

Viewpoint: Are Multiple Use Management and Ecological Integrity Mutually Exclusive?

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Decision making by natural resource managers is becoming increasingly complex because of changing social views on public land use (Kessler et al. 1992) and because special interest groups are a major factor in determining land use policy (Dodge 1995). Frequently, the land manager is caught between two groups with conflicting agendas: one group advocating protection and the other group advocating maximum use of public lands. Because multiple use management takes a stakeholder approach, these conflicts are unavoidable. Critics of government policy argue that when this situation arises, land use decisions based on politics rather than science prevail. Management based on demands from "maximum use" advocates fail to protect natural systems and fail to address the problem of how today's management decisions will impact negatively on future generations (i.e. intergenerational inequities).

Many people are disenchanted with commodity based management systems because they fail to address the needs of natural processes (Brunson and Steel 1994, Kessler et al. 1992) and because governments are often insensitive to the wishes of the populace. For example, in January of 1990 the provincial government solicited from Albertans their views on the future of natural resource management in Alberta. This effort received a strong mandate from the people to pursue an ecological approach to management, particularly in sensitive areas. Many respondents felt that commodity based management was inappropriate for Alberta's sensitive ecosystems and increased protection was required (Anon. 1990). Government performance and policy since that time indicate that the exercise was one of pub-

lic relations rather than any real desire to improve public land management.

Concern for the sustainable management of living resources is a major worldwide concern as reflected in the World Conservation Strategy (WCS) of 1980 outlining three main objectives: to maintain essential ecological processes and life support systems, to provide genetic diversity, and to ensure the sustainable utilization of species and ecosystems (Anon. 1980). Meeting these objectives is crucial to providing a quality life for future generations. The World Commission of Environment and Development (i.e. the Brundtland report of 1987) recommended that in order to meet the WCS objectives, each country in the world should protect 12% of its land area representing all major ecosystems.

Current management practices are inadequate to meet the objectives of the World Conservation Strategy. For example, since 1950 wetlands in Alberta have decreased by 50% with similar trends in the United States (Sinclair et al. 1995), and legally pro-

tected wilderness in Alberta has declined by 13% since 1965 (Pachal 1995).

Land managers must respond to the complex and conflicting situation created by societal demands for a high quality of life (i.e. providing products) while protecting natural processes. Failing to protect natural processes is often an administrative problem because public agencies in Alberta and elsewhere have done a good job of identifying ecological problems. Governments often fail to act on the recommendations of their own departments. Many ecosystems continue to be degraded from activities that are known to cause severe environmental damage. The major problem is in the view that every unit of resource possible must be extracted from a natural system before it is being managed effectively (i.e. commodity based management). The purpose of this paper is to discuss the ability of Integrated Resource Management (IRM) and similar systems to effectively manage sensitive ecosystems in North America.



Livestock grazing on a riparian system in southwestern Alberta public lands, 1995. Photo by Reg Ernst



Clearcut logging on a sensitive ecosystem in southwestern Alberta. Photo 1996. Photo by Don Ferguson.

Alberta will be the main focus of this discussion because it is a good example of how inappropriate management has damaged public lands.

Present Management Philosophy

Integrated Resource Management is the system initiated by the provincial government during the 1970's to manage Alberta's public lands. It is similar in scope, philosophy, and application to Coordinated Resource Management (CRM) and other multiple use systems employed by public agencies in the United States; therefore, for the purposes of this discussion they will be considered the same.

In Alberta, practically all public lands (other than the < 2% that is protected by the province) is managed under Integrated Resource Management. In general, poor management in many areas of North America has caused local extinctions (extirpation) of some native species, the invasion (ecesis) of non-native plant species, a loss of fish and wildlife habitat, degradation of riparian habitats, and accelerated damage to watersheds (Fleischner 1994). Alberta is no exception. Mountain and alpine ecosystems are especially vul-

nerable to human activities (Billings 1979) and are a good example of perturbed public lands in Alberta.

The foundation of multiple use management systems is based on securing the most favourable mix of uses to achieve maximum benefits (Anon. 1984). This is accomplished by receiving input from interested and affected groups (i.e. stakeholders) and then drawing up a management plan that will yield the most units of total resource output (Swanson 1994). Demand for resources in sensitive areas is often keen and conflicting, resulting in high levels of stress on natural processes. For example, in Alberta the cumulative damage from high impact activities such as logging, livestock grazing, oil and gas activity, and off road vehicle use competes directly with users seeking a quality wilderness experience.

