

**Joint Fact-finding: The Interface of Science, Policy, and Communities
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The Department of the Interior manages one in every five acres of land in the United States. Its mission is multifaceted, including:

- Resource protection;
- Providing access to energy, minerals, and forage;
- Providing outdoor recreation opportunities; and
- Serving communities through science, law enforcement, firefighting, and fulfillment of responsibilities to Native Americans, Alaska natives, island communities

The Department's multifaceted mission lies at confluence of people, land and water. That mission puts Interior at the center of complex environmental and land management issues. Should snow mobiles traverse Yellowstone? How much water should flow to protect salmon or chub or silvery minnows? How should we manage forests, tundra, wetlands, or mountain tops? How might we use resources to warm our homes, put food on our tables, toothpaste in our bathrooms, or catalytic converters in our cars—all items that use resources from our public lands?

All human action has some environmental footprint. For the Department's land managers, who must fulfill multiple public goals, a fundamental question is how to lighten that environmental footprint while maintaining thriving communities. How might land management decisions enable people to pursue their economic, recreation, and other activities while protecting landscapes? How might they work with communities and apply their ingenuity so our children and grandchildren can flourish in a delightful and prosperous world?

Informing these decisions with science insights and information is important, indeed, critical to our ability to maintain healthy lands and thriving communities. Yet this interface of science and policy presents both opportunities and challenges.

Science—Opportunities and Challenges at the Interface with Policy

The use of science in a land management context is essential to maintaining and restoring healthy lands. Land managers can't develop and evaluate management options without some notion of the functioning of lands, waters, and wildlife. They can't evaluate options without some notion of the effects of human action on surroundings and some notion of the possible scope, duration, and risks to human health and the environment generated by the activities and products of human action.

But with opportunity also come challenges: I will call these challenges the 7 C's:

- First are challenges associated with *complexity*. Ecosystems and their interfaces with human action involve multiple variables and trade offs.
- Second are challenges that spring from ever-present *change*. Greek philosopher Heraclitus observed that: "All is flux; nothing stays still." Human action is dynamic. The natural world is full of dynamic interactions. And so, too, is knowledge dynamic. Decision makers lack omniscience—the knowledge we accumulate is never final. Science itself a perpetual discovery process.
- Complexity, change, and incomplete knowledge combine to present *uncertainty*. Land and resource managers must make decisions on a daily basis, often in a context of incomplete, inconclusive, or even ambiguous information. These uncertainties are compounded by fundamental limits on the "knowable" and limits on our ability to predict future conditions—whether as a consequence of the "butterfly effect" heralded in chaos theory or the inevitable surprises of human action.
- *Constraints*—on time and resources—limit our ability to accumulate and apply information relevant to understanding the implications of different decisions and policy choices. Relevant information may be infinite; time and money are not. These constraints leave us with the challenge of determining how much information is good enough?
- Even armed with relevant scientific knowledge, *communication*—across specializations and experiences—presents challenges for those striving to inform policy and management decisions with that

science. Author Michael Schrage wrote in his book, *Serious Play*, of the difficulties in sharing knowledge across different disciplines, professions, and experiences. In the world of business, an engineer does not speak the language of a marketer. In the world of science, we face challenges of communication across disciplines and, perhaps, even more acute challenges between scientists and those who speak the language of philosophy, politics, or personal choice.

- Policy and management challenges do not present themselves in pre-defined problem sets. Defining the scope and scale of the relevant problem set—the *compass*—of a land management decision can, itself raise both scientific and social questions. Is the relevant boundary for accumulating and applying information a backyard, a stream, a watershed, a continent, or a world? Through what process might we draw appropriate boundaries for a problem set and decision focus? Answering these questions demands scientific insights, but they are as much questions of human communities, values, and social constructs as they are matters of scientific distinctions and categories.
- Finally, the most distinctive challenge in any interface of science and policy pertains to *context*: policy making is, fundamentally, about values. Policy makers ask: “What values do we care about?” “How clean is clean enough?” “How do we allocate which resources?” Scientists ask: “What is reality?” “How does the world work?”

Yet understanding “what is” is not the same as exploring and illuminating responses to the questions of “what do we care about?” or “where do we want to go?”

Joint Fact-finding—Linking Science with Communities

Joint fact-finding offers a way of bridging the conversation between those engaged in the policy question: “where do we want to go?” and those who have insights regarding “what do we know that might help us decide.” Building these bridges can advance better decisions and reduce conflict. The challenges summarized earlier present a context of conflict that takes many forms:

- Complexity and disagreements about what information is relevant or how to interpret it often lead to what I call “data battles”—a fight over “what is” that steers efforts away from problem solving;
- Miscommunication is common in the absence of “common language” and with miscues and misunderstanding that come from people hearing different content within the same words. In the end, we communicate what people hear, not what we think we are saying.
- Without community engagement, those assembling relevant information may focus on the wrong question, resulting in a mismatch of the “problem set” with community expectations.
- Mistrust flourishes as interested participants in decisions may conclude: “If I don’t understand you, I don’t believe you.”

Joint fact-finding is about process—and process can be as important as substance in assembling and communicating information relevant to land management decisions. Some recent research has linked the “ability to hear” and the “inclination to listen” to the nature of the decision process. For example, in reviewing decisions to site hazardous facilities, some researchers have found that decision sequence and setting matter. If local authorities first select a site and then present the public with scientific and engineering information on its suitability, conflict, data battles, and stalemate often ensue. If, instead, local authorities first describe the need for a facility along with the desired features of a site, and then engage interested constituents in evaluating options, the relevant science and engineering information often become the focus of deliberations.

