Principles and Practices
of Integrating Science into Land Management
DESK GUIDE

This Desk Guide provides a quick reference for the BLM's full guidelines on the same subject.

INTRODUCTION

BLM managers consider many factors before making a management decision—from professional and public input, to political and financial realities, to regulatory, administrative, and other requirements. The BLM is committed to science-based decisionmaking and recognizes that credible scientific information is essential for sustainable management of the nation's public lands. The Checklist below is a useful tool for systematically bringing science to the question at hand, guided by these key **principles and practices:**

- Use high-quality information relevant to the problem or decision being addressed, relying on peer-reviewed literature when it exists.

- Recognize the dynamic and interrelated nature of socioecological systems within which the BLM operates.

- Acknowledge, describe, and document assumptions and uncertainties.

- Use quantitative data when they exist, and applicable qualitative data, in combination with internal and external professional scientific expertise.

- Use transparent and collaborative methods that consider diverse perspectives.

For additional guidance, visit the BLM's Science in Practice Portal.

CHECKLIST

☐ **1. DEFINE THE MANAGEMENT QUESTION(S)**, including related management objectives. It is essential that you—and all parties who can provide information, expertise, or perspective—begin by understanding exactly what management question(s) you are trying to answer. Placing questions in their larger context will help you find broadly relevant information and, ultimately, use the data more effectively. To ensure that information is correctly interpreted, define the relationships among the geophysical, biophysical, cultural, and/or socioeconomic systems that could be affected by different decisions or alternatives. Translate the management question(s) into management objectives that further the BLM's mission.

☐ **2. FIND** available science relevant to the management question(s). Be systematic, rigorous, and objective, and use a method that is easy for others to follow and that is well-documented.

◆ BLM Library and Online Search Services.

Government Publications. The **BLM Library** houses a broad collection of scientific documents produced by federal agencies, including technical references, technical notes, National Environmental Policy Act planning and other planning documents, strategic plans, and more. Many are available digitally.

Academic Search Engines and Databases. Access scientific journal databases through the **BLM Library**; ask BLM librarians to help with your search. Use online services such as **ResearchGate**, **Google Scholar**, and **Academia.edu**, and ask colleagues and partners about other possible sources.

Partner Organizations. The BLM's **Science Partnership Resources** website lists current partnerships and collaborations. The BLM's Science in Practice Portal website links to many science partner websites, and, in turn, to original research.

- ◆ Data Portals. Search for relevant assessment, inventory, and monitoring information, including geospatial data. Examples of data portals include: **BLM Landscape Approach Data Portal**, **BLM EGIS Portal**, **AIM TerrADat**, **USGS Geo Data Portal**, and **Data Basin**.

- ◆ Field Offices. Request unpublished data and information from neighboring field offices, including records containing allotment and monitoring data.

- ◆ Experiential Knowledge. Systematic observations made by others can be quite useful, especially if based on long-term, well-documented knowledge of a resource.

- ◆ External Experts. Consider engaging external, credible, and neutral experts, either as individuals or as part of a panel. They can help establish or validate applicable science and suggest analytical approaches or decisions.

☐ **3. EVALUATE** the potential relevance and reliability of the science identified in Step 2. As you do so, keep in mind that research conducted at a broad scale or at another location may not provide a basis for extrapolation to your management context. Many characteristics of how a system functions are specific to a particular location, and local data may be required. Improvements in data quality and data collection methods may affect the usefulness of information obtained before those improvements. Documenting why information is, or is no longer, relevant will help decisionmakers better understand your analysis. In addition, assess the reliability of information by exploring the data's validity from a number of angles, including potentially flawed studies, weak evidence, and biased analysis.

Relevance

- ◆ Are data relevant to the local physical, biological, geological, cultural, and/or socioeconomic conditions?

- ◆ For older studies, are data still relevant considering advances in knowledge, methodology, or both since the information was originally presented?

Reliability

- ◆ Are the methods and analysis replicable and sound?

- ◆ Are the conclusions logical and supported by strong evidence?

- ◆ Does the study or report acknowledge or cite other relevant science?

- ◆ Has the science been peer-reviewed, and if so, by whom?

- ◆ Who developed the information and why?

☐ **4. SUMMARIZE** the science, address any conflicting science, and identify any information gaps.

- ◆ Summarize the relevant and reliable science to create a coherent understanding of the situation.

- ◆ Acknowledge and deal with conflicting science.

- ◆ Identify any gaps in science that are relevant to the management question(s).

☐ **5. APPLY** your science-based conclusions to the management question(s) to decide the best course of action for achieving management objectives. Document and communicate clearly with partners and stakeholders about how you found, evaluated, and interpreted data and science relevant to the decision. Describe any limitations of science that create uncertainties about potential outcomes, so that people have practical expectations. Highlight topics that would benefit from additional research. By using high-quality information and technological tools, the agency builds trust and confidence in BLM land management decisions.

☐ **6. ASSESS** how the application of science affected public support, the sustainability and effectiveness of the decision, confidence in the course of action selected, and further learning about the system and the effects of management actions. Plan any future assessments and/or develop and implement a monitoring plan. Refer to the BLM's **Assessment, Inventory, and Monitoring (AIM) Strategy** for details.