

PRESENTATION 4 – OLD GROWTH FORESTS/MAIN RIVER FOREST ECOLOGY

Slide 1



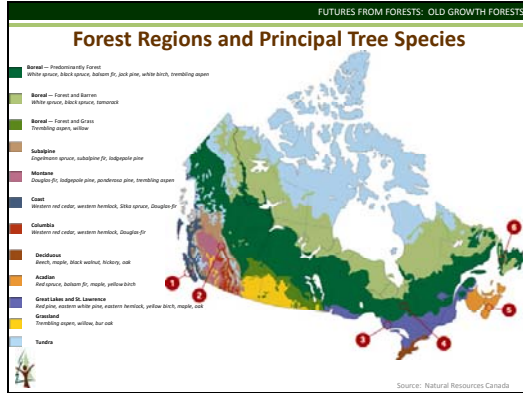
- Futures from Forests binder contains **discussion questions** and **suggested activities** to accompany this presentation
- Student worksheet** “Old Growth Forests/Main River Forest Ecology” accompanies this PowerPoint presentation

Slide 2



- Longevity:** Life expectancy under ideal conditions
- Snags:** Dead trees that are still standing
- Labrador Tea:** A low, spreading evergreen shrub that prefers bogs, swamps, and moist woods; 30-80 cm tall; pictured in bottom right hand corner of slide
- Bunchberry:** Also called crackerberry, this is a common plant found on the forest floor in Newfoundland and Labrador; yield red berries in the fall; pictured in bottom left hand corner of slide

Slide 3



- This map shows the Forest Regions of Canada, and provides examples of different old-growth forest types in some of these regions
- The numbered red circles represent old-growth forests that will be described later in the presentation.
- Note that the boreal forest is divided into three types: predominantly forest, part barren to north and part grass to south
- In the Atlantic region, the main forest types are boreal and Acadian. Acadian is sometimes called “mixed” forest as it has a mix of evergreen and deciduous trees

Slide 4

Coast (Temperate)

Age
150 years, oldest trees live 1000 years

Structure
Multi-aged, multi-layered canopy, very high biomass accumulation

Natural disturbance regime
Tree replacement


Tree species composition
Mixtures of long-lived, shade-tolerant species

Associated species
Winter wren, Pacific tree frog, fern-leaved goldthread, sword fern


- **Forest Structure** means the physical arrangement and characteristics of the forest. It includes such things as the age, species, height and diameter of the forest stand.
- **Biomass** refers to living and dead trees, shrubs and plants that are found in a forest. In this forest, there is high biomass accumulation because trees are large and there is much growth on the forest floor.
- **Tree replacement** refers to the replacement of single trees as they die, fall over, and allow new trees to take their place. This is also referred to as gap replacement. It results in uneven-aged forests consisting of trees of many ages.

Slide 5

FUTURES FROM FORESTS: OLD GROWTH FORESTS



Montane




Age
100 years, oldest trees live 350 years

Structure
Even-aged, single layer canopy, low biomass accumulation

Natural disturbance regime
Stand replacement

Tree species composition
Shade-intolerant species mixtures

Associated species
Northern goshawk, hoary bat, one-sided wintergreen, bearberry (kinnikinnick)



Source: Natural Resources Canada


- **Biomass** refers to living and dead trees, shrubs and plants that are found in a forest. In this case, there is not a large volume of accumulated biomass as the understory of a Montane forest is usually sparse because of the lack of moisture.
- **Stand replacement** means that large areas of forest are usually replaced at one time, such as after a fire, which destroys the old forest and allows a new forest to grow. This is why the structure of the Montane forest is even-aged.

Slide 6

FUTURES FROM FORESTS: OLD GROWTH FORESTS



Great Lakes and St. Lawrence



Age
150 years, oldest trees live 400 years

Structure
Multi-aged, multi-layered canopy, moderate biomass accumulation

Natural disturbance regime
Tree replacement

Tree species composition
Long-lived, shade-tolerant species mixtures

Associated species
Southern flying squirrel, northern long-eared bat, red-backed salamander, pileated woodpecker, wild leek, jack-in-the-pulpit




Source: Natural Resources Canada


- For definitions and explanations of **biomass accumulation, stand replacement and tree replacement**, see slides 5 and 6.

