

PRESENTATION 1 – FOREST ECOLOGY IN NEWFOUNDLAND AND LABRADOR

Slide 1



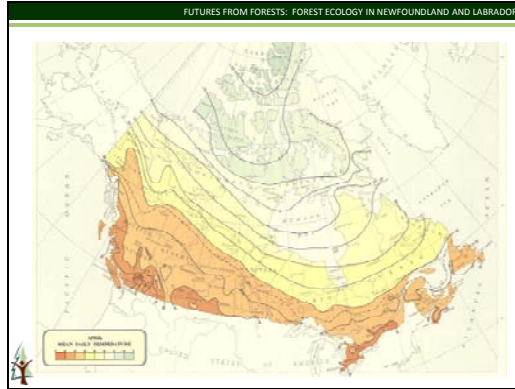
- Futures from Forests binder contains **discussion questions** and **suggested activities** to accompany this presentation
- Student worksheet** “Forest Ecology in Newfoundland and Labrador” accompanies this PowerPoint presentation

Slide 2



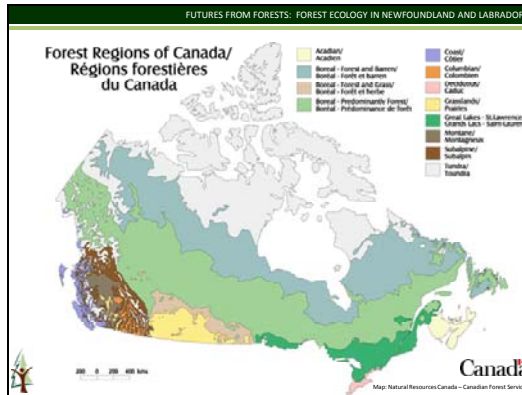
- For a list of links to boreal forest resources, see www.borealforest.org

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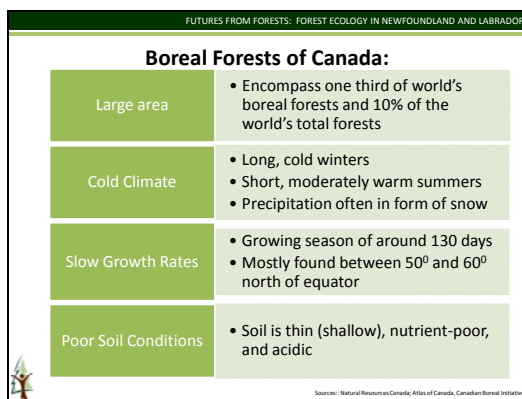
- This map shows mean daily temperature in April and should be used in relation to the next slide, which shows forest regions of Canada. Encourage students to see the correlation between temperature and forest regions.
- For more climate information or temperature maps, see <http://atlas.nrcan.gc.ca/site/english/index.html>

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- If possible, go back to the previous slide to show correlation between temperature and forest regions.
- Most of Newfoundland and Labrador is considered boreal forest and barren. The northern part of Labrador is considered Tundra, or arctic plane, where very few trees grow. Outside of Newfoundland and Labrador, Atlantic Canada is dominated by Acadian forests, which have a mix of hardwood and softwood.
- For more maps or further information on Canada's boreal forests, see <http://atlas.nrcan.gc.ca/site/english/index.html>

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- For more information on Canada's Boreal Forests:
 - <http://atlas.nrcan.gc.ca/site>
 - <http://www.borealforest.org/>
 - <http://www.borealcanada.ca/>

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FUTURES FROM FORESTS: FOREST ECOLOGY IN NEWFOUNDLAND AND LABRADOR

Boreal Forests of Newfoundland and Labrador:



23.2 million hectares of forest in the province. Around 46% of Newfoundland and 62% of Labrador is forest!

Most common trees are black spruce and balsam fir. Other common softwoods are larch and pine.

Hardwoods, including white birch and trembling aspen, form a smaller component of forest cover in the province.


