Forestry

## FOREST FACTS

- 37% of Canada's land area covered by forests.
- Stretches in a continuous band from BC to NL.
- Commercial forests are forests that could be easily be harvested for timber.
- Non-commercial forests are located in areas where there are low temperatures, low precipitation levels, or are too far from the Canadian or export markets to make harvesting feasible.

## CHARACTERISTICS OF CANADA'S FORESTS

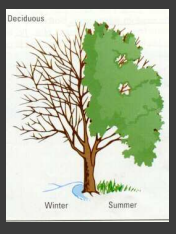
- Diversity of forests allow for a broad range of products.
- The boreal forest is the largest region. Common species include black spruce, white-spruce, balsam, fir, jack pine, and tamarack. Pulp and paper production (small logs) tend to be more important than lumber produced.
- The broad-leaved forest is smallest and least important. Very little commercial value. Species such as black walnut, maple, and cherry are usually sold to the special furniture making industry.

- The mixed forest region is a transition zone between the broad-leaved forest to the south and the boreal forest to the north. Broad-leaved species such as maple, beech, and oak, dominate in the south, along with maple syrup production. Needle leaved species such as white pine, hemlock, and red pine are common.
- The many landform regions and climate conditions of BC lead a diverse forest pattern. Along the coast where precipitation levels are high and the growing season is long, we see huge red cedar, western hemlock, Douglas fir, and Sitka spruce. In the interior we find lodgepole, pine, ponderosa pine, and Engelmann spruce.

## TYPES OF FORESTS IN CANADA

**1. CONIFEROUS**

- **90% of Canada's forest in coniferous**
- **evergreen needles**
- **soft wood**
- **seeds are produced in the cones**
- **main purpose of needle leaves is to preserve moisture during winter**
- **ideal wood for pulp and paper**
- **spruce, fur, pine and cedar**
- **flourish in Canada because of cold moist climate**

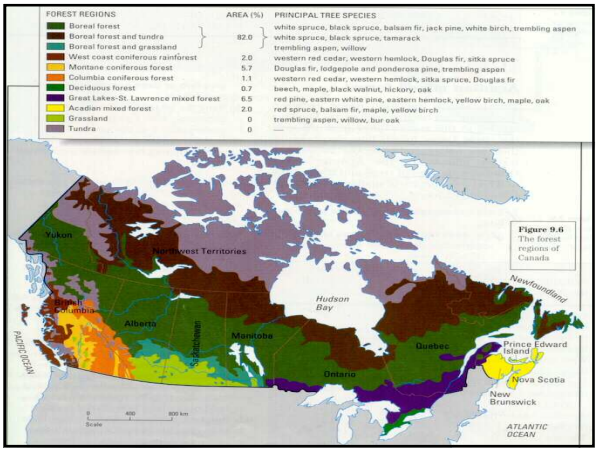
**2. DECIDUOUS**

- 1 % of Canada's forests are deciduous
- hardwood
- loose leaves in winter to preserve moisture
- in spring new buds appear and leaves eventually regrow
- birch maple cherry walnut

## FOREST REGIONS

The factors that determine what type of forest will grow in a region are

- temperature
- precipitation
- growing season
- soil
- land forms




## 1. BOREAL FOREST

- 3 REGIONS OF BOREAL FOREST

a) Boreal Forest

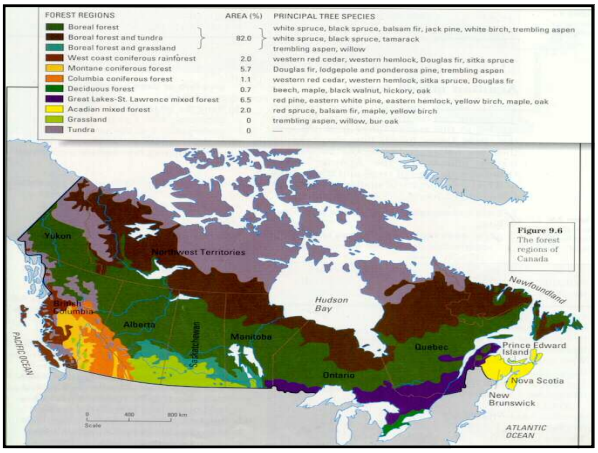
- small to medium trees
- most of Canada's forest in Boreal

b) Boreal Forest and Tundra

- tree have adapted to colder, windier and dryer climates
- some areas have *permafrost*
- trees are short, thin and scattered

