

Ecosystem management



Over the past twenty years, it has been proposed that natural resource management should take an ecosystem based approach, i.e. it should take the entire ecosystem into consideration. Management should maintain or improve the ecosystem and should provide a variety of goods and services to present and future generations.

Among the components of ecosystem management are:

- Consideration of the connections between different levels of biodiversity (genes, species, populations, ecosystems, landscapes).
- Inclusion of appropriate spatial scales to include the relevant ecological processes; definition of ecological boundaries rather than administrative boundaries.
- Acceptance of human society as part of the ecosystem; consideration of current requirements for maintenance of environment in order to meet future needs.
- Emulation of natural disturbance regimes in order to maintain biodiversity.
- Maintenance of ecological integrity through the protection of viable populations, patterns and processes of all native species.

- Consideration of appropriate time scales: Adoption of long-term planning.
- Introduction of management experiments with experimental design, including adequate monitoring and documentation of the effects of the management, in order to learn.
- Promotion of interagency coordination and communication with society.

Restoration

Human activities such as extraction of timber, plants and wildlife, agriculture, cattle ranching and urban and infrastructure development change the original characteristics of ecosystems. Some of these activities simply change the composition or abundance of species while others can completely alter the ecosystem.

In many cases, if we wish to continue to benefit from the resources and environmental services that ecosystems provide us with, it is necessary to restore them, i.e., we need to reconstruct their original characteristics. This proposal may sound very straightforward, but it is not. First, since the effects of human activity may have been felt for hundreds or thousands of years, the original features of most ecosystems are unknown: which species dominated the landscape? in what abundance?, etc. Secondly, it is necessary to have a good understanding of the processes of natural disturbance and plant succession in the region in order to reconstruct the soil, composition (types of species) and structure (relative abundance) of plants and animals that would restore the original functions of the ecosystem.

The study of the processes of renewal of destroyed or degraded ecosystems is known as **restoration ecology**.