



Total Landscape Management: An Integrated Approach to Conservation Protection and Resource Development

- [Introduction](#)
 - [Conservation Objectives](#)
 - [Total Landscape Management](#)
 - [Flexibility and Responsiveness](#)
 - [The NorSask Project](#)
 - [The Whitehorse Mining Initiative](#)
 - [Looking Ahead](#)
 - [Conclusion](#)
-

Introduction

Several jurisdictions across the country are currently engaged in consultations designed to develop plans for the future use of Crown land. As they endeavour to establish commonly agreed parameters, these jurisdictions struggle to find the balance between two apparent opposites: resource development and conservation objectives. Crucial to resource development are access to land and certainty of title. Fundamental to conservation objectives are biological diversity, wilderness protection, and preservation of unique and exceptional areas. There has been an increasingly heavy reliance on the use of exclusive use protected areas to achieve conservation objectives, but this use of a single tool for multiple purposes has delivered unsatisfactory results. The complex and changing needs of the landscape require a more comprehensive, integrated approach with access to a variety of tools to meet the objectives.

Total Landscape Management is a concept that offers a wider vision and more coherent and integrated approach to achieving both resource development and conservation objectives. It is an approach which incorporates the principles of inclusivity, flexibility, adaptiveness, and

sound science, while, at the same time, encompassing many of the tools currently at our disposal, including the setting aside of exclusive use protected areas for unique and exceptional features.



Conservation Objectives

Exclusive use protected areas, although used increasingly by jurisdictions to attain the objectives of conserving biological diversity, wilderness protection, and representativeness, are failing to accomplish these ends. By definition, protected areas are fixed in space with designated boundaries that encompass a rigidly defined part of the physical landscape. In contrast, the ecological landscape is infinitely complex with flora and fauna constantly colonizing and adapting to natural changes, causing altered patterns of distribution. The landscape itself is continually transformed under the influence of natural disturbances such as drought, fire, flood and infestations. It is impossible to establish an inventory of the biological diversity of such a dynamic ecological landscape because knowledge of species and their distribution is incomplete. Without that inventory, the objective of achieving representativeness through exclusive use protected areas cannot be attained. To superimpose on such a dynamic landscape an artificial fixed grid of exclusive use protected areas also fails to achieve the stated objective of conserving biological diversity since these areas will encompass only a subset of the diverse ecological conditions present in the landscape.

Underlying our industry's concern about the removal of Crown land into exclusive use protected areas is the fact that, in practice, this designation is irreversible. Land designated as a park remains a park in perpetuity, despite the fact that the original reason for its designation may have disappeared. In the 1930s, for example, the Northwest Territories designated the Thelon Reserve as a protected area in order to arrest the decline of the musk-ox population. Now, despite the fact that there has been a resurgence in musk-ox to the point of over-population, the park designation still exists, and there is even talk of its expansion. As a result of such practices, there is an ever-increasing inventory of lands from which exploration and mining are prohibited.

The rationale for park creation has changed over time, and some now advocate parks as being essential for the conservation of biological diversity. Since exclusive use protected areas are a preservation tool, however, their application as the sole means to achieve the objectives of conservation and protection is inappropriate.

With the inability of exclusive use protected areas to achieve their stated objectives, there are constant demands for government to increase their size and number, to create complementary buffers around them, and to establish interconnecting corridors between them. As an example, parks scattered along the Rocky Mountain cordillera have failed to protect wolves and grizzly bears. Environmental groups are currently proposing a reserve network running from Yellowstone Park to the Yukon that will link parks with corridors in order to allow these carnivores to range freely.

Using the rationale of conserving biological diversity, exclusive use protected areas are also

being recommended as a primary tool to achieve the conservation and protection of roadless areas, popularly known as wilderness. The combining of these dissimilar objectives has created unnecessary confusion. While the use of the exclusive use protected areas tool might occasionally be appropriate in order to preserve unique areas, the application of more open and flexible conservation tools to roadless areas would be a more effective solution. Wilderness is an emotive word, and its definition varies with the individual. To some, wilderness means essentially roadless areas. However, the size of such areas and the degree to which tertiary private roads can be used and then removed are fundamental issues that remain to be addressed in a logical, scientific manner. Until some sound science is applied, decisions about wilderness will always be made on an arbitrary and emotional basis.



