

From the Everglades

One Scientist's View

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One should feel fortunate if the benefits of attending meetings match, over the long run, the time and energy expended in attending them. The Symposium on Application of Genetics to the Management of Wild Plant and Animal Populations will balance many more of the more usual sorts of meetings. Arriving with no special expectations, a nearly open mind, and an active interest in the topic (a matter of concern for a park faced with a small and in many cases rapidly decreasing animal populations), I found myself a few days later with many expectations, a well exercised mind crammed with ideas and information, and an increased concern for the genetic consequences of resources management.

I judge the symposium to have been an outstanding success. It was, first of all, exquisitely organized. Facilities, readily available background material (actually homework), selection of topics, progression of ideas, and choice of participants left little to be desired. Clear goals and crisp execution allowed the real work to move unrelentingly forward without distraction. That work was to have been the transfer of information and techniques from scientific practitioners to conservation—oriented biologists and managers. This the symposium accomplished, but not, perhaps, in ways some might have expected. Few simple recipes for management action were provided, but the ingredients were identified and mixed well. Early in the conference, which provided ample opportunity for discussion, the scarcity of answers was viewed with disappointment. Few thought so by the end, when everyone had been taught what questions to ask.

Simple solutions do not exist for management of wild populations. Ecology and genetics under the best of circumstances can provide their theories and their new ways of approaching old problems. This conference supplied both, and any manager willing to concern himself seriously with resource problems could not help but benefit from the new ways of thinking offered by the speakers, workshop leaders, and participants. Such a manager would now realize that preservation of genetic resources is as

fundamental a concern as preservation of species diversity, population size, demography, community structure, and ecosystem processes. Ignoring any of these concerns will lead to the loss of resources.

That approaches and insight were offered rather than recipes is not surprising in retrospect. Population genetics, especially at the molecular level, is one of the most rapidly developing, changing, and diversifying fields of biology. All but a few population geneticists, supported solely and poorly by funding for pure research, have had little opportunity to think about the practical application of their work to wild populations. The guidance of the pioneers of conservation genetics was much in evidence at the conference, which should be viewed as a beginning, not the end, of the difficult task of transferring ideas and techniques across disciplines. The beginnings were mutualistic, most of the geneticists benefitted as much as did the field people. The geneticists had their interests broadened, their fruit-fly oriented ideas debated, and their contributions appreciated. Some of the most distinguished of evolutionary geneticists will be devoting much more effort to real-life problems in the years ahead, and that may be the most lasting accomplishment of this landmark symposium.

We should not, though, let the excitement of discovery cause us to swallow new approaches in their entirety. In the recent past, uncritical acceptance of the management applicability of concepts such as island biogeographic theory and the once axiomatic correlation between species diversity and community stability has become somewhat embarrassing when more thorough debate revealed fundamental weaknesses and ambiguities.

Likewise, application of molecular genetics, to ecosystem management stands in need of thorough and prolonged debate. By the conference's end nearly all participants had converted to the belief that conservation of genetic diversity was a worthwhile goal under nearly all circumstances.

But an ecosystem manager might need to search a bit further for guidelines. The logic of maximizing the genetic diversity of captive tigers does not necessarily hold for all wild populations. In some parks where natural selection has been highly directional, might not genetic diversity be naturally low in populations specifically adapted to their local environment? We have, for example, found that Everglades alligators have very low levels of

electrophoretic variability but are genetically distinctive from other populations. Should it not be the purpose of a national park to preserve the genetic distinctiveness of the local populations irrespective of how genetically diverse they might be or what portion of their species genes they might retain? That we may have more thinking to do should not detract from what has been accomplished. The symposium forcefully opened the way to exploring such problems, and that is as much or more than anyone should have hoped for.