Source: Department of Natural Resources

- For more information on the Boreal Forests of Newfoundland and Labrador:
 - http://www.nr.gov.nl.ca/forestry/ourforest/forest_types.stm

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FUTURES FROM FORESTS: FOREST ECOLOGY IN NEWFOUNDLAND AND LABRADOR

BALSAM FIR



Common species in Newfoundland. Used extensively for pulp and lumber.

At maturity, is 12-15 metres in height and 30-50 cm in diameter

Flat, needle-like leaves are 2-3 cm long, rounded or notched at tip, dark shiny green on top, whitish on bottom.

Cones are 5-10 cm long, oblong shaped and dark purple.

Bark is smooth, pale green on young stalks becoming rough, scaly, red-brown on mature trees

Dominant natural disturbance is insect outbreak


Information: Department of Natural Resources, Forestry Division
Photo: Model Forest of Newfoundland and Labrador, Atlas of Canada

- For more information, see <http://www.nr.gov.nl.ca/forestry/ourforest/treespecies>
- Disturbance:** Something natural or the result of human activity that brings significant change to a forest ecosystem. Common natural disturbances include fire, insect outbreaks, and storms (ice, wind etc.) Common disturbances that result from human activity include harvesting and deforestation.

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FUTURES FROM FORESTS: FOREST ECOLOGY IN NEWFOUNDLAND AND LABRADOR

BLACK SPRUCE



Dominant tree species in Labrador. Most valuable pulpwood species in N.L.

Grows slowly to 9-12 metres in height and 15-30 cm diameter at maturity

Leaves are 1-2 cm long, needle-like four-sided in cross section, dark bluish-green, without lustre, surrounding the whole twig.

Cones are oval, purplish-green, 1-4 cm long.

Dominant natural disturbance is fire

Provincial tree of Newfoundland and Labrador


Information: Department of Natural Resources, Forestry Division
Photo: Model Forest of Newfoundland and Labrador, Atlas of Canada

- For more information: <http://www.nr.gov.nl.ca/forestry/ourforest/treespecies>

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FUTURES FROM FORESTS: FOREST ECOLOGY IN NEWFOUNDLAND AND LABRADOR

EASTERN LARCH



Also called Tamarack or Juniper. A heavy, strong softwood that makes good posts and poles

Found mostly in swampy, wet soil

Can grow up to 15 metres in height and 30 cm diameter

Deciduous needles are about 2.5 cm long, slender, flexible and in clusters of 10-20 arranged spirals.

Cones are 1 cm long, erect and brown coloured with about 20 thin, smooth scales.

Bark is thin, smooth bluish-grey on young trees becoming rough with small, flat, reddish-brown scales when mature


Information: Department of Natural Resources, Forestry Division
Photo: Model Forest of Newfoundland and Labrador, Atlas of Canada

•For more information:
<http://www.nr.gov.nl.ca/forestry/ourforests/treespecies>

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FUTURES FROM FORESTS: FOREST ECOLOGY IN NEWFOUNDLAND AND LABRADOR

WHITE BIRCH



Most common birch and most important hardwood in NL

Used for fuel wood and in manufacturing of value added products such as hardwood flooring

At maturity, grows to 15-21 metres in height and 30-50 cm in diameter

Leaves are 4-10 cm long, oval to heart-shaped, with toothed edge

Bark is creamy-white to pinkish-white at maturity, easily separated into papery leaves

Regenerates quickly after fire by 'stump sprout'


Information: Department of Natural Resources, Forestry Division
Photo: Model Forest of Newfoundland and Labrador, Atlas of Canada

•For more information:
<http://www.nr.gov.nl.ca/forestry/ourforests/treespecies>

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FUTURES FROM FORESTS: FOREST ECOLOGY IN NEWFOUNDLAND AND LABRADOR

Conifers are usually evergreens. They don't need to expend energy on growing new leaves each year, so they can begin photosynthesis early in the spring	Dark colored needles help the tree absorb maximum energy from the sun for photosynthesis. A waxy coating limits water loss through transpiration and resin on needles helps withstand freezing
CONIFER ADAPTATION TO THE CLIMATE IN THE BOREAL	
Conifers tend to carry out high rates of photosynthesis at relatively low temperatures compared to deciduous species	Branches are pointy shaped and often downward sloping to allow winter snow to slide off easily without breaking or damaging the branches.



