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Break-out Session 2: The Colorado Plateau

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Abstract

Unique features of the Colorado Plateau include aridity and the associated importance of water, topographic control on local ecosystems, large urban centers on the periphery but none within the region, and a combination of resource-extraction industries and tourism. Potential constraints to EM are conflicts in the legislative and administrative framework, inadequate staffing and funding of the agencies, insufficient communication among elements of the public, and the difficulty of achieving large-scale data integration. Characteristics of the region favorable for EM include diversity of expertise available, large number of monitoring and research sites, abundance of data, grass-roots ties to the land, and agency commitment. Needs for implementation are definition of EM, implementation initiated at the local level, and an atmosphere of trust and open communication.

PROCEDURES

The Colorado Plateau working group included individuals who live in, are concerned about, or work in parts of the four-state region shown in Figure 1. The process employed in this working group was to divide participants into seven discussion groups, each comprised of 10-12 individuals. Four questions were posed to each group. Three were the same as those given the other break-out sessions, and the fourth was: "What must be done so that ecosystem management does not just become business as usual under a new name"? Each group discussed these topics and recorded concerns and issues during a 2-hour period. During a final 30-minute period, all individuals met as one group and summarized their findings. Those integrated findings were further summarized in order to prepare Tables 1, 2, 3, and 4.

CHARACTERISTICS OF THE REGION

The group identified 12 key physical and human attributes common to the Colorado Plateau Region (Table 1). Although many of these are distinctive, none was considered to pose an insurmountable limitation to successful implementation of ecosystem management. The primary physical attributes of the region are its aridity, associated importance of its water supplies, and strong topographic control on local ecosystems. Although the region is surrounded by large urban centers, (Denver, Las Vegas, Phoenix, Salt Lake City), there are few population centers in the Plateau. Many of these (Flagstaff, St. George, Grand Junction, Durango, Moab) are

growing rapidly. The smaller towns, associated resource-extraction or development industries, and growing tourism industry all have a significant tie to the region's biophysical environment.

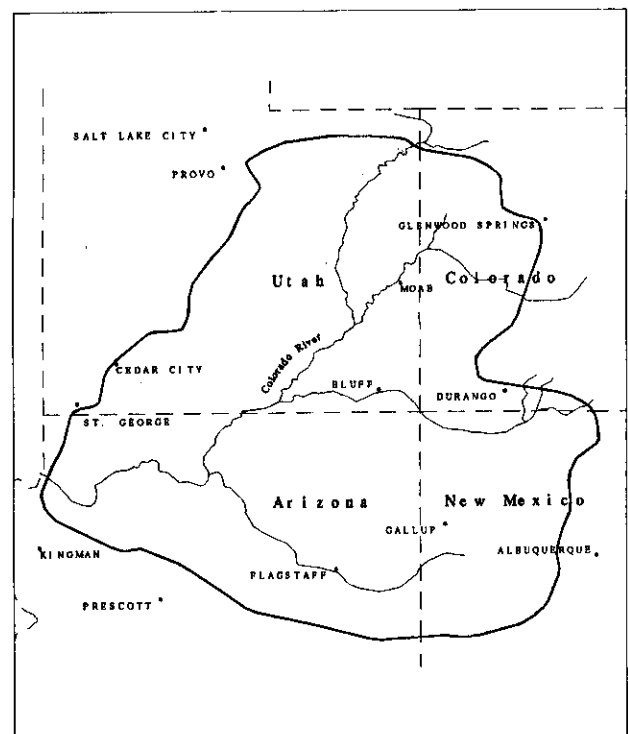


Figure 1. Index map of the Colorado Plateau Province. Redrawn from a base map by C.B. Hunt.

CONSTRAINTS ON ECOSYSTEM MANAGEMENT

Five key barriers or constraints to implementing ecosystem management were identified by the group (Table 2). These are not considered to be unique to the Plateau region, but do constrain the potential for ecosystem management. They range from contradictions and conflicts in the legislative and administrative framework of ecosystem management, inadequacy of staffing and funding of new agency mandates, the need to develop communication links among all elements of the public, and the difficulty of achieving large-scale data integration across the region. High levels of public frustration and impatience with agency decision making further raise the levels of these already substantive barriers. Finally, the group also speculated that expectations about the value and utility of ecosystem management may have been raised so high that they are not achievable.

OPPORTUNITIES FOR IMPLEMENTING ECOSYSTEM MANAGEMENT

There were nine significant opportunities identified that make implementation of ecosystem management desirable

and possible (Table 3). These opportunities include those related to the characteristics of the region's populace, land-management agencies, and environment. Ecosystem management was seen as an opportunity to integrate a substantial volume of existing data, establish linkages among interest groups and various levels of government, and take advantage of the region's distinctive environment.

CONDITIONS THAT MUST HOLD IN ORDER TO IMPLEMENT ECOSYSTEM MANAGEMENT

For ecosystem management to be implemented effectively, several key issues must be dealt with. Participants were asked to identify the most important things to which administrators need to give attention (Table 4). Participants felt it critical that all agencies, as well as the public, must agree on a common definition and conceptual framework for ecosystem management. Participants agreed that implementation must begin at the local level, and that local-level personnel and citizens can best identify implementation problems. However, participants also agreed that it is critical for senior-level management personnel to embrace the concept of ecosystem management sincerely.

TABLE 1. CHARACTERISTICS OF COLORADO PLATEAU REGION.

