

# Chapter Five - The Past, Present and Future of Old Cedar-Hemlock Forests

## Introduction to the Chapter

Chapter Five explores the reasons why the old Cedar-Hemlock forests are disappearing, and outlines ways the old forests might be saved for the future.

## Objectives of Chapter Five

1. Students will examine the past and present extent of old Cedar-Hemlock forests.
2. Students will examine why the old Cedar-Hemlock forests are/have been disappearing.
3. Students will learn about the future outlook for these forests and ways in which they might be protected.

## This chapter includes two lesson plans:

Lesson One – The Extent of Old Cedar-Hemlock Forests

Lesson Two - The Future of Old Cedar-Hemlock Forests

*Both of these lesson plans are included in this abridged version of the Old Forest Study Unit.*

# Lesson One - The Extent of Old Cedar-Hemlock Forests

## Objectives of Lesson

1. Students will identify disturbances that prevent trees from reaching old age.

## Materials Needed

None

## Teaching the Lesson

1. The Biogeoclimatic Zone termed Interior Cedar-Hemlock is not full of *old* forests. Remind students that this zone is one in which mature forests of Cedar-Hemlock are only one of the community types that can develop. Even on a site which will be best suited for a Cedar-Hemlock forest, the forest may exist in an early successional stage, or the Cedar-Hemlock forest community may not have had enough time to develop all the old forest characteristics described in Chapter Two.
2. Why isn't there as much old forest now as there used to be?

Brainstorm with students to develop the following list; then categorize according to human causes or natural causes. Discuss how the ecosystem may or may not be able to recover from these factors. Are any of these effects permanent?

### **Reservoirs for flood control and power generation.**

**Logging industry** - Trees are replaced, but different species are often planted and most of these are expected to be harvested when they are about 100 years old. But it takes 200-300 years for trees to develop "old" characteristics. Because the big trees are removed from the site, there will be very few left to form the snags and downed wood on the forest floor. Forestry practices are changing, however, and soon we may see management to retain or artificially create some of the old forest characteristics.

**Forest fires** - Most are started by lightning strikes, but some are started accidentally by humans, e.g. campfires that aren't put out, or slash-burning that escapes into the nearby forest. In some parts of BC native peoples used fire as a way to keep forests in early successional stages, which support more deer and moose for them to hunt. In the wetter parts of southeastern BC, such as around Revelstoke, more trees die of old age, rot, and other tree diseases than forest fires. With respect to forest fires, how will global warming affect old forests?

**Settlement** - Humans choose to settle in the valley bottoms, which in southeastern BC is often occupied by the Cedar-Hemlock forests. Land has been cleared for farms, towns and roads.

**Insects and other forest diseases** - Root rots, heart rots, Hemlock Looper caterpillars, and other forest pests continually attack trees. Damaged trees are more easily invaded by rot than healthy trees. If the ecosystem is in balance, woodpeckers and other insect eaters will eventually bring the insect numbers back to normal. A disease-resistant species of tree will fill in the gap left by a tree that succumbed to rot. Over time the forest will regain its original mix of trees.

# Lesson Two - The Future of Old Cedar-Hemlock Forests

## Objectives of Lesson

1. Students will recognize that the forest industry poses a major risk to the future of old forests.
2. Students will recognize the conservation value of a network of protected areas linked by corridors.

## Materials Needed

None.

## Teaching the Lesson

Initiate a discussion using the questions (and answers) provided.

- Humans use the old forests in many ways. Most of these ways are non-consumptive or sustainable, and with care, these uses can continue indefinitely.

### **What do "non-consumptive" and "sustainable" mean?**

Non-consumptive - nothing is used or consumed.

Sustainable - the activity, sometimes consumptive, can be continued over time with no net loss.

### **What are some non-consumptive uses of old forests?**

Picnicking, hiking

### **What are some sustainable uses?**

For example: Trapping pine marten - some animals can be taken from the population without harming the overall population; normal breeding will replace the lost animals. Mushroom picking - sustainable only if some mushrooms are left behind every year, to set spores for the next generation.

### **Is timber harvesting sustainable? Is the ecosystem sustainable?**

Yes, but over a very long time frame. Harvesting is sustainable only if the forest is replacing wood at the same rate as it is being harvested. The amount of wood a forest produces is apparently sustainable; however continually removing generations of trees will not allow a *sustainable ecosystem* to develop (because of the loss of nutrients to the ecosystem, the lack of snags and logs on the forest floor, the loss of habitats created by old trees, etc.).

- Note the difference between a sustained yield of wood and a sustained ecosystem. The biggest risk to the future of old forest ecosystems is timber harvesting.

**What form does this risk take?**

In a forest managed by humans, big trees are continually being removed, and the nurse logs, woody debris, and potential snags, so important to the old forest ecosystems, cannot form. Most trees are scheduled for harvesting before they start to show the "old" characteristics.

- It is important to have some areas protected from timber harvesting, where the natural old forest ecosystems will endure. These are places where the ecological values and non-consumptive human-related values will have priority over other values.

