

# ACTION LEARNING SCENARIO # 2

## **USGS Response to DOI's Technical Guide and Departmental Order on Use of Adaptive Management by DOI Bureaus**

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In natural resource conservation and management, decision-making often is framed in a context of management actions taken through time, typically on an annual or multi-year basis. Decision making is thought to be guided by objectives, with management actions producing immediate outputs (e.g., harvest yields, reintroduction costs, fire regimes, water allocation and distribution, grazing, recreational opportunities etc) and influencing future resource conditions (e.g., population size, species richness, extinction probabilities, restoration objectives etc). External influences, limited understanding about resource responses to management, and other factors can limit one's ability to predict resource responses to management, and thus to make informed management decisions. Further complicating the process is the fact that natural resource management almost always involves multiple stakeholders, each with his or her own perspectives and values, who together expect to participate in decision making. This combination of features strongly suggests that an adaptive approach to decision making may be applicable for many natural resources in DOI.

There is a recognized need in the DOI agencies for more structured, adaptive decision making in natural resources conservation and management. An adaptive approach helps decision makers to focus attention on what is to be done, why it should be done, and how it will be done, through the identification of management alternatives and assessment of their projected consequences with respect to objectives. There are wide-ranging opportunities for USGS involvement with the DOI management agencies in this potentially valuable way of addressing management decision making. However, our involvement to date has been quite limited, suggesting that new mechanisms are needed to facilitate a larger supportive role for USGS scientists in adaptive decision making.

Recently the Department of the Interior released a technical guide for adaptive management that includes a definition, operating conditions, and approaches to the implementation of adaptive management. Adaptive management is described in the Technical Guide as learning by doing (learning through the use of management itself) and adapting what one does based on what is learned (adjusting management decisions as a result of improved understanding). The iterative application of learning by doing and adapting based on what's learned leads naturally to improved understanding resource dynamics, and improved management of resources as a consequence of that understanding. Concurrent with the release of the DOI Adaptive Management Technical Guide was the announcement of a Departmental Order on adaptive management, a DOI web site, and development of training programs in DOI.

In general, the application of adaptive management is described in the Technical Guide as a 2-phase process, in which some key elements are put in place during a startup phase, and are used thereafter in an iterative phase of management and learning. The startup phase includes (i) identification and engagement of stakeholders, (i) identification of management objectives, (ii) identification of acceptable management alternatives, (iv) the use of predictive models to guide

decision making and promote learning, and (v) the development of monitoring plans and protocols to track progress in achieving objectives and improving management. The iterative phase utilizes these elements in an ongoing process of objective-based decision making, post-decision monitoring, assessment of monitoring data, and feedback of what is learned into future decision making.

A strong relationship between science and management is key to the successful application of adaptive management. Within DOI, the USGS can play an important role in providing the necessary science support for the management agencies as they become more adaptive in their decision making. However, most management agencies currently lack an institutional capability to engage in a structured, adaptive approach to decision making, and USGS itself has only limited experience in adaptive management. Most scientists within USGS have specialized scientific expertise, but are not trained in methods and techniques such as dynamic modeling, risk analysis, utility assessment, and collaboration that are required for adaptive management.

An important question is how USGS can provide the technical support needed by DOI agencies in these circumstances. In particular, how can we expand the needed expertise within USGS to meet a large and growing demand for the structured process of adaptive decision making? How can we facilitate the connection of scientists in USGS who have the relevant expertise with people in the other DOI agencies who have a need for that expertise? How can technical assistance to agency partners be promoted by the USGS senior leadership? How can institutional arrangements be effected (through training, encouragement by leadership, allocation of fiscal resources, etc) that will allow a culture of adaptive decision making to develop in both USGS and the DOI management agencies? Working with our partner agencies, what steps can USGS take to better utilize USGS science to support adaptive decision making in the management agencies?