Setting a Broader Framework for Joint-Fact Finding

There is a passage in *Alice in Wonderland* in which Alice asks the Cheshire cat, “Tell me, please, which way ought I to go from here?” The cat grins and replies: “That depends a good deal on where you want to get to.”

I recently perused a book, *Win-Win Ecology*, by Michael Rosenzweig. The author coins the phrase “reconciliation ecology.” He speaks of the reconciliation of Man and Nature. Like the great conservationist Aldo Leopold a half century ago, Rosenzweig appeals for a Nation of citizen stewards—on their farms, in their neighborhoods, communities, and factories. Reconciliation of environmental and economic goals and cooperation across a mosaic of landscapes offer a way of stitching together

fragmented landscapes and nurturing habitat niches across landscapes. At Interior, Secretary Norton holds forth related a vision that she calls the 4 C's—conservation through cooperation, communication, and consultation.

Whatever words one chooses, they reflect a yearning for a similar vision—a vision of conservation, cooperation, and partnered problem solving. It is a vision that seeks a blending of healthy lands, thriving communities, and dynamic economies.

As we look across this Nation and its environmental problem solving, we see an institutional discovery process underway that reflects this vision. Four decision making characteristics are emerging through new forms of governance, different decision making relationships, and new tools.

First is the emergence of more integrated decisions through institutions and relationships that focus on whole landscapes across a mosaic of land ownerships and incorporating a mosaic of values blended into a sustainable whole. Join me on virtual journey to the Duck Trap River in Maine to see this integration. There 28 partners along miles of a river that hosts Atlantic salmon are working together in land and riparian restoration, conservation, recreation, and preservation of farming. Or we can travel to Las Cienegas to experience the Sonoita Planning Partnership in Arizona. The partnership includes public land managers, ranchers, the recreation and environmental communities jointly working to manage lands according to a set of performance goals within a context of adaptive management.

In this institutional discovery process, we also see a search for decision arrangements that foster innovation—both technological and organizational. Technological innovation is well understood in its role of enabling individuals and communities to solve problems and enhance quality of life. Less well appreciated is the role of organizational innovation in helping people solve problems.

Consider the grassbank at the Malpai in New Mexico or the Absarokas where ranchers, working with conservation groups, have created easements across grazing lands. Through these easements, lands are protected but the easements include provisions for ranchers to use the lands during times of drought or other emergencies as forage for their cows. Or consider the advent of environmental performance contracts such as one pioneered at a

mine in Montana. The company worked with the community to hammer out a good neighbor compact—an environmental performance agreement.

Let us turn now to the third characteristic of cooperative conservation or reconciliation ecology—the importance of tapping local ideas and insights as part of the problem-solving process. Sometimes, reference to such “local knowledge” makes scientists nervous. They imagine such references to suggest that mythology or untested local lore be given the same credence as knowledge produced through scientific methodology. But local knowledge is, in fact, critical to on-the-ground problem solving, and it does not refer to mythology. In a recent book, *Knowledges*, the author points to different kinds of knowledge—including experiential knowledge—the textured knowledge of time, place and situation.

Wallace Stevens, a Pulitzer-prize winning poet, once wrote: “Perhaps real truth resides in a walk around the lake.” His words have both figurative and literal meaning. They refer to the importance of knowledge that comes from knowing lands in winter and summer, flood and drought, day and night. Local insights and knowledge can make reconciliation possible. I was in Alaska where I learned of concerns about declining albatross and the possible connection between those losses and certain fishing practices. A solution has been proposed—one that merges science and the experiential knowledge of fishers. The analysis of scientists identified the problem; the wisdom of the fishers identified the solution—a solution that involved altering their practices while still maintaining productive fishing.

I conclude with the fourth characteristic unfolding in efforts of cooperative conservation—inspiration and the alignment of incentives land managers face with environmental results. Much human action is motivated by encouragement—not threats of punishment. Across this Nation, many land managers—public and private—are extending a hand to work in conservation partnerships with landowners, farmers, families, and communities. At Buffalo Creek in Western Pennsylvania, the Interior Department’s Fish and Wildlife Service is working with dozens of farmers on conservation projects that include stream-bank fencing, planting of native grasses, and creation of vernal pools—all accomplished in ways that are compatible with continued productive farming activities.

Reconciliation Ecology and Joint Fact-finding

As we seek to maintain healthy lands, thriving communities, and dynamic economies, no grand schemes or single remedies can succeed yet several challenges recur across locations.

First is the complexity of place. Each place has its own physical and community story. Solutions require a tailoring to circumstance. Second is the complexity of nature itself. These complexities sometimes confuse us or defy our understanding, inevitably giving rise to data battles and science disputes. A final challenge is the crisis in conversation that surrounds environmental discourse. Habits of debate have overtaken the art of conversation. Each of these three challenges underscores importance of joint fact finding.

Walter Isaacs, author of *Dialogue*, reflects that dialogue is conversation with a center not sides. Joint fact-finding is part of the process of finding that center. Through joint fact-finding, communities can explore:

- What information is relevant?
- Which policy questions are important?
- Who needs to be at the table?
- What values are in play?
- What information is credible?
- Which terms mean what?

Joint fact finding is a way of linking science and scientists to the process of thinking through complex problems of reconciliation.