

Strategic Ecological Research Workshop

By Jane Lubchenco and John Dennis

The continuing growth of human populations and of human demands for natural resources has direct and indirect effects on the abilities of parks to sustain natural biological systems. Park research traditionally has emphasized short term projects to detect, understand, and predict some of the direct effects of human activities, including exotic species, overharvesting of species, and alteration of habitats to meet human needs.

Park scientists presently have little support for conducting longer term, strategic research on ecological effects caused by pervasive or difficult-to-

detect, indirect influences. Such influences result from human activities outside the parks that lead to fragmentation of habitat patterns over broad landscapes and changes in ecological relationships in response to changes in such factors as climate, availability of seasonally used habitats, natural fire dynamics, long distance transport of pesticides and other pollutants, loss of genetic diversity from wild populations of plants and animals, or inter-species relationships in complex food webs.

In the absence of management intervention, the continued interaction of these indirect influences eventually may lead to irreversible declines of park resources as we know them today.

In an effort to develop the longer term research needed to support management of these indirect influences, 127 NPS and academic participants met at a workshop convened by Drs. Paul G. Risser, Michael Ruggiero, Jane Lubchenco, and Milford Fletcher in Albuquerque on Feb. 24-26, to define an NPS ecological research agenda structured in the context of the Sustainable Biosphere Initiative proposed by the Ecological Society of America (Lubchenco et al. 1991, Risser et al. 1991).

The report of this workshop recommends a long term, strategic, ecological research program designed to support current and future policy formulation by characterizing resource conditions and

trends and the ecological processes that create them. The report also recommends that the strategic program be designed to encourage incorporation of parks and the NPS research program into the broader national research agenda dealing with global change, biodiversity, and sustainability.

To achieve this dual purpose of supporting park management needs and using parks as components of a national research agenda, the report recommends that the program build on existing and new Service research activities, link with strategic programs of other organizations, and include elements on anticipating and recognizing threats to park resources. The report recommends that these elements focus on:

- developing linked inventory, monitoring, and research programs that will detect and track change;

- identifying the status and trends of biodiversity at landscape, species, and genetic levels of diversity;

- merging complex social, economic, and environmental research into broad scale analyses and predictive models dealing with differing levels of uncertainty through a range of spatial scales (from larger-than-park landscapes through biological regions to global) and time scales (from decades to millenia) and,

- constructing a high quality NPS science program empowered to address both short-term and long-term research, focus on both park and national research agendas, act collectively, work cooperatively outside park boundaries, maintain rigorous information management systems, and develop and apply conceptual models as integral parts of research and resource management activities.

The intended product of this recommended program is information at genetic, ecosystem, landscape, biogeographic region, and global scales that will be useful for policy formulation, natural resource monitoring and management application, and public education on major resource issues.

For more information on the workshop report, contact Michael Ruggiero, Chief, Wildlife and Vegetation Division, NPS, Washington, DC. (202)343-8121.

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References

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- Risser, P.G., J. Lubchenco, and S.A. Levin. 1991. *Biological research priorities: a sustainable biosphere*. *Bioscience* 41:625-627.