



FIRE MANAGEMENT

Ecosystem Management



Canada's national parks were created to protect examples of our natural landscapes. In the far reaching words of the 1930 National Parks Act, "parks shall be maintained and made use of so as to leave them unimpaired for future generations." Traditionally, we have viewed national parks as pristine areas protected by their boundaries from outside influences.

Today, a different approach is needed. No protected areas remain untouched by human activities. Many parks contain highways and developments. Even remote areas are influenced by long range pollutants and global warming. Outside parks, much of the landscape is devoted to forestry, agriculture and expanding human settlement.

Clearly, national parks cannot be fully protected by lines drawn on a map. Few parks contain complete or unaltered ecosystems. They are part of larger landscapes and depend on the ecological well-being of these areas. Today, we need a

conservation approach that recognises the connections between humans and ecosystems. Ecosystem management is such an approach.

What is an ecosystem?

An ecosystem is a community of plants and animals and the processes, like the flow of energy through food chains, that link them to each other and to the physical environment. The term 'ecosystem' comes from the Greek 'oikos' and means 'home system'. Home for a beetle may be a rotting log; home for a grizzly, a territory of thousands of square kilometres. Ecosystems can be large or small; a region, a watershed, or even a single tree. Regardless of size, these systems contain a tremendous variety of species and habitats.

Ecosystems continually change over time. Some changes are slow; for example, the gradual adjustment of vegetation to climate fluctuations. Other events, like fire, flood or drought may cause rapid changes. Ecosystems are resilient; they can adjust to natural disturbances and continue to function.

What do we mean by ecosystem integrity

Ecosystem integrity is a little like human health. The state of health, or integrity, is one where the body, or ecosystem, is complete and functions properly. To have integrity, an ecosystem must have all its native species,

complete food webs and naturally functioning ecological processes. Moreover, it must be able to persist over time.

Just as people under stress may develop disease, ecosystems under stress can suffer damage. Human activities can stress ecosystems by making rapid changes they cannot adjust to. Symptoms such as the loss of a species or the inability to retain nutrients may signal the breakdown of ecosystem integrity.

What is biodiversity?

Biodiversity (short for biological diversity) refers to the **variety of life**. It occurs at different levels:

- **Species diversity** refers to the variety of plant and animal species found in an area. It is important for ecosystem functioning because if one species disappears, so may others that depend on it.
- **Genetic diversity** refers to the variation among individuals of the same species. Populations that are genetically diverse can adapt to changing conditions. For example, some individual pines have the ability to resist pine beetle attacks. This means at least some trees will survive beetle epidemics.
- **Landscape diversity** refers to the variety of biological communities in a landscape. Fire contributes to landscape diversity by creating a mosaic of different ages and types of vegetation. This variety of habitats, in turn, supports many different kinds of animals.

Around the world, biodiversity is declining in response to human activities. Not only species, but entire ecosystems are disappearing. National parks are becoming increasingly important in the global effort to conserve biodiversity, but they cannot do it alone!

What is Ecosystem Management?

Instead of focusing exclusively inside park boundaries or on a particular species, ecosystem management bases decisions on an understanding of the ecosystem as a whole.

The goal of ecosystem management is ecological integrity, which includes sustaining native biodiversity. The *Canada National Parks Act* now makes this a mandated responsibility.

Ecosystem Management is a holistic approach. It recognises that the well being of parks, as well as human communities, depends on the ecological state of larger landscapes. Ecosystem management involves working with other agencies and groups. It considers the social and economic needs of a region within the framework of preserving ecosystem integrity.

We do not completely understand ecosystems, yet still must make decisions. Managers are guided by current information. This may come from science or traditional knowledge. Actions are monitored and the approach is adapted as new information becomes available.

To succeed, ecosystem management relies on social consensus. It is based on a set of values that regards humans as part of interconnected living systems. Ecosystem management provides an opportunity for humans to understand and fit in with nature. In doing so, it strives to ensure the long term survival of the great diversity of life on this planet.