution decision making may be possible in few cases, such research can sometimes be extrapolated from related organisms. Certainly one must assemble all available information for the decision making process.

Much information gained at this conference will improve my ability to carry out research and advise Haleakala's superintendent. I have a better feel for the genetic limitations which very small, isolated populations of Hawaiian plants and animals may have and the potential positive and negative results of "tampering with" gene pools by transplanting. I can now better develop a research approach to a situation in which elimination of pollinators may result in drastic reduction of seed production or seedling vitality. I am impressed by the potential of exotic species with limited genetic variation because of small founder populations to undergo a shift from a "benign" exotic status to aggressive invasion of native vegetation after a long period because of introduction of new genetic variability or reorganization of existing variability. *Schinus terebinthifolius* in Florida seems to be an excellent example from my experience. This aggressive exotic tree was present in southern Florida for nearly a century before a population explosion in the 1960's which threatens native pine forests, mangroves, and other vegetation. One should beware of apparently innocuous exotics —especially trees and shrubs —in ecosystems such as those of southern Florida and Hawaii which are highly vulnerable to invasion by exotics.

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