

## Ecological balance

Having a sense of balance means you are sure of not falling. It means stability, harmony. We know that any one ecosystem contains thousands of components: there are thousands of habitats, animals, plants. And there are thousands or millions of possible relationships between these components. A component of an ecosystem could be indispensable to one or more other components in the ecosystem.

**Example:** Many animal species have no idea where to go when a fire destroys a forest.



Deer

An ecosystem is like an enormous net where each link is a different component that ties the others in place. The balance within each ecosystem is maintained by the presence of each component. They are all indispensable. If one component is disturbed, it may have a negative impact on other components, and trigger a chain reaction that disrupts the entire ecosystem. Like a hole in a net that widens because one link held four others in place, and each of those held four more others, and so on and so forth.

- The osprey and all the fish in a lake will be affected if the lake dries up;
- Small animals like rodents and hares are affected when bushes in forest land are cleared;
- Birds, foxes, bears and deer are affected when a forest is harvested.
- If all the cats are removed from a farm, the number of mice that eat the harvest will increase;
- If the trees beside a river are cut down, the roots of the trees will no longer be there to hold the soil, the soil will get washed into the river, and the animals living near the river bank will have to go elsewhere;



- If predators (wolves, coyotes, foxes, bears) are eliminated from a forest, herbivores (deer, hare, moose) will increase in number and will devour the vegetation.
- If a bird's favourite caterpillar is eliminated, the bird will have trouble finding food.

The vulnerability of individual species differs because every species lives differently from every other species. Every species is used to a certain way of life, a habitat of a certain size, and the components it needs to survive. The ability to adapt to change differs among species. Many species are more vulnerable because they are dependent on a well-defined habitat and they have specific needs. They perform and live better when their needs are met, and are often left without resources when there is not an adequate number of habitats and their needs are not fully satisfied. Other species may be less vulnerable because their habitat is not as well defined and is not indispensable to their survival. Such species are more tolerant; they have fewer needs; and they know how to adapt. They will not perform better in a specified habitat.



Spotted owl

**Example:** *Gulls manage to live just about anywhere in a city even if their normal habitat is a coastal zone, shoreline or island. The American marten and spotted owl, however, thrive only in very old forests more than 200 years old.*

Habitats change as time goes by because the need for water and solar energy changes among species (especially trees). As trees age, and grow wider and taller, they take in more water and solar energy. The result is that there is less water and sun for new trees and animals. The conditions in the habitat are no longer the same, so it will attract only species that can thrive in the new conditions. That's why a young 20 year-old-forest does not have the same trees and animals as a 60-year-old forest, which does not have the same trees and animals as a 200-year-old forest, or a 350-year-old-forest.

The number of habitats in an ecosystem will differ. Some ecosystems have few habitats, whereas others have many. Since habitats change as time goes by, there are fewer older habitats than younger ones.





Canada yew

**Example:** *There are many, many more young trees than old trees. Even if most trees can live up to 200 years, few trees actually do. Trees generally live less than 100 years.*

Habitats may disappear because of forest fires, insect infestation and fierce wind storms. The balance is maintained, however, because habitats naturally blend into surrounding habitats.

Ecological balance means there is always about the same number of habitats and species within an ecosystem.

The vitality of the ecological balance, which is continually changing, results from local changes in habitats and species.

When a habitat becomes too scarce and the species that live there become vulnerable, the ecosystem is no longer in equilibrium and biodiversity is threatened.

**Example:** *When too large a part of a habitat disappears for the occupants to have the time to find a similar habitat that meet their needs.*

Biodiversity is threatened by industrial expansion. Human populations are increasing and we need more and more resources to feed everyone. To meet these resource needs, we are developing more resources, at the expense of many habitats. We know that some habitats are more widespread than others, but some habitats are becoming increasingly scarce. The more scarce a habitat is, the less chance there is that it will be able to recreate itself, and withstand disturbances and change. The same thing applies to all living things on earth.

**Example:** *A tree cannot reproduce on its own. A number of trees, separated by thousands of kilometres from one another will not have the same chances of reproducing. A small number of trees that live in the same place will have a chance at reproducing, but*



*they will all disappear in one fell swoop if the place where they live is destroyed.*

The only solution is to protect habitats that are scarce.

When animals and plants lose large parts of their habitat, their survival is threatened because they will have trouble surviving in smaller habitats.



Bald eagle

**Example:** *Some birds need a large forest of about 20 hectares to find enough food . If they find themselves in a small wooded area of 2 to 3 hectares because the rest of the forest has been destroyed, they will have a tremendous amount of trouble finding food in such a limited area.*

There are an increasing number of rare and endangered species.

**Example:** *Predators may be endangered because they need more space to find prey. Also, some trees and plants are growing in habitats that are not tailored to their needs, so they are taking longer to develop.*