Slide 7

FUTURES FROM FORESTS: OLD GROWTH FORESTS



Boreal (dry)




Age
100 years, oldest trees live 250 years

Structure
Even-aged, single layer canopy, low biomass accumulation

Natural disturbance regime
Stand replacement

Tree species composition
Dominated by shade-intolerant species

Associated species
Three-toed woodpecker, grey jay, woodland caribou, Labrador tea, clintonia




Source: Natural Resources Canada

- For definitions and explanations of **biomass accumulation, stand replacement and tree replacement**, see slides 5 and 6.
- Dry Boreal forests are also found in eastern and central parts of Newfoundland and in central Labrador. For further information, see slide 11

Slide 8

FUTURES FROM FORESTS: OLD GROWTH FORESTS



Acadian


Age
150 years, oldest trees live 400 years

Structure
Multi-aged, multi-layered canopy, moderate biomass accumulation

Natural disturbance regime
Tree replacement

Tree species composition
Long-lived, shade-tolerant species mixtures

Associated species
Yellow-bellied sapsucker, barred owl, showy lady slipper, large round-leaved orchid




Source: Natural Resources Canada

- For definitions and explanations of **biomass accumulation**, **stand replacement** and **tree replacement**, see slides 5 and 6.
- For information on an Acadian forest in Cape Breton, see http://www.pc.gc.ca/pn-np/ns/cbreton/natcul/natcul1b_e.asp

Slide 9

FUTURES FROM FORESTS: OLD GROWTH FORESTS



Boreal (wet)


Age
100 years, oldest trees live 250 years

Structure
Multi-aged, multi-layered canopy, moderate biomass accumulation

Natural disturbance regime
Tree or stand replacement

Tree species composition
Shade tolerant species, sensitive to drought

Associated species
Pine marten, black-backed woodpecker, feather moss, New York fern




Source: Natural Resources Canada

- For definitions and explanations of **biomass accumulation**, **stand replacement** and **tree replacement**, see slides 4 and 5.
- Much of the forest found on the west coast and northern Peninsula in Newfoundland, and coastal Labrador sites, is considered wet Boreal.

Slide 10

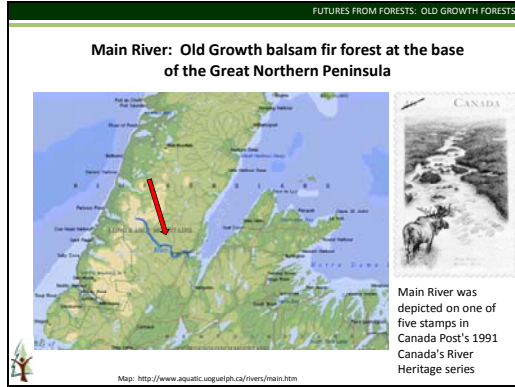
FUTURES FROM FORESTS: OLD GROWTH FORESTS



<p>Dry Boreal forests are found in the eastern and central parts of the island and in central Labrador</p>	<p>Fire is the most common natural disturbance type in dry Boreal forests</p>	<p>Wet Boreal forests are found on the west coast of Newfoundland, on the Great Northern Peninsula, and some coastal parts of Labrador</p>	<p>Insects are the most common natural disturbance in wet Boreal forests</p>
--	---	--	--

- For more information on forest succession, see “Futures from Forests – Forest Ecology” PowerPoint presentation

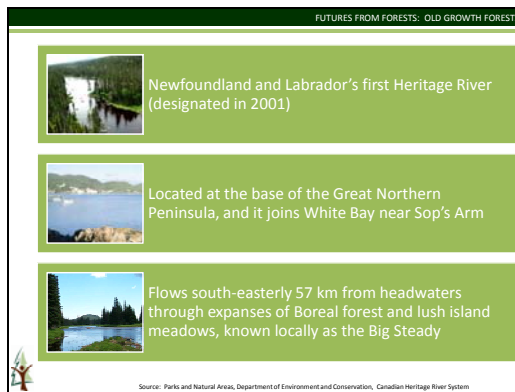
Slide 11



•Examples of old growth forests are found all over Newfoundland and Labrador. Some examples are Soufflets River Valley (on the Great Northern Peninsula), Bay de Nord (south of Gander) and areas of Labrador. However, Main River is the best known of these old growth forests in the province.