•The slide shows several conifer adaptations, but students may come up with others!

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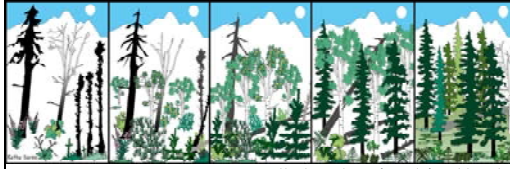
FUTURES FROM FORESTS: FOREST ECOLOGY IN NEWFOUNDLAND AND LABRADOR

Boreal Forest Succession:

Succession is the gradual and natural change in a forest community that occurs over time.

For example, if left undisturbed, an open field may become an aging forest in around 200 years

Natural succession may be influenced by climate, soil conditions, topography and disturbances



Artwork by Kathy Sarns and courtesy of USFWS Role of Fire in Alaska Curriculum

•Kathy Sarn’s artwork effectively illustrates the process of forest succession over a period of time.


•**Discussion Questions:**

- What are some *natural* disturbances that might affect natural succession?
- What are some *human* disturbances that might affect natural succession?
- How might natural succession be influenced by each of the disturbances listed in your responses?

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FUTURES FROM FORESTS: FOREST ECOLOGY IN NEWFOUNDLAND AND LABRADOR

Primary and Secondary Forest Succession:



Primary Succession

- Begins with a barren area with no vegetation
- Pioneering organisms (e.g. lichens) break down the rock
- Colonizers (e.g. shrubs) grow as soil accumulates



Secondary Succession

- The soil already exists from Primary Succession
- Occurs after a disturbance such as fire, insect damage, storm or harvesting
- Forest regeneration is gradual and complex
- Climax vegetation is final stage of succession without disturbance.

Photos: Model Forest of Newfoundland and Labrador, Department of Natural Resources

•**Succession**, as defined in the previous slide, is the natural sequence of plant community replacement beginning with bare ground and resulting in a final, stable community in which a climax forest is reached.

•Foresters, wildlife biologists, and farmers constantly battle ecological succession to try to maintain a particular vegetative cover.

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FUTURES FROM FORESTS: FOREST ECOLOGY IN NEWFOUNDLAND AND LABRADOR



Pioneer species

- Grow rapidly after a natural disturbance such as fire or harvesting
- Require a lot of light
- Generally short-lived
- In the Boreal Forests, these are often shrubs such as Kalmia, raspberries and blueberries, followed by hardwoods



Late Successional Species

- Take longer to establish after natural disturbance.
- Generally slow-growing and long-lived
- Generally don't require a lot of light.
- In the Boreal, these are usually softwood species.

•**Discussion Question:**

•From the information about succession in this slide and the previous slides, explain why cutovers (recently harvested areas) provide a good place for berry picking in the summer and fall.

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•The impact of fire and insects on the forests of Newfoundland and Labrador is addressed in more detail in later slides

•Discussion Questions:

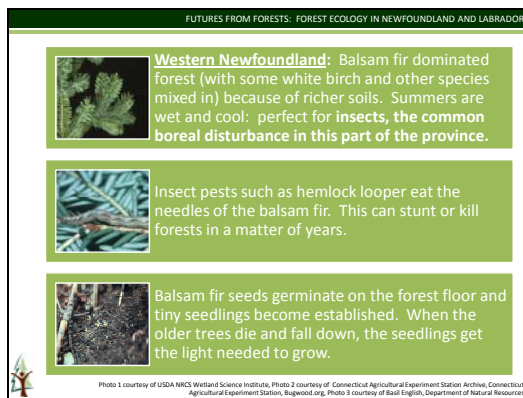
- Which of the common Boreal disturbances pictured here are natural disturbances?
- Which are man-made disturbances?
- Which ones may have some elements of natural and man-made disturbances?

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Serotinous: Late in developing, opening, or blooming. For example, serotinous pine cones may persist unopened on the tree for years and only burst open during a forest fire. Serotinous flowers on trees develop only after the tree has produced leaves.

