National Biological Information Infrastructure

Land Use History of North America (LUHNA): Clues From the Past to Aid Our Future

The principal aim of the LUHNA program is the production of a well-documented history of the patterns of land use and environmental change.

Human history is dwarfed when compared with the Earth's geological history. When we look at the vast changes that have occurred over geological time, we see continents breaking up and drifting apart, mountains rising, and then being worn away by the elements. And like the continents and the mountains, the Earth's living ecosystems are also in constant change. While these changes occur far more rapidly than the movement of continents, ecological changes may occur at a slow enough pace to make them difficult to detect over the span of, let's say, a human lifetime.

Now, working together, resource managers and scientists are taking a dynamic view of ecosystems and ecological processes when looking at land cover changes. A variety of forces — from climatic change to fire to human land conversion — interact continually to determine the magnitude and direction of change. But although human activity alone is not responsible for all the changes that occur over time, we must accept responsibility for the fact that, in most places, our activities have become the dominant component of biological change.

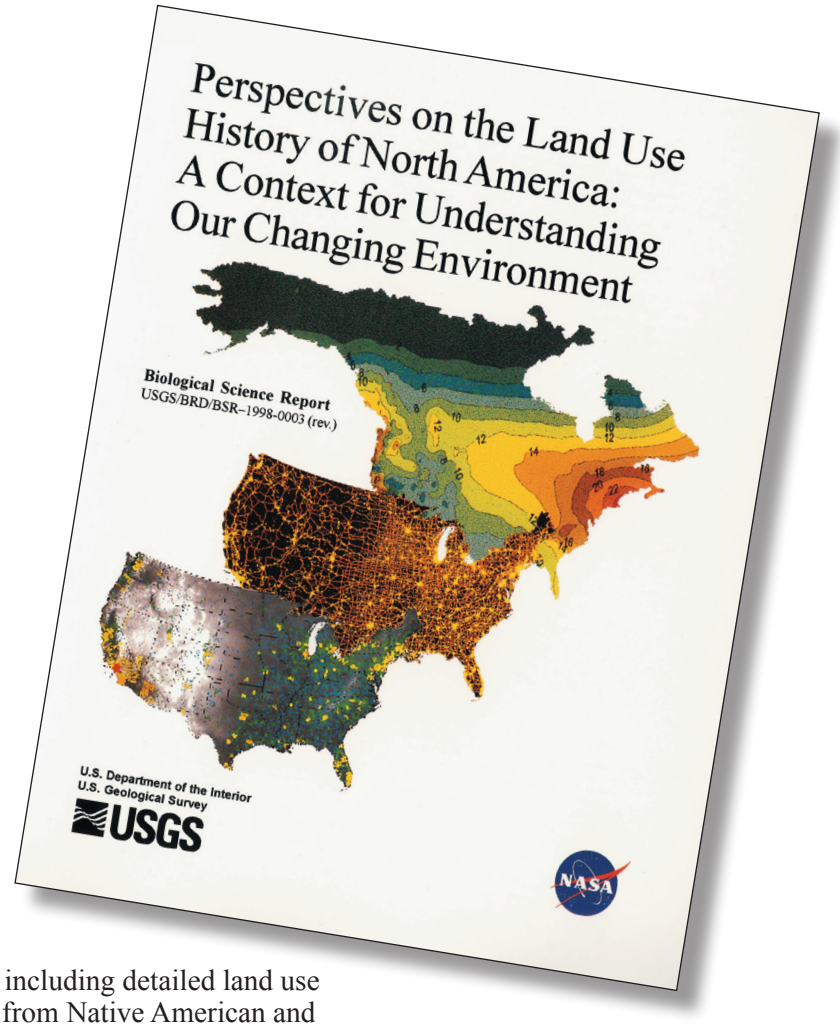
Geographic area covered by LUHNA's Colorado Plateau project.

Encompassing the time of pre-European settlement to the present, the U.S. Geological Survey (USGS) Land Use History of North America — LUHNA — program seeks to understand the relationships between human land use and land cover change and works to assess future implications of these interactions. LUHNA products and research results are widely available to Internet users through the National Biological Information Infrastructure (NBII), a Web-based system coordinated by the USGS that provides increased access to data and information on the nation's biological resources.

In the summer of 1995, the USGS hosted a diverse group of scholars working on the issues of land use, land cover, and ecological change. Historians, geographers, ecologists, and sociologists met with scientists from the National Park Service, the National Aeronautics and Space Administration (NASA), and other institutions to discuss how the work of the different agencies and academic sub-disciplines might be brought together to provide an integrated perspective on land cover and land use history. Under USGS coordination, LUHNA continues to explore approaches for fostering

this cross-disciplinary work and developing data products and analytical tools for researchers, resource managers, educators, and the general public.

The principal aim of the LUHNA program is the production of a well-documented history of the patterns of land use and environmental change. Additional LUHNA objectives include demonstrating the educational value of a land use history and using such a history to help inform future resource management decisions. Major areas of new research will be identified to integrate approaches taken by different disciplines, such as anthropology, environmental history, ecology, and remote sensing. Because all LUHNA project documentation and products are made available through the NBII, other interested parties can readily locate, retrieve, and utilize the information and products that best meet their needs.



Current LUHNA projects can be viewed at the Web site <http://biology.usgs.gov/luhna/>. Many of these projects are also documented in the 104-page USGS-NASA report shown at the right, *Perspectives on the Land Use History of North America: A Context for Understanding Our Changing Environment*. T.D. Sisk, editor. U.S. Geological Survey, Biological Resources Division, Biological Sciences Report USGS/BRD/BSR–1998-0003 (revised September 1999).

LUHNA has also focused on the Colorado Plateau, demonstrating an integrated and comprehensive presentation of land cover change and land use history for this diverse geographic region <www.cpluhna.nau.edu>. A highly variable and well-studied historical record extending back to the Pleistocene era is the backbone of the project, including detailed land use records from Native American and European settlement.

Through the NBII, the participants in the LUHNA program are providing the information to help support land and resource management decisions. As noted by former Secretary of the Interior Bruce Babbitt in his foreword to the LUHNA report mentioned above:

> "The overarching lesson from a historical look at land use in America … is that we need to address open space and habitat conservation from the very beginning, and get going on the front end with more effective planning, involving both civic leaders and conservation biologists. This kind of collaboration requires innovation, development, and outreach and some degree of mutual trust. Now is our chance to forge a better way."

For More Information

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