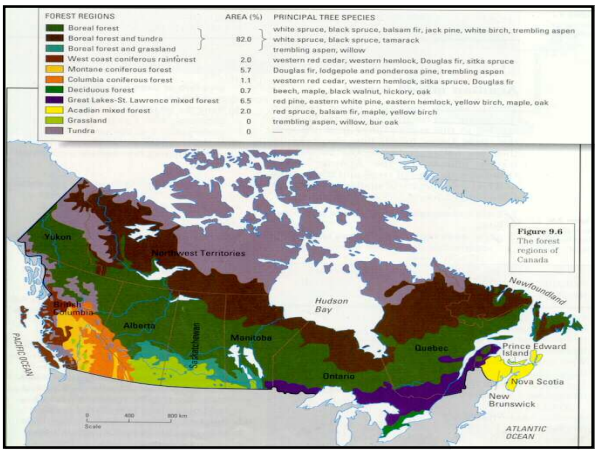
c) Boreal Forest and Grassland

- transition zone between forest and dryer grassland
- Forest thins and trees become smaller
- less water is available for trees because higher temperatures mean more evaporation
- river valleys and wetter areas mean more trees



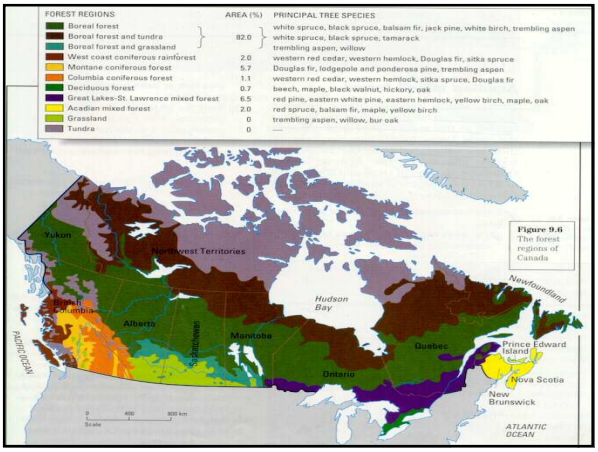
## 2. WEST COAST CONIFEROUS RAIN FOREST

- most productive forest region in Canada
- rain bearing winds from the pacific provide the moisture for the forests
- these coniferous trees grow to huge sizes because oh high precipitation, moderate temperature and a long growing season
- Douglas Fur, Sitka Spruce, Western Cedar
- this forest is the highest in terms of # of $m^3$ wood per hectare.



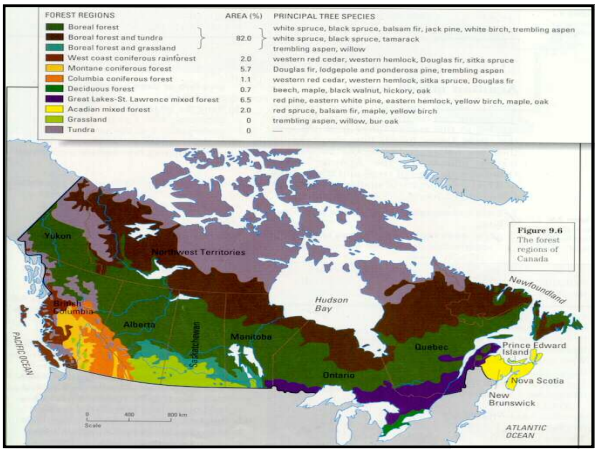

## 3.COLUMBIA CONIFEROUS FOREST

- found on the wet, western slopes of the interior of B.C.
- trees are smaller than the west coast coniferous because of less rainfall, shorter growing season and steep mountain slopes.
- second in terms of # of $m^3$ wood per hectare.



