

## **How clear cut forestry harms biodiversity.**

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There is often disagreement when biodiversity is discussed in the context of clearcutting. Some may say there are more species in young forests that grow up on former clear-cuts than there was before, so biodiversity has increased; others say that different species exist in older forests, so biodiversity has changed. What really happens when clearcutting takes place on a landscape?

To understand how clear-cuts impact landscapes, you need to know a little bit about biodiversity.

The term biodiversity first appeared in 1985 but it was not until 1992 at the UN Earth Summit in Rio de Janeiro that the term was officially adopted by the Biodiversity Convention of which Canada was one of the first signatories.

Biodiversity is a term that is not well understood and often used incorrectly. It's popularly thought of as the variation (diversity) of species in an area. But biodiversity is much more than the diversity of species. It's the combined diversity of genes within a species in a given area, the number of different species within an area, the variation of species that coexisting within different areas, and the variation of these areas across landscapes. Thus, biodiversity is the variation at all levels of biological organization. Years ago I remember reading a popular article in a newspaper purporting that the biodiversity of Toronto was now higher than it had ever been because of all the exotic pets and house plants that people have in their homes; a totally absurd pronouncement but not surprising that people are confused.

The biodiversity of a forested landscape is a function of topography, soil type, climate, past vegetation, time, and chance. Thus, forested landscapes tend to be highly diverse and they vary through time. They are what they are and this is neither good or bad; the species found in these diverse forested landscape have adapted to these conditions and a certain harmony exists. But nature is not static it's dynamic.

When a forest is harvested by clearcutting, all the trees are removed and the diverse habitats that existed for all kinds of wildlife is gone. The various animal species that lived there are either killed directly or face a slow death as they cannot just move elsewhere because elsewhere is already occupied; clearcutting created wildlife refuges.

After clear cutting, a process called succession starts to take place. Initially alders, white birch, poplars, red maple and balsam fir, the fast growing shade intolerant species, may become established on the area to be slowly replaced by sugar maple, ash, yellow birch, red spruce and maybe hemlock, the slow growing shade tolerant species, depending on conditions. A myriad of

organisms also become established in a certain sequence depending on the habitat available. Early on there may indeed be more species in a young forest than there will be later in the older forest. This is a natural progression.

Industrial forestry today generally homogenates a landscape because, with short-term rotation cycles, forests are not allowed to get old. Thus, early succession species dominate the landscape and late succession species are diminished. With few to no old growth forests remaining, biodiversity across the landscape has been reduced.

The forestry industries often try to justify clearcutting by telling the public that they re-plant the area. However, generally only one or two conifer species are planted. These species are cloned (genetically identical) and thus biodiversity is reduced. Additionally, herbicide spraying follows planting and this additionally reduces biodiversity by killing all broadleaved trees and plants and has its own set of negative environmental effects.

Older ecosystems, such as old growth forests often have species that are unique, they exist almost exclusively as a result of slow growth or poor ability to disperse (move) to their preferred habitats. Certain species of lichens, fungi and beetles are examples.

Commonly when we think of wildlife and forestry we think of “animals”, that is, mammals and birds, and maybe reptiles, amphibians, and fish, the vertebrates, but not the insects, worms, lichens, mosses, and fungi. The organisms in forest ecosystems most significant in the process of nutrient cycling-- the process which makes the forest system sustainable--are insects and fungi. Insects and fungi recycle the nutrients in the forest back into the soil. Unfortunately, these essential organisms are the ones which we know the least about.

When we clear-cut an area we disrupt biodiversity patterns unique to the area with the result that the sustainable processes maintaining the area will be lost. If we have already impacted the biodiversity of an area by clearcutting there is no telling what climate change will bring.