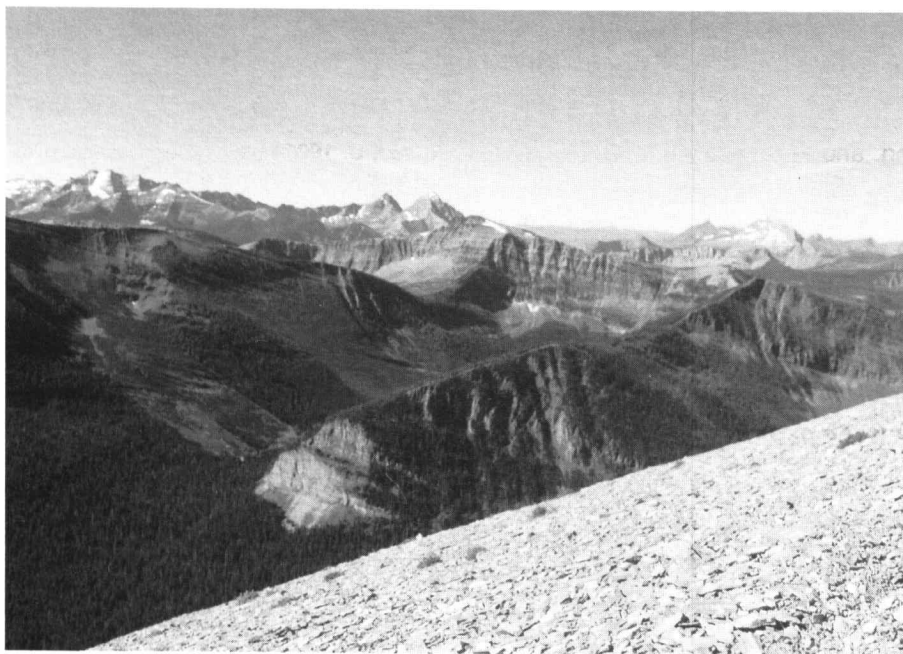
Economics and Resource Utilization

Economic efficiency is a criterion used to judge the effectiveness of a management system. Is multiple use the best system to provide maximum economic benefits in sensitive areas? Perhaps not. A basic definition of eco-

nomics is the allocation of scarce resources among competing and *sustainable* uses. Unless all external costs are internalized (they often are not in commodity based management), high impact land use is often financially inefficient and ecologically devastating. Externalities (external costs) are costs (or benefits) borne by a third party as a result of a transaction between 2 other parties. Internal costs are all the costs incurred to provide a service or product. For example, if cleanup costs in a mining operation were not borne by the mining company (internalized), but imposed on the taxpayers, then these costs would represent an externality. High impact activities such as logging, oil and gas exploration, livestock grazing, and off-road vehicle use often have long term externalities attached to them. Internalizing all costs would provide long term economic efficiency while preventing environmental degradation.

Management Concerns

North Americans are becoming more reluctant to accept commodity based management of public lands as proper



Typical mountain scenery in southwestern Alberta. Photo 1996. Photo by Reg Ernst.

(Brunson and Steel 1994, Kessler et al. 1992): therefore, without the ability, resources, and commitment to provide intensive ecosystem management, the way to meet ecological objectives and societal demands on sensitive public lands is through legislated protection and enforcement. Maximum use proponents argue against protection because of perceived economic sacrifices, but others (Rasker and Hackman 1995) suggest that environmental protection stimulates economic growth.

In Alberta, the federal national park system and the provincial wilderness park system have been relatively successful at applying an ecosystem approach to managing public lands. Some problems exist even in protected areas, but generally the contrast between ecological conditions on protected federal and provincial lands compared to portions of unprotected provincial public lands is significant. The most obvious and noticeable of these conditions include watershed health, the biodiversity of native plant communities, exotic species invasions, and the amount and quality of wildlife and wildlife habitat.

Time and space scales under multiple use management are inadequate

to address problems related to biodiversity, habitat fragmentation, minimum viable populations, watershed protection, and threatened and endangered species. Scales must be expanded to a landscape or regional scale (Kessler et al. 1992) and time frames lengthened if land use problems are to be adequately addressed. Landscape scales of management, applying principles of landscape ecology (Risser 1992), and using technology such as remote sensing and Geographical Information Systems (GIS), would improve natural resource management.