Total Landscape Management

In the 1970s, there were growing demands for better resource management by industrial sectors and for an increasing awareness of ecosystem management. New forestry and various other initiatives were targeted towards meeting these objectives. However, the management approaches adopted were rather piecemeal and failed to involve all users impacting the entire landscape. Gradually, a visionary new concept, referred to as Total Landscape Management, emerged from various users of the land. Total Landscape Management is an integrated ecosystem approach to land use which establishes as an absolute priority the conservation of biological diversity. It is based on the premise that landscape, including both natural and man-made disturbances, should be managed in its entirety rather than for individual sectoral purposes, so that the fundamental ecological characteristics and dynamics of the landscape are reasonably conserved. This comprehensive approach to land encompasses many tools, including the judicious use of exclusive use protected areas to give unique and exceptional areas a higher level of protection.

Total Landscape Management incorporates:

- management of entire ecological landscapes, employing the over-arching principle of conservation of biodiversity;
- a system of floating reserves designed to accomplish protection in a constantly changing, dynamic landscape;
- adaptive management, allowing the flexibility to accommodate new information, evolving ecosystems, and natural disturbances; and
- co-management, ensuring the provision of local community input.

Total Landscape Management is initially applied through use of sound science which may be substantially refined or fine-tuned through adaptive management. As the landscape constantly changes through natural processes, so the management of it adapts and changes also. Human activities are planned within this ecological context and designed to mimic natural patterns of disturbance and transformation. Such activities are subject to a two-tier management process. If a proponent desires to undertake an activity in the landscape, it must demonstrate the existence of a *comparable ecological area* - including in existing

parks and protected areas - with the same ecological components so that there is no loss in biodiversity and representativeness for the duration of the project. Under most circumstances, demonstration of a comparable area would be relatively simple. However, if the area is demonstrated to contain unique features which require some measure of protection, then a determination would be made whether or not the proposed activity is a compatible use and what special conditions may need to be applied. Following conclusion of the activity, the site is returned to an ecological state that replicates the original as closely as possible. This requirement for restoration has existed in Ontario under Part VII of the revised *Mining Act* since the early 1990s.



Flexibility and Responsiveness

The flexibility and responsiveness of Total Landscape Management are characterized by the concept of floating reserves that have the ability to follow representative and special or sensitive values across the landscape. As landscape features such as age-class distribution of forests and migration of animals evolve, various levels of protection and management can be applied. For example, as specific areas of mature forest become classified as old growth, a certain percentage can incur protection and be designated as a floating reserve. As these old growth areas die off and other specific areas of the forest achieve old growth status, the floating reserves can be re-organized to accommodate them.

Total Landscape Management incorporating floating reserves offers distinct advantages over other forms of landscape management. Since there is no limit to the area covered, it optimizes the inclusion of all biological components and, therefore, more readily achieves the objectives of conserving biological diversity. As already demonstrated, exclusive use protected areas cannot achieve the objective of representativeness due to their own fixed nature, in contrast to the dynamic nature of the ecological landscape. For this reason, they are unable to provide long-term consistent data sets of biological diversity (representative benchmarks) that are essential for conservation objectives and the guidance of forest management decisions. The benchmark data from protected areas will, by definition, not fully reflect the inherent variability expected in an ecologically distinct area. Total Landscape Management overcomes this by encompassing the entire landscape involved. Since floating reserves cover a greater number of ecosystem types dispersed over a broad geographical area, the potential for a greater number of representative benchmark control replicates exists.

Unlike other forms of management, Total Landscape Management is responsive to natural catastrophes and disturbances, such as forest fires or infestations, that can dramatically transform parts of the landscape. Through adaptive management techniques, Total Landscape Management can address the problems that result from such circumstances - for example, by identifying other areas with similar values to replace those that have been altered.

By its very nature, Total Landscape Management affords protection to the landscape without unduly compromising other land uses. It thus offers a more flexible land-use

management approach than exclusive use protected areas which work on the basis of blanket prohibition of development. It also minimizes conflict over use of Crown land through impact assessment of human activity in areas with special features, and allows, under the tool of co-management, compatible activities under special provisions. An added advantage to Total Landscape Management is that it encourages the acquisition of ecological knowledge and understanding. Proponents desiring to establish activities in the landscape will, of necessity, become knowledgeable about ecological values such as the conservation of biological diversity and the protection of ecosystems in order to fulfill the requirement of demonstrating *comparable ecological areas*. Accumulated information about the landscape will become a reservoir of public knowledge that will be continually increased through the activities of proponents.



The NorSask Project

The principles underlying Total Landscape Management have been applied in a pioneering project which is being undertaken in the boreal forest of northwestern Saskatchewan by Mistik Management Ltd. The "NorSask Project" comprises the proposed expanded development of the NorSask forest and existing developments such as the NorSask Forest products sawmill and the Millar Western pulp mill at Meadow Lake. The project is a new partnership in forest management among northern people that makes forest management everyone's responsibility.

