

Short Term Stress & Long Term Change

Range of Tolerance

•Abiotic factors affects the survival of all living things. For example a plant may die if the temperature drops below 0 °C or reaches 100 °C.

Range of Tolerance refers to the range within which an organism can survive. An organism will survive best at the middle of their range of Tolerance.

Every living organism has a range of tolerance within which it can survive.

Two types of stress on ecosystems

Short Term Stress:

- seasonal peaks in temperature,
- sudden changes in water supply,
- sudden but limited human impact.

Long Term Change:

- Climate change (global warming),
- infestation by foreign plants and animals (exotic species),
- permanent human influence (habitat destruction, acid deposition, etc.) are examples of long term change.

How short term stress affects the organisms living in a community?

While many natural forces -- drought, fire, flood, frost or species migration can affect it, an ecosystem will usually continue to function in a recognizable way.

For instance, a pond ecosystem may go through flood or drought but continues to be a pond.

This natural resilience of ecosystems enables them to resist change and recover quickly from disruption.

How long term change affects the organisms living in a community?

Toxic pollutants and other non-natural phenomena can overwhelm the natural stability of an ecosystem and result in irreversible changes and serious losses, as illustrated by the following examples:

- > decline of forests, due to air pollution and acid deposition;
- > loss of fish production in a stream, due to death of invertebrates from copper pollution;
- > loss of timber growth, due to nutrient losses caused by mercury poisoning of microbes and soil insects;
- > decline and shift in age of eagle and hawk (and other top predator) populations, due to the effects of DDT in their food supply on egg survival;

- > losses of numbers of species (diversity) in ship channels subjected to repeated oil spills;
- > loss of commercially valuable salmon and endangered species (bald eagle, osprey) from forest applications of DDT.

Usually, adverse ecological effects take place over long period of time or even at some distance from the point of release of a chemical. For example, DDT, though banned for use in the United States for over twenty years, is still entering the Great Lakes ecosystem through rainfall and dust from sources half way around the world.

The impact on the Pine Marten

In 1986 they were listed as threatened because there were about 800 Newfoundland Pine Martens left. Today there are only 300-600 remaining in the wild.

The biggest threat to the Newfoundland Pine Marten population is [habitat loss](#). Large-scale logging projects cut down 1000s of hectares of forests each year, making the land unsuitable for these martens.

Forest structure provides critical resources required for survival including concealment and escape routes from predators, denning and resting sites, and access to prey.

video

<http://www.youtube.com/watch?v=PLfhWVZ7k10&safe=active>

The impact on the Bogs

Bogs depend upon rainfall for its entire annual supply of water, and it will be sensitive to changes in both timing and amounts of precipitation.

Climate change is having a big impact on the peat bogs.

Lower water tables and warmer drier summers increase evaporation and transpiration will caused the peat bogs to dry out resulting in the moss dying.

A shift to moss covered peat bogs into bogs predominately covered with trees, affecting their ability to store carbon.

The amount of stored carbon that could be released to the atmosphere from drying peat bogs will increase.

pollution- oil

<http://video.nationalgeographic.com/video/news/nsf-oil-plumes-joye-vin>

<http://video.nationalgeographic.com/video/news/us-oil-spill-bird-migration-vin>