1. The exterior boundary of the region is well defined.
2. The region is dominated by its aridity and geology. Streamflows are generated in the high plateaus, "island" mountain ranges, or in the surrounding Rocky Mountains.
3. The region's high elevation and aridity make it a sensitive landscape, dependent on its riparian areas. Human activities can have large impacts. There is a high level of species uniqueness and threat to these species. Many are threatened or endangered. There are also many introduced species. Aspen is an important vegetation type but is being invaded by conifers—pinyon and juniper areas are spreading. Fires have been suppressed.
4. The ownership and control of land are dominated by the federal government, but there are significant areas of state ownership. Some Native American reservations are very large.
5. The region includes a few growing urban centers as well as small towns, many of which are not growing. Population density is extremely low in many areas. There are abundant mineral resources in some areas and available streamflow has been tapped for irrigation or large-scale development. Traditional economic activities of farming, ranching, and mining are now being replaced by new economic activities such as tourism. These shifts are occurring rapidly. Some elements of the population have a strong bias against the federal government.
6. Population growth and economic changes are also introducing new ideas into the region.
7. The region receives significant national and international attention because of its scenic beauty and uniqueness.
8. The region has a long history of low-density population; archaeological resources are abundant.
9. Although the region has diverse cultures, the different groups share strong economic, social, cultural, and spiritual ties to the land.
10. The region's water supplies are highly valued within the region and downstream from the region.
11. There is a large Native American population.
12. Large cities surround the region, but are not located within it.

TABLE 2. BARRIERS AND CONSTRAINTS TO IMPLEMENTATION OF ECOSYSTEM MANAGEMENT.

1. The legislative foundation on which ecosystem management is based is inadequate. Some elements of the foundation are contradictory, such as the purposes of state water law and the Federal Land Planning and Management Act (FLPMA). The mandates within some agencies may impact implementation of ecosystem management. There is no mandate to change contradictory institutional missions if they impede implementation of ecosystem management. The missions of different agencies within the same region and their definition of a healthy ecosystem may conflict as may their jurisdictional boundaries.
2. The agencies charged with implementing ecosystem management are undergoing significant change. The task load is increasing but the budgets are driven by small-scale and long-term planning. Staff inertia, and segregation of disciplines within staffs, may be sufficient to impede implementation.
3. The general public of the region has a wide range of socio-cultural values. These groups have diverse historical backgrounds, interests, political agendas, and expectations. Land ownership patterns in different parts of the region are distinct; rates of population growth are very high in some regions. Some elements of this public are polarized and do not trust one another. Some elements of the public are apprehensive about implementing ecosystem management. These factors make effective involvement difficult.
4. There are large data needs, yet scientific achievement on these fronts is lacking. Guidelines have not been developed with which to develop ecosystem-management boundaries. The scientific basis has not been adequately explained to the public. Data available to implement ecosystem management are inconsistent. Research facilities, such as those which might monitor management success, are inadequate.
5. Agencies and the public may be too impatient to permit ecosystem management to be effectively implemented.

TABLE 3. OPPORTUNITIES THAT MAKE ECOSYSTEM MANAGEMENT IMPLEMENTATION POSSIBLE.

1. Many groups can contribute data and expertise to the development of ecosystem management. These include agency personnel charged with implementing ecosystem management, the general public, landowners, and national and international groups concerned about the Plateau.
2. Substantial data and monitoring sites already exist with which to document successes and failures of previous efforts analogous to ecosystem management. Thus, the opportunity exists to develop unified data sets that cross the boundaries of previous studies.
3. Long-term research sites with which to monitor management success can be created in the topographic and ecologic types of the region. Natural barriers define subregions and facilitate smaller-scale ecosystem management.
4. There is a strong grass roots tie to the land, and agency personnel have a strong sense of responsibility to it. There is substantial grassroots support for ecosystem management. The region is not yet divided by environmental issues so the opportunity exists to develop ecosystem-management partnerships involving the interest groups, local government, state and federal agency personnel. Some of these are already in place.
5. Mandates and management objectives make it possible to implement ecosystem management within the context of adaptive management. Thus, the opportunity exists for us to learn by our mistakes.
6. Although there are a few "hot spots" of population growth, there are large areas of limited growth.
7. The present national attention on ecosystem management provides an impetus for its development and implementation, and provides opportunities to fund management and research programs.
8. The wilderness areas and large roadless areas can provide core areas of low human impact on which ecosystem management can focus. Many other areas also have low human impacts.
9. Scientific and management research are yielding new knowledge about implementing ecosystem management.
10. The potential exists to develop ecosystem management strategies that involve multiple levels of jurisdiction without associated loss of jurisdictional authority.
11. There is an opportunity to reintroduce fire.
12. Aspen areas provide an opportunity to apply management (logging and grazing) practices to these lands.
13. Ecosystem-management focus will initiate better sharing of available resource data.

TABLE 4. WHAT MUST HAPPEN IN ORDER FOR ECOSYSTEM MANAGEMENT TO BE IMPLEMENTED.

1. All agencies, as well as the public, must agree on a common definition and conceptual framework for ecosystem management.
2. Implementation must begin at the local level and at the lower levels of the agencies. Money must be directed to these levels to help initiate this work. The focus of many existing programs must be changed. If needed, a structure should be created to facilitate communication among all groups.
3. An atmosphere of trust and open discussion must be maintained so that all parties can work together.
4. A public information campaign must be initiated to convince the general public that ecosystem management is in the public's best interest.
5. Local-level agency personnel and local citizens can best identify any legislative changes that are necessary in order to implement ecosystem management.
6. Senior-level management in land-management agencies must publicly embrace ecosystem management.
7. All land-management agencies must be consolidated within one department.
8. A Plateau-wide ecosystem research service should be developed, and an electronic information network should be established.
9. Reconsider western water-rights policies and statutes to ensure protection of riparian systems which are a critical component of the Colorado Plateau ecosystem.