- For more information on the Main River area, see:
 - <http://www.env.gov.nl.ca/parks/rivers/main/>
 - http://www.chrs.ca/Main_e.htm
 - http://www.nfld.net/paa/main_river.htm

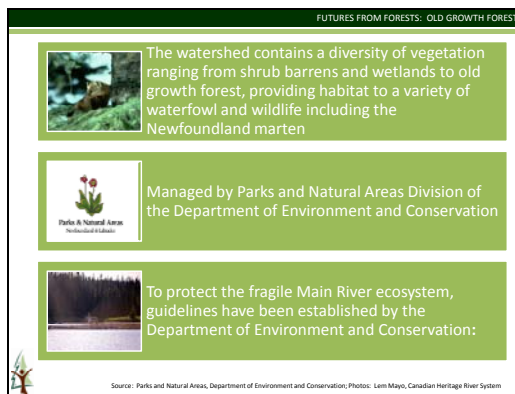
Slide 12



•The Canadian Heritage River System (CHRS) has its own website http://www.chrs.ca/Main_e.htm

•The CHRS was established in 1984 by the federal, provincial and territorial governments to conserve and protect the best examples of Canada's river heritage, to give them national recognition, and to encourage the public to enjoy and appreciate them. It is a cooperative program of the governments of Canada, all 10 provinces, and the three territories.

Slide 13



•For more information, see the Parks and Natural Areas website, <http://www.env.gov.nl.ca/parks/rivers/>

Slide 14

FUTURES FROM FORESTS: OLD GROWTH FORESTS

Activities not permitted	Activities Permitted
<ul style="list-style-type: none"> Timber harvesting ATV use New cottage development Mineral exploration 	<ul style="list-style-type: none"> Salmon and trout fishing Hunting - big and small game Snowmobiling Outfitting and adventure tourism Backcountry hiking and camping Canoeing/ kayaking





Source: Parks and Natural Areas, Department of Environment and Conservation; Photos: Canadian Heritage River System

•For more information, see the Parks and Natural Areas website, <http://www.env.gov.nl.ca/parks/rivers/>

•**Discussion Questions:**

- Why is snowmobiling permitted but ATV use is not permitted in the Main River area?
- What is the difference between the environmental impact of backcountry camping and regular car –based camping?

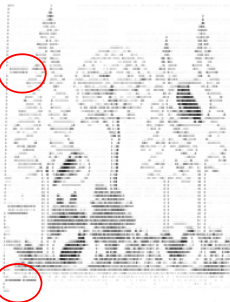
Slide 15

FUTURES FROM FORESTS: OLD GROWTH FORESTS

The Main River's forests have multilayered canopy and an abundance of lichens such as 'old man's beard'

The forest floor is covered with fallen trees, mosses and decomposing logs that often become "nurse logs," acting as a seed bed for young trees.

The Boreal ecosystem of Main River has remained intact since it was established after the retreat of the glaciers thousands of years ago. Forests have been insulated from fire, wind, insects and disease



Source: Parks and Natural Areas, Department of Environment and Conservation
Graphic: NL Department of Natural Resources Forestry Services Branch

•Look at a topographical map of Newfoundland. What geographical features may help explain why the Main River forests have been insulated from the impact of insects, wind, fire and disease that have disturbed and renewed other areas of forest outside this region?



Slide 16

FUTURES FROM FORESTS: OLD GROWTH FORESTS

Main River area has balsam fir that live up to three times their normal life span . Forests are multi-aged and diverse

Floodwaters annually deposit large quantities of fine organic sediment in the 15 square kilometer flood plain known as "Big Steady"

Frequent flooding and spring ice rafting keep mature forests in the Big Steady clear of most undergrowth, producing open forests interspersed with meadowland

Source: Parks and Natural Areas, Department of Environment and Conservation. Photos: Canada's Heritage Rivers website

•The Canadian Heritage River System (CHRS) has its own website http://www.chrs.ca/Main_e.htm

Slide 17

FUTURES FROM FORESTS: OLD GROWTH FORESTS

Gap Replacement

Openings in the forest canopy occur when individual trees, or small groups of trees, die. This is often because of fungal infection in stems and roots of old trees.

When the weakened trees fall down, the increased growing space and available light and nutrients allow small or suppressed trees that were previously overtopped to develop and increase in size. This is commonly referred to as "release."

Balsam fir and black spruce are two tree species that have the ability to survive in shady conditions for many decades until released.

There is significant gap replacement in the Main River area

Source: Sustaining Ecosystems (Science 1206: An Alternate Resource); Photo: Canadian Heritage River System

Slide 18

FUTURES FROM FORESTS: OLD GROWTH FORESTS

Newfoundland
Labrador

Canada

Model Forest
OF SUSTAINABLE FORESTRY

Natural Resources
Canada / Ressources naturelles
Canada

Kruger
Publication
Projet

Canadian Institute of Forestry
Institut forestier du Canada

City of St. John's

