

GIS Thesis Provides Insights

*Editor's Note: As part of the requirements for his Master's Degree in Landscape Architecture from the University of Washington, Dirk Wascher studied the role and function of GIS technology in NPS natural resource management. Harvey Fleet of the **NPS Geographic Information Systems Division** reviewed the thesis and culled the following highlights:*

The study's objectives were to discover technical and institutional issues regarding implementation of GIS in the NPS and to learn about NPS expectations of GIS use and Park Service philosophy, thinking, and attitude toward use of the technology. To obtain data on these topics, 21 NPS units were interviewed by telephone in April of 1989. The findings were:

(1) The start of a system frequently is accompanied by management frustrations with its complexity. User-friendlier software, particularly for vector operations, needs to be implemented. Despite this shortcoming, overall acceptance of the hardware and software is high. (2) The largest handicap for successful GIS implementation appears to be the common lack of time to dedicate to GIS activities. Adequate staff training and funding also are frequently lacking. Suggested institutional improvements include cooperation with other agencies and the GIS Division in Denver, and improvements in communication among all NPS GIS

users. (3) GIS technology has vastly improved the capability of most parks to conduct, maintain, and manipulate resource inventories. The technology will very likely help parks move toward their short- and long-term resource management goals. (4) Half of all GIS users reported that they had discovered new management concepts and strategies while working with the technology.

The findings led to formulation of 17 recommendations that delineate vital aspects of technical devices, suggestions for proper choice of software applications, suggestions for training and cooperation, alternatives for internal organization, ways of extending communication, the significance of financial support, optimal definitions for management projects, and the future role of GIS for the research disciplines in the parks. The overall conclusion emerges that GIS technology provides significant enhancement of parks' capabilities to conduct, manage, and manipulate data inventories, which, in turn, can lead to more effective resource management. These advantages clearly outweigh any drawbacks that stem from the various technical and institutional deficiencies.

In addition to the direct technical enhancement of day-to-day traditional resource management tasks, GIS technology can induce more sophisticated and interdisciplinary resource management strategies; lead to a redefinition of the role of research and sci-

ence in the parks; and result in new approaches toward the enhancement of interagency cooperation. The NPS eventually could serve as an intriguing model for other land management agencies. The far-sighted use of the technology can be an important contribution toward overcoming the limitations of territorial jurisdictions in the management of natural resources.

If Mr. Wascher's findings have not been prophetic, they have been insightful. In the year or so since his study, the NPS is moving forward in many of the areas he identified. The technology is being accepted ever more widely as proof of its effectiveness grows. Staffing, funding, and other institutional issues, such as cooperative mechanisms and support arrangements, continue to be problematic, but proposals for dealing with them have emerged for discussion, particularly in relation to the 1992 budget. In time, I believe we will see the realization or resolution of virtually all of Mr. Wascher's findings.

The full text of Wascher's thesis, *The Role and Function of the Geographic Information System for the Management of Natural Resources in the National Park Service*, (178 pp) may be obtained from me, NPS GIS Division, PO Box 25287, Denver, CO 80225: (303) 969-2593.

Wascher received his MA in Landscape Architecture from U/WA in June 1989, and currently is working in a nature preservation agency in West Germany.