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FORT COLLINS SCIENCE CENTER
Social and Economic Analysis Branch

Integrating Policy, Social, Economic, and Natural Science

Capabilities

Photograph by Rudy Schuster, USGS.

The Fort Collins Science Center's Social and Economic Analysis (SEA) Branch provides unique capabilities in the U.S. Geological Survey by leading projects that integrate social, behavioral, economic, and natural science in the context of human–natural resource interactions. Our research provides scientific understanding and support for the management and conservation of our natural resources in support of multiple agency missions. We focus on meeting the scientific needs of the Department of the Interior natural resource management bureaus in addition to fostering partnerships with other Federal and State managers to protect, restore, and enhance our environment. SEA has an interdisciplinary group of scientists whose primary functions are to conduct both theoretical and applied social science research, provide technical assistance, and offer training to support the development of skills in natural resource management activities. Management and research issues associated with human-resource interactions typically occur in a unique context and require knowledge of both natural and social sciences, along with the skill to integrate multiple science disciplines. In response to these challenging contexts, SEA researchers apply a wide variety of social science concepts and methods which complement our rangeland/agricultural, wildlife, ecology, and biology capabilities. The goal of SEA's research is to enhance natural-resource management, agency functions, policies, and decisionmaking.

Economics and Ecosystem Services

Federal policymakers and land managers are accountable to the public for how they invest public funds and for the outcomes of the policy and management decisions they make. Through a variety of economic analyses and custom modeling, SEA economists evaluate how investments and management decisions affect individuals, local communities, and society as a whole. Specifically, SEA economists (1) conduct economic effects analyses to quantify how spending cycles through local economies, generating business sales and supporting jobs and income; (2) conduct research to assess nonmarket values associated with public policy and land management practices; and (3) assess the economic values associated with ecosystem services, defined as socially valued goods and services resulting from ecosystem structures and functions, and other natural resource management issues.

Photograph by Katie Walters, USGS.

Policy Analysis and Negotiation

Natural-resource management increasingly demands skills in negotiation to engage a broad range of stakeholders in decisionmaking. SEA scientists incorporate the results of their published research on multi-party negotiation into training courses taught annually at the FORT. SEA researchers also work to understand how institutional arrangements contribute to successful implementation of natural-resource management plans or policies, and how to address conflicts of science in complex institutional settings. This work is important because the science, policy, and stakeholder communities must collaborate for informed and effective decisionmaking.

Human Dimensions of Resource Management

Human dimensions in the context of natural resource management refers to the ways humans value natural resources, resource management preferences, and how humans affect or are affected by natural resource management decisions. Natural resource management and policy decisionmaking require incorporation of sound biological, social, and economic science. SEA scientists use tools, research methods, and training to support managers in the creation and revision of Federal land and water management plans. Specific activities include (1) surveying visitors, community residents, and other stakeholders about their activities on public lands and their attitudes toward and perceptions and knowledge of management alternatives; (2) understanding the relationships among public land management, human well-being, and community sustainability in light of phenomena such as climate change and energy development; and (3) learning how scientists and the public apply scientific information in their decision processes.

Agricultural Practices

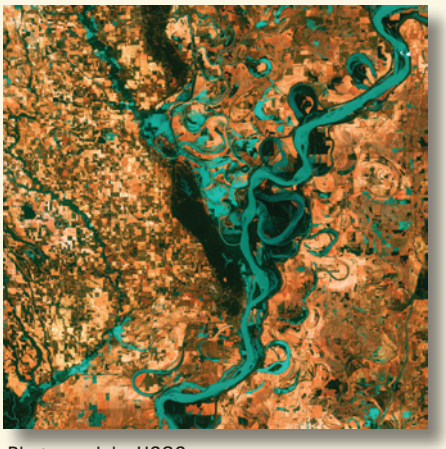
The significance placed on environmentally responsible land management is based in part on public recognition that social, aesthetic, and recreational values enhance the traditional uses of agricultural land. SEA scientists generate science-based information needed to guide management actions and policy decisions that support wildlife habitat and other environmental services compatible with both U.S. Department of Agriculture (USDA) conservation goals and land managers. Under guidance from the USDA Farm Service Agency, SEA scientists provide biological, social, and economic information that integrates agriculture and conservation for USDA conservation programs. Results are provided to Federal and State conservation agencies and nongovernmental organizations.

Photograph by Mark Vandever, USGS.

Selected Projects

Users, Uses, and Value of Landsat Imagery

Landsat satellites provide high-quality, multi-spectral, moderate-resolution imagery of urban, rural, and remote lands for all areas of the world. The imagery is applied to a variety of research areas, such as global climate change research, agriculture, and environmental management. Limited information is available about how private businesses, nonprofit organizations, Tribes, and State and local governments use and value federally sponsored, moderate-resolution land imaging. Social scientists at SEA are conducting a series of surveys to provide longitudinal data on how the users and uses of the imagery are changing over time. The value of the imagery is being estimated both qualitatively and quantitatively through the surveys and ongoing case studies. The case studies provide an opportunity to research individual applications of Landsat imagery extensively, including an in-depth look at the market and nonmarket value of the imagery within a given application.



Photograph by USGS.