**Why are these other values as important as timber harvesting, which supports many jobs?**

These other values also support jobs, for example, in the tourism and recreation industries. More importantly, the ecological values of old forests are tied to other ecosystems, upon which we all depend for survival.

**What kinds of protected areas are now in place to protect ecosystems?**

Protected areas now include national and provincial parks, Ecological Reserves, and others, such as Special Management Zones. The federal and provincial governments are working to build a system of protected areas that will protect the full range and diversity of our natural, cultural and recreational resources.

**Do protected areas work? Will they really protect an ecosystem?**

Yes, if they are big enough. But most BC provincial parks and many national parks are not big enough to protect an example of an ecosystem that's big enough to function naturally.

**Is it practical to tie up even bigger pieces of land in protected areas?**

Not really. To protect every ecosystem, an enormous amount of land would have to be off-limits to human activity.

- Our ecosystems can be safeguarded by carefully choosing core areas, and then linking them with corridors of landscape. These corridors aren't quite protected areas, but they are used in a way that doesn't compromise their natural qualities.

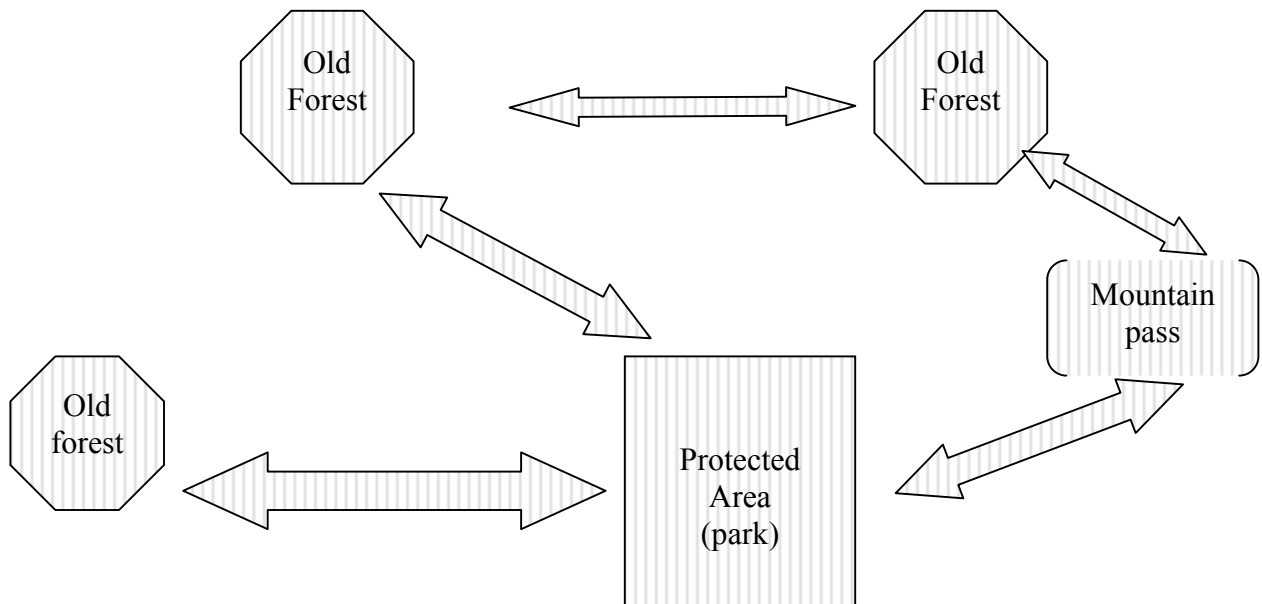
**Why do the protected ecosystems need to be linked?**

Without these corridors, protected areas can become islands in a sea of human development. Linking protected areas with corridors allows the living parts of the ecosystems to move back and forth between the protected areas. For example, if there was a fire in one of the protected areas, living things from the other core areas could migrate along the corridors to re-colonize the affected area. Movement corridors allow living things to interbreed with fresh genetic stock, minimizing inbreeding.

Some corridors do not link "officially protected" areas. They might link particularly important habitats or features, for example, the approaches

leading up to a mountain pass that is frequently used by animals, or two patches of old forest.

**Wildlife corridors can connect patches of old forests  
with parks and other old forest areas**



**But why do living things need the corridors to move along, why can't they just cross overland any old way?**

Many creatures are hesitant to cross openings, such as clearcuts, and need the shelter of trees to hide or for shade. Some living things, for example, lichens that live in old forests, or salamanders or voles, will need several generations to "migrate" to a new area. They must have their habitat requirements met as they move slowly along the corridor.

**Isn't a corridor just another kind of protected area?**

Yes and no. The corridor is managed in a special way to conserve its natural characteristics, but it is not completely protected. For example, old trees might be logged, but special effort would be made to leave behind snags and woody debris. Trees might be harvested every 200 years instead of every 100 years to allow the ecosystem to stabilize between harvests. Special hunting or access regulations might be in place.

## **Further Investigation:**

### **Do a case study on an old forest protection issue.**

See Appendix Three for how to obtain information from the Western Canada Wilderness Committee or the British Columbia Forestry Association.