The Meadow Lake sawmill has been producing lumber from spruce and pine trees since 1964. In 1987, some of the sawmill employees and a group acting on behalf of the Meadow Lake First Nations formed NorSask Forest Products Inc. and bought the Meadow Lake sawmill. They subsequently negotiated with the provincial government a forest management licence agreement to harvest wood from the boreal forest in northwestern Saskatchewan. Millar Western, a company making pulp from aspen chips, became the third shareholder in the project. Three years later, Mistik Management was established as a non-profit forest management company that is owned and directed by NorSask Forest Products Inc. and Millar Western.

Fundamental to the NorSask Project approach is its flexibility and responsiveness to a variety of concerns. Aboriginal populations depend on the forest for their livelihood and will benefit from forestry-related jobs; but of even greater concern is the effect of forest management plans and operations on the forest ecosystem and on cultural and spiritual values. To address these concerns, the NorSask Project depends on two management concepts. Adaptive management gathers new information and experience and these are continuously applied so that forest management plans and decisions can be continuously updated and improved. Co-management provides those living in local communities, who are dependent upon the forest, with a voice in management design and decision-making.

After broad consultation with all land users, and employing the traditional knowledge of local aboriginal peoples, Mistik developed a twenty-year forestry management plan that was deemed best for the various ecosystem and human requirements. This plan is now being

applied to twelve regions of the NorSask forest, each of which is continuously monitored by a local co-management board whose task is to identify issues of public concern. This is a classic example of shared land use. The twelve areas were created over fifty years ago in order to manage the successful recovery of fur-bearing animals critical to the trapping industry. Both fur and timber management are now integrated in order to harvest sustainably. Simultaneously, a scientific advisory board is conducting research in the NorSask forest to help solve specific problems. The findings from these studies, and from post-environmental impact studies, will be fed back into the forest management decision-making process. After ten years of monitoring and scientific research, Mistik will bring all the acquired knowledge to a review of the twenty-year plan and, in light of that knowledge, will revise the plan.



The Whitehorse Mining Initiative

As the NorSask Project demonstrates, the comprehensiveness and flexibility of Total Landscape Management allow it to embrace a variety of approaches to sustainable land use, such as those suggested in the Whitehorse Mining Initiative Accord. Signed in 1994 by representatives of the mining industry, senior governments, labour unions and aboriginal and environmental groups, the accord states that protected area networks are "essential contributors to environmental health, biological diversity and ecological processes." Accordingly, the signatories agreed that by the year 2000, the protected areas required to achieve representation of Canada's 39 natural land regions would be set aside from industrial development.

As already noted, there is a place for protected areas under Total Landscape Management; however, their use will constitute only one of a much larger set of tools available. Since these other tools will be available to achieve conservation and protection objectives, there will be less dependence on the use of protected areas. It is anticipated then that there will not be such a pressing need to establish as many exclusive use protected areas as was previously envisaged.



Looking Ahead

The concept of Total Landscape Management is relevant wherever land use planning is taking place, and is receiving increasing interest in various parts of Canada, most recently in Ontario. There, the provincial government has launched Lands for Life, a two-year province-wide consultation process designed to develop a comprehensive land-use plan for the 21st century. Lands for Life has three objectives: the sustainable management of forests; the identification of resources for use by the tourism industry; and the implementation of a plan that suggests the creation of new exclusive use protected areas in order to conserve biological diversity, conserve and protect wilderness and preserve unique and exceptional areas.

In response to this, the Alliance for Responsible Land Use, of which the Prospectors and Developers Association of Canada is a member, presented to the consultation a description of the Total Landscape Management concept. Subsequently, the alliance has formed a technical committee to develop an implementation scenario for Total Landscape Management in Ontario that would draw on and encompass a number of existing resources, including: existing legislation, modern practices of the resource industries, codes of practice and innovative ideas emerging from the Lands for Life consultation. The end result would be to bring together the best components of current ecological landscape management and integrate them within a strategic framework of Total Landscape Management.



Conclusion

The Prospectors and Developers Association of Canada acknowledges the need to conserve biodiversity, protect wilderness and preserve unique and exceptional areas of the Canadian landscape. However, the tool which has traditionally been used to achieve these objectives, that of exclusive use protected areas, while appropriate in some circumstances, has proven to be unsatisfactory and ineffective in others. The use of a single tool to achieve multiple objectives is not only unrealistic but causes unresolvable conflicts.

The Prospectors and Developers Association of Canada believes that decisions about land use require an integrated, comprehensive approach which can be applied over entire landscapes and which can include all conservation and land use objectives. Total Landscape Management offers such an approach.

For further information about Total Landscape Management, please contact the Prospectors and Developers Association of Canada.

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