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FORT COLLINS SCIENCE CENTER
Policy Analysis and Science Assistance Branch

Integrating Social, Behavioral, Economic and Biological Sciences

Capabilities

The Fort Collins Science Center's Policy Analysis and Science Assistance (PASA) Branch is a team of approximately 28 scientists, technicians, and graduate student researchers. PASA provides unique capabilities in the U.S. Geological Survey by leading projects that integrate social, behavioral, economic, and biological analyses in the context of human–natural resource interactions. Resource planners, managers, and policymakers in the U.S. Departments of the Interior (DOI) and Agriculture (USDA), State and local agencies, and international agencies use information from PASA studies to make informed natural-resource management and policy decisions. PASA scientists' primary functions are to conduct both theoretical and applied social science research, provide technical assistance, and offer training to advance performance in policy-relevant research areas. Management and research issues associated with human-resource interactions typically occur in a unique context, involve difficult-to-access populations, require knowledge of both natural and biological science in addition to social science, and require the skill to integrate multiple science disciplines. In response to these difficult contexts, PASA researchers apply traditional and state-of-the-art social science methods drawing from the fields of sociology, demography, economics, political science, communications, social psychology, and industrial/organizational psychology. These social science methods work in concert with our rangeland/agricultural management, wildlife, ecology, and biology capabilities. The goal of PASA's research is to enhance natural-resource management, agency functions, policies, and decisionmaking. Our research is organized into four broad areas of study.

Land Management and Planning

Management of Federal public lands is guided by long-term plans that identify goals and objectives. These plans require incorporation of sound biological, social, and economic science. PASA scientists have developed tools, research methods, and training to support the creation and revision of these plans. Specific activities include (1) surveying visitors, community residents, and other stakeholders about their activities on these 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, energy development, and wildland fires; and, (3) measuring public and decisionmaker perceptions of risk regarding human hazards such as hurricanes and wildlife diseases such as chronic wasting disease.

Decision Tools and Economics

Federal regulations require that economic effects of changes in land-management practices must be analyzed and addressed within the planning process. PASA scientists (1) conduct research to quantify the market and nonmarket values and assess potential effects of public land- and water-management practices; (2) evaluate the economic values associated with natural resource-management issues; and (3) develop decision-support tools for measuring, communicating, and coordinating actions related to public land- and resource-management planning, habitat restoration, and other conservation concerns.

Agricultural Practices

PASA scientists generate science-based information needed to guide management actions and policy decisions that support wildlife habitat and other environmental services compatible with both USDA conservation goals and farm operations. Under guidance from the USDA Farm Service Agency, PASA scientists provide biological, social, and economic information that integrates agriculture and conservation for the Conservation Reserve Program (CRP). Results are provided to Federal and State conservation agencies and nongovernmental organizations.

Negotiation and Institutional Analysis

Natural-resource management increasingly demands skills in negotiation to engage a broad range of stakeholders in decisionmaking. PASA scientists incorporate the results of their published research on multiparty negotiation into training courses taught annually at the FORT. PASA researchers also work to understand how institutional arrangements contribute to successful implementation of natural-resource management plans or policies, and how conflicts over science are addressed in complex institutional settings. This is important because the science, policy, and stakeholder communities must collaborate for informed and effective decisionmaking. PASA scientists are also engaged in organizational assessments for DOI agencies to help managers understand customer satisfaction, Bureau capabilities, and program effectiveness.

Selected Projects

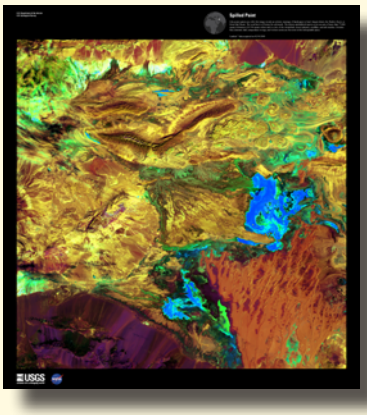
Assessing Socioeconomic Planning Needs (ASPN)

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, 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, PASA scientists are collaborating with other federal agencies to develop a Web-based decision tool, named ASPN, that will allow 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 custom-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 tools given the reality of budget and time constraints.