Some solutions are relatively simple in concept but difficult to enact. For example, closing non-essential backcountry roads to motorized vehicles has been used successfully by federal and provincial land managers to improve and restore ecological conditions in wilderness areas. But provincial lands in Alberta still have many miles of roads that should be closed to motorized vehicles. As well, construction of new roads in previously unroaded areas poses new threats to many systems already under stress. In spite of soil erosion, watershed damage, and negative impacts to fish and wildlife, public money is still being spent to improve and maintain non-essential roads in

sensitive areas. Critics of this policy blame the lobbying efforts of special interest groups.

Road construction and clear cut logging are likely the most damaging aspects of the forest industry. Studies have shown that without roads watershed damage in logged areas is not significant (Sartz 1969). Damage from logging could be reduced substantially if more areas were selectively logged using horses or helicopters.

In Alberta, the oil and gas industry is accepted as being crucial to the economic health of the province, but the provincial government has failed to exercise leadership in protecting the environment. For example, Shell Oil has an extensive network of plants, wells, and roads in the mountainous areas of southwestern Alberta. Forecasts indicate the wells will run out early in the 21st century yet the government has not even requested a restoration plan for the area.

Alternative Systems

The economic and social well-being of North Americans depend on a strong, healthy economy; development and utilization of natural resources is therefore desirable and necessary. But current management systems fail to protect the environment or long term economic health. Alternative management systems, incorporating ecological principles and environmental economics, could provide long term financial benefits through the sustainable use of scarce and limited resources. Conventional economics and environmental economics differ because management scales are much larger and longer in environmental economics and all costs are internalized.

To prevent the continued damage to public land, natural resource managers must exercise strong leadership to determine appropriate land use policy. This may require protecting sensitive ecosystems from high impact human activities such as logging, livestock grazing, mining, oil and gas exploration, and off road vehicle use. These activities often compete with less damaging recreational activities such as hiking, fishing, hunting, and

camping. Acknowledging that "one size does not fit all" in natural resource management would be a major step in the right direction. Some sensitive areas are unsuitable for development and should have legislated protection. Alberta is considered a wealthy province, but has less than 2% of provincial lands protected. This represents a serious imbalance between protected areas and areas managed under Integrated Resource Management.

Maximizing biodiversity may require minimizing multiple use (Payne and Bryant 1994). Swanson (1994) suggests that integrating Coordinated Resource Management and the National Environmental Policy Act (NEPA) will provide broad public involvement and protect the environment against unavoidable adverse effects. A system addressing the problem of consumptive resource use while protecting natural processes is also proposed by Kessler et al. (1992) under the "New Perspectives" management system. The goals of these 2 systems are similar: to balance commodity output with environmental protection. Alternate systems of natural resource management may not succeed in satisfying the demands of industry for more production, or the demands of environmental groups for more protection, but they may provide balance in natural resource use. A balanced approach, at a variety of scales, is required for sustainable development (West 1993). Public land managers may argue that multiple use management has safeguards to provide this balance, but critics argue that activities and ecological conditions on public lands reflect otherwise. Government policy documents stating the Integrated Resource Management can provide maximum benefits while protecting the environment are conflicting and dishonest.

Conclusions

Public land managers must provide stronger leadership in managing natural resources. Policy decisions based on science, environmental economics, and ethics must become part of a new philosophy for public land management. Scientific research and monitor-

ing are required on public lands but is presently lacking. In fact, as downsizing and privatization occur, there is less research, less ecological monitoring, and less enforcement of existing regulations.

Improved management, more protected areas, and restoration of damaged systems are needed to address the legacy of degraded natural systems we are leaving for future generations. Each generation must practice good stewardship to protect natural processes for future generations (Box 1995). Classifying public lands according to their ability to recover from human induced stresses rather than the type and amount of commodities they can provide would help to ensure the sustainable use of sensitive systems. Multiple use management on public lands requires intensive development (i.e. roads, commercial and industrial developments, etc.) to meet its goal of "maximizing benefits". Ecological integrity of sensitive systems cannot be maintained in the face of intense development, therefore, multiple use management and ecological integrity are mutually exclusive.

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