Assessing Socioeconomic Planning Needs (ASPN)

Lands and resources managed by Federal, State, and local agencies provide many goods and services that contribute to the social and economic well-being of local communities and society as a whole, including benefits such as recreational opportunities, commercial uses, environmental education, and subsistence. Social and economic analyses are an essential and required part of evaluating the effects of land-management actions; however, familiarity with identifying and analyzing socioeconomic effects is not a skill many planners or managers possess. To provide a consistent framework for this process, SEA scientists are collaborating with other Federal agencies to develop ASPN, a Web-based decision tool that allows planners and managers to assess the appropriate social and economic issues to address in their management process. ASPN then provides a socioeconomic analysis plan that is tailored to the user's individual land unit and planning issues. Information provided by the tool will improve the planning process by (1) prioritizing the specific attributes of significant issues that need to be addressed, (2) determining the level of analysis necessary for specific attributes, and (3) identifying the most applicable socioeconomic assessment methods.

Photograph by Rudy Schuster, USGS.

Human Dimensions of Climate Change

Photograph by Katie Walters, USGS.

A changing climate poses challenges to both natural and human systems. The 2009 Department of the Interior Climate Change Task Force documented that many communities and user groups that depend on public lands and waters are at risk from climate change impacts. We call these impacts and related issues the human dimensions of climate change (HDCC). HDCC issues include changes in economic activity, subsistence practices, human health, recreation, infrastructure, community resilience, and others. While there are policy documents addressing the human dimensions of climate change, there is limited guidance that is directly relevant to the operational challenges of resource management. The Human Dimensions of Climate Change: An Interagency Collaborative is a group of researchers and managers that has been developed to fill this need. In collaboration with resource managers, HDCC will offer information, guidance, and applied research on the human dimensions of climate change to inform operational decisions. Methodology includes a number of regional case studies to identify information gaps and potential solutions to filling those gaps.

Collaboration and Dispute Resolution

Developing skills in collaboration and dispute resolution at both the individual and organizational level is a significant challenge for the Bureau of Land Management (BLM) because management decisions on BLM land involve stakeholders. SEA researchers are working with BLM to learn what information sources and resources BLM employees use to fill their collaboration and dispute resolution needs and which additional resources could be provided by BLM to enhance and support collaboration skills. Researchers also identified barriers that hinder skill development in collaboration and dispute resolution, and assessed BLM employee attitudes toward collaboration and dispute resolution. U.S. Geological Survey researchers conducted an online survey of a broad group of BLM employees and followed up with in-depth interviews of a sample of BLM field office managers. The information gathered from this study will be used as the BLM develops a new plan, "Strategic Plan for Collaboration and Alternative Dispute Resolution," and will help shape the direction of programs to develop the capacity to engage with stakeholders in decision processes.

Photograph by Katie Walters, USGS.

Ecosystem Service Valuation of Everglades Restoration

South Florida's Everglades are a unique and complex system of interdependent ecosystems that provide many direct and indirect benefits to humans. Now considered one of the most threatened ecosystems in the nation, efforts to intervene in the degradation of the Everglades by reestablishing historic flows of water are expected to impact a wide range of ecosystem services; the benefits from ecosystem structures and processes integral to human well-being. SEA economists, in collaboration with a team of interdisciplinary scientists at the U.S. Army Corps of Engineers (USACE), the South Florida Water Management District, the University of Florida, and other Federal, State, and local agencies, are assessing the economic value of ecosystem services that could be affected by restoration activities that will take place under the Central Everglades Planning Project. The results of this assessment are expected to be of significance to the Comprehensive Everglades Restoration Plan and its stakeholders, the general public, USACE Jacksonville District, and USACE nationally.

Photograph by USGS.

Integrating Agricultural and Conservation Goals

Photograph by Mark Vandever, USGS.

Federal and State agencies need information on the biological effects of conservation program policies to ensure that these policies are based on the best science, reflect important regional and ecological differences, and are applicable for land enrolled in conservation programs. Of these, the Conservation Reserve Program (CRP) is the largest, with approximately 25 million acres of potentially erosive or otherwise environmentally sensitive private lands in 47 states. SEA scientists collaborate with USDA administrators to help quantify environmental benefits of individual conservation practices and improve the conservation effectiveness of their programs. Researchers are evaluating short-term vegetation responses to CRP land management practices in response to extreme drought in Texas; while in Colorado, rangeland management specialists and ecologists examine the role CRP grasslands play in providing refugia for pollinators in agricultural landscapes. In Iowa, a two-year assessment is coming to completion after analyzing the utility wetlands provide for habitat to native amphibians by examining water quality, testing for disease, and estimating survival and stress levels.

Economic Contribution of Federal Investments in Restoration of Degraded, Damaged, or Destroyed Ecosystems

Photograph by Bureau of Land Management.

Nationwide, restoration projects are underway to mitigate environmental damages and improve the health and resilience of terrestrial, freshwater, and marine ecosystems. In addition to environmental benefits, Federal investments in restoration activities cycle through local economies, generating revenue, and supporting jobs and income. SEA economists collaborate with the DOI Office of Policy Analysis, DOI Restoration Program, and Bureau of Land Management to collect data and develop a series of case studies that will increase the available information on the costs and required inputs for ecosystem restoration and the resultant economic effects of these investments to local economies. In addition to providing improved information on the economic effects of restoration, these case studies highlight DOI restoration efforts and tell personalized stories about each project and the communities that are positively affected by restoration activities. The long-term aspiration of these efforts is to provide a framework to estimate the economic effects of a variety of restoration activities.

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ISSN 2327-6932 (online)
http://dx.doi.org/10.3133/fs20143070