Survey of Visitors to National Wildlife Refuges

Understanding and characterizing visitors to Federal public lands is a critcal element of managing these lands. A national survey of visitors to National Wildlife Refuges, managed by the U.S. Fish and Wildlife Service, aims to better understand visitors' recreational experiences, measure visitor satisfaction with current services and facilities, and identify desired future amenities and opportunities. Additionally, this survey targets transportation issues related to wildlife-oriented recreational opportunities, including access roads and routes, alternative transportation services, and road safety. This survey builds on more than six years of social and economic research on National Wildlife Refuges in support of their Comprehensive Conservation Planning processes. Information from this effort provides refuge managers, planners, and visitor-service professionals with scientifically sound data about visitors that can be used to inform long-term planning, improve facilities, tailor services, understand economic impacts of visitors to the local economy, and better protect refuge resources by integrating social, economic, and biological data.

The Users, Uses, and Value of Landsat Satellite 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 has been applied in a variety of research areas, such as global climate research, agriculture, and environmental management, but there is little understanding of how private businesses, nonprofit organizations, tribes, and State and local governments actually use and value Federally federally sponsored, moderate-resolution land imaging. Social scientists at PASA 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 extensively research individual applications of Landsat imagery, including an in-depth look at the market and non-market value of the imagery within a given application.

Understanding Methods for Resolving Conflicts over Science

The U.S. Bureau of Reclamation manages a network of water storage and delivery projects in the western United States. Project operating plans must describe how contractual obligations to water users will be upheld and address conditions for fish, wildlife, land, and cultural resources. To determine how to meet these multiple objectives, scientists conduct necessary studies and provide results to decisionmakers. However, as in many natural-resource management settings, the course of action following from scientific study is not always clear, and conflict among scientists and between scientists and other stakeholders is not uncommon. PASA scientists are working to identify the most effective methods and approaches Bureau of Reclamation scientists and decisionmakers can use to resolve conflicts over science. Research methods include surveys of Bureau of Reclamation scientists and managers, interviews with a subset of those surveyed, and case studies of selected projects.

Integrating Agricultural and Conservation Goals

The U.S. Department of Agriculture needs 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 work "on the ground" for landowners enrolled in conservation programs. Of these, the Conservation Reserve Program (CRP) is the largest, with approximately about 29 million acres of potentially erosive or otherwise environmentally sensitive private lands in all 50 States. PASA scientists have worked with USDA administrators to quantify the biological effects of individual conservation practices and the administrative effectiveness of their conservation programs. Work involves evaluating short-term vegetation responses to CRP land management practices (primarily grazing and haying) and the effects of extreme drought; comparing richness and diversity of pollinators in CRP fields, and assessing the utility of wetlands in providing habitat to amphibians by examining water quality, testing for disease, and estimating survival and stress levels in two species of native frogs.

Energy Development and Society

Domestic energy sources are increasingly sought out as the Nation seeks energy independence. Domestic energy development can have effects on local, regional, national, and international policies and economies, and international relations; the social structure of local communities; the quality of life for local residents; and the values people hold toward the natural landscape and private property rights. PASA scientists are working to understand the social, economic, political, and ecological interactions surrounding different types of energy development including oil and gas, uranium, coal-bed methane, wind, solar, and geothermal. PASA scientists are conducting research for the Wyoming Landscape Conservation Initiative, a multipartner, science-based program directed to plan energy development while conserving habitats at a landscape-scale in southwest Wyoming. This research involves (1) a comprehensive literature review of the social, economic, and political aspects of oil and gas development coupled with a case study focused on current development effects in southwest Wyoming; (2) understanding different policy implications at local, regional, national, and international scales that may affect local communities; (3) understanding the effects of energy development on ranchers' quality of life and ranching operations (part of a coordinated effort with the Wyoming Department of Agriculture); and (4) modeling human population growth and associated development as a tool to assist wildlife and land managers in conservation planning and land use.

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