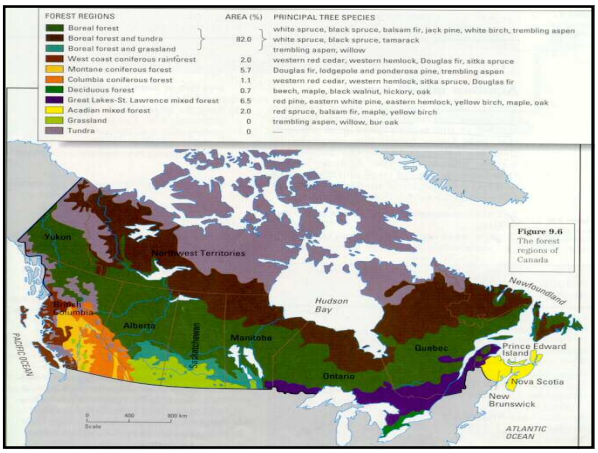

## 4. MOUNTAIN CONIFEROUS FOREST

- interior of B.C.
- smaller than the Columbia Coniferous Forest because they are in the shadow of the mountains



**5. Deciduous Forest**

- **grow in area's with hot summers, short winters, abundant precipitation, long growing season and fertile soil**
- **oak, maple, beech and walnut**
- **very few areas of true deciduous forest remain because people have cleared the land for farms or urban development**

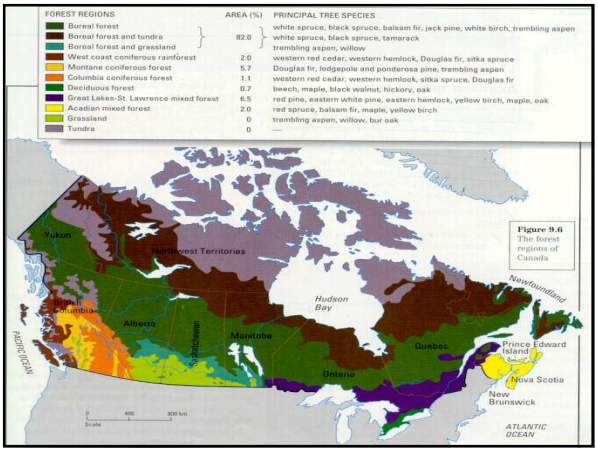



**6. Great Lakes - St. Lawrence Mixed Forest**

- **transition zone between boreal forest and deciduous forest**
- **cooler temperatures, less rain and a shorter growing season than the deciduous forest**

**7. Acadian Mixed Forest**

- **transition region between deciduous and coniferous forests**
- **trees are better suited to cooler dryer climate**




## USES OF THE FORESTS

- Very important economically to Canadians.
- The forest industry produces shipments of wood, paper, and other forest products totaling over 42 billion per year. Over 16 billion is exported.
- Provides over 200000 jobs for Canadians.
- Sawmills and pulp and paper mills generally located near both the forests and transportation routes.

## FORESTRY DIVIDED INTO LOGGING OPERATIONS AND MANUFACTURING OPERATIONS

**A). Logging Operations**

- Clear cutting (about 80% of logging operations) is much cheaper than selective cutting.
- High lead system common in BC due to size of trees and the difficulty of the terrain

## B). MANUFACTURING OPERATIONS

- Pulp and Paper
- 95% of the paper comes from wood pulp.
- The pulp and paper industry is highly specialized and costly.
- Canada is the world's second largest producers of pulp and paper. (US is the first)
- Largest exporter.
- Pulp and paper operations in every province except PEI.
- 150 pulp and paper mills in Canada, usually large multi-million dollar operations.

## LUMBER

- BC dominates lumber production, producing 50% of Canada's lumber.
- BC leading plywood producer.
- 95% of lumber industry is from softwood species such as fir, pine, and spruce.
- 5% from hardwood species such as maple, and oak.
- Saw mills use simpler technology and have had to become more efficient due to the reduction in the number of trees available. They now use almost all of the tree, reducing pollution, using less forest, and increasing production.

## RECREATION

- Forests provide opportunities for a wide range of outdoor activities.
- 27%of Canadians own camping equipment.
- Recreation is a major contributor to the economy.

## CONSERVATION RATIONALE

- Forests provide economic benefits.
- Forests provide habitats for hundreds of kinds of mammals and birds.
- Forests hold back moisture during spring run-off.

## THREATS TO THE FOREST

- Like the fishery, forestry should be treated as a renewable resource, and subjected to sustained yield management, which unfortunately isn't the case.
- Foreign competition, especially from warm, moist climates zones, have made inroads into world markets, forcing Canadians to look to other means to stay competitive.
- Sweden making use of Sustained yield management and are competitive. Environmental hazards such as acid rain and chemical spraying against the spruce budworm and gypsy moths.

**1. Excessive logging**

**2. Forest Mismanagement**

- **environmental movement is becoming more popular**
- **concern over old growth forests ( mature forest undisturbed by humans**

3. Methods of Harvesting
- Clear Cutting- removal of all trees in a block or strip

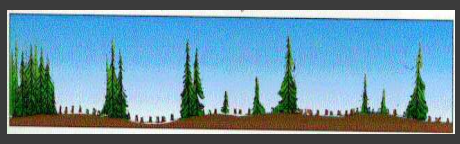
- Sustainable Development
- the volume of trees cut in any year must be equal to or less than the volume of trees replanted ( you must also take into account the time it takes the tree to grow )

## ALTERNATIVES TO CLEAR CUTTING

1. Small Patch Clear Cutting
- clear 1 - 2 ha. of land
- leave older trees around cleared area
- older trees provide shade for cleared site
- logging debris left to decay and nourish soil

2. Shelter wood Logging
- remove 70% of trees
- small patches of old trees are left to provide seeds for new trees

3. Seed Tree Retention
- remove all trees except those bearing seeds



4. Selective Cutting
- harvest only mature trees of a certain species
- trees removed in small groups

## SILVCULTURE :

- the science of breeding, developing, and cultivating trees
- genetic engineering is attempting to develop new varieties of trees that will grow faster, resist insects and disease and produce better quality wood
- researchers are trying to find *regeneration* ( growing back harvested trees )

*note:* in the past almost half the of the replanted forests have failed to regenerate

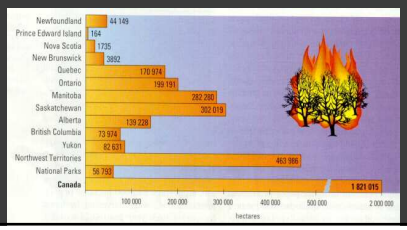
## OTHER THREATS TO CANADIAN FORESTS

1. Forest Fire
- How can a forest fire be good for a forest
1. some trees depend on fire to release seeds
2. Fires can destroy competing bushes and fertilize the soil

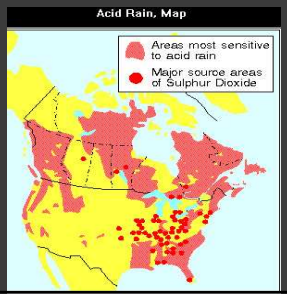
- Size and number of forest fires usually depends on climactic conditions.
- ( dryer and hotter means more fires)

- facts:
- Average yearly burn from 1978 - 1992 was 1.8 million hectares

- Amount burned in 1989 was 7.5 million hectares
- Average harvested by wood companies from 1978 - 1992 was 0.89 million hectares
  Human activity causes more than ½ of all forest fires, usually in areas that are accessible to humans
- Lightning states fires that burn 80 - 90% of all forest area burned




2. Acid Precipitation
- chemical pollutants get mixed with the air and water vapor
- trees are burnt plus soil becomes to acidic and trees stop growing or die




3. Insects
- Spruce bud worm
- Jack pine bud worm
- Tent caterpillar
- Gypsy moth
- Pine bark beetle

4. Diseases
- fungi infestation
- cankers
- each year insects and disease kills more trees than logging