Title
Conservation in the Internet Age: Threats and Opportunities

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Peer reviewed

Review: Conservation in the Internet Age: Threats and Opportunities
By James N. Levitt (Ed.)

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This volume is an admirable effort in the direction of suggesting the harnessing of technology for conservation purposes. The Internet revolution and conservation are not mutually exclusive or in conflict, as this volume demonstrates. Communication and transport networks also *facilitate* conservation and new dynamics of regional, demographic, and land use patterns.

James Levitt opens the volume with a thorough, informed historical survey of "networks and nature" in America. Closely reading the development of railways, roadways, and other forms of transport and communication, Levitt pays attention to the ways in which exploration of the landscape and the creation of national parks and forests have frequently engaged with issues of land use, conservation, and human geography. He suggests that the Internet, express delivery systems, and other networks are "key enablers" of deconcentrating settlement and development patterns. Increased mobility and communication in the last decades of the 20th century radically altered economic expansion. Levitt notes that people who grew prosperous with businesses devoted to contemporary technology have also, in the main, been influential in popularizing novel modes of land use and conservation. Further, Levitt argues that conservationists now have an increased set of administrative, educational, and scientific tools at their disposal.

William Mitchell's essay speaks of the "loosening" of spatial and temporal linkages-what he terms fragmentation and recombination-among urban activities through use of digital telecommunication networks. Such networks, Mitchell suggests, enable extensive distribution of inexpensive decentralized intelligence. We can also adopt new, network-enabled patterns of development to reinvent the traditional neighborhood (the theme of the New Urbanists). Mitchell also sees enormous potential for rural backwaters and smaller communities.

Kenneth Johnson's essay deals with the changing dynamics of rural demography. Noting changes in patterns such as the age of people out migrating from rural areas and to retirement destinations, Johnson suggests

that urban sprawl and smart growth (concentrated networked spaces enabling people to work in small towns for employers across the world) has a serious impact on non-metropolitan areas.

Ralph Gross's "Farmland in the Age of the Internet" begins with a survey of shifting patterns in farm use and organization in 1990s America. He notes that Americans are spreading out across the landscape as never before. The rise of the smaller, 35 acre farm (called ranchettes) alters the productivity of the area. As the population spreads more thinly across the landscape, farm and forest operations are severely affected. Gross suggests that GIS and communication technologies can evaluate conservation and development initiatives (including conflicts between farmers and developers). Small farmers and organizations can receive information about development, new technologies, and employment just as easily as large developers. Local planning processes are smoothened and marketing of products facilitated even for small farms in the rural backwaters.

James Levitt and John Pitkin explore the impact of the new technologies in a region in Oregon (Deschutes/Crook Counties). Noting a variety of changes-from population to employment patterns-Levitt and Pitkin also focus on potential detrimental effects such as groundwater pollution, loss of wildlife habitat, and air pollution. They conclude that while migration to amenity-rich areas is definitely influenced by new technologies, amenity-influenced migrants are more likely than others to affiliate with conservation groups.

The case study of Greater Yellowstone by Andrew Hansen and Jay Rotella focuses on the issue of biodiversity. The authors discover that bird hot spots and grassland dependent species' habitats have changed considerably. They suggest that integrated assessment and management of public and private lands, development and use of decision-support tools for land management, prioritization of lands based on ecological and socioeconomic growth, and public education will help achieve sustainability.

"The Green Internet" by Leonard Krishtalka et al. concerns biodiversity informatics-an interdisciplinary field uniting earth systems sciences, computational science, and software engineering. The National Science Foundation identified bioinformatics as having the highest priority for knowledge creation in the biological sciences. The Green Internet is an example of the use of integrated information from terrain, land cover, climate, and gene sequencing data to create new classes of biotic information for computational analysis and modeling. The Species Analyst is Internet-based informatics architecture that helps turn a museum's varied data archives into networked knowledge. Using this system, a user can query multiple collection databases simultaneously-from tracking "human

disease" to what is termed "The Global Biodiversity Information Facility."

John Fitzpatrick and Frank Gill also focus on the Internet as a tool for information retrieval. Using the example of a system, BirdSource, they demonstrate how local birdwatchers can add to the database. If each of the 50 million birdwatchers provides information about the birds they see at their favorite spot, it can help provide detailed scientific knowledge about geographically specific, long-term biological changes.

Jacob Scherr moves the discussion on to conservation campaigns. Thinkers such as Mark Poster have seen the Internet-as a democratizing technology. Scherr's essay on the campaign to save Laguna San Ignacio near Mexico from the planned saltworks demonstrates the use of the Internet-among other forms of campaigning-in spreading awareness and garnering resources. The Internet gives voice to people and communities whose natural resources are being threatened. William Roper and Brian Muller's essay, "Envisioning Rural Futures," is also a discussion of local programs. Using a Vermont-based community program as a case study, Roper and Muller discuss the application of a software program CommunityViz™ -which enabled users to interactively sketch land use scenarios; evaluate them against community objectives and constraints; view comprehensive information on the past, present and future impacts of their choice; and walk through realistic three-dimensional simulations of those scenarios. The tools in CommunityViz™ enhanced local planning processes through an expansion of the visual and aesthetic experience, active community participation, and information supply for analytical purposes. In a similar vein, Bob Durand and Sharon McGregor's essay looks at conservation initiatives in Massachusetts. They explore the extensive use of GIS (Geographic Information Systems) in the area's watershed program through an easy-to-use compilation of pool data stored on CD-ROMs.

Joel Hirschhorn looks at the "new economy" of the Information Technology (IT) age. Hirschhorn contends that higher growth rates undermine natural amenities of the region with loss of natural habitats and demand for development (including leisure and recreational spaces that frequently prove destructive to natural amenities). Peter Stein and James Levitt look at the role of network entrepreneurs such as Thomas Jefferson, Sterling Morton, the Rockefellers, and others. They suggest that the motivations of these conservation philanthropists are a mix of enlightened self-interest and social responsibility, and can be of great use to the conservation movements.

James Levitt's concluding essay, "A Call for Conservation Innovation," reiterates several of the themes addressed by the individual essays: the power and potential of communications technology to keep people informed

about a variety of data in conservation and to link people together in social movements, and the sheer financial resources generated through both entrepreneurial work in IT and more wide-spread campaigns.

Conservation in the Internet Age is a comprehensive and non-technical introduction to what is surely one of the most significant prospects of the new technology. Most of the authors in the volume address the issue of access to information and the use of the Internet to link communities. The new communication technologies represent a whole new dynamics of interaction. The Internet represents a massive multicultural organization; and communities in cyberspace share some cultural commonalities, a concern for the environment being one. As the studies in this volume reveal, people have been brought together because they have experienced similar problems and see the same threats to biodiversity, despite their geographical differences. This democratizing potential of a larger public sphere clearly facilitates social movements, and the essays in the volume are alert to this factor. As for the Internet as a space of information-nothing more can really be said about it! The essays demonstrate exactly how the Internet databases enable extraordinarily thorough research and development programs.

A useful volume for urban studies, environmentalism, and development studies, *Conservation in the Internet Age* provides conclusive evidence of the fact that technological development need not necessarily be at the expense of the local fauna and flora. Neither alarmist nor techno-fetishist in their approach, the contributors explore the possibility of stating, after an American writer: the world is a beautiful place, and it is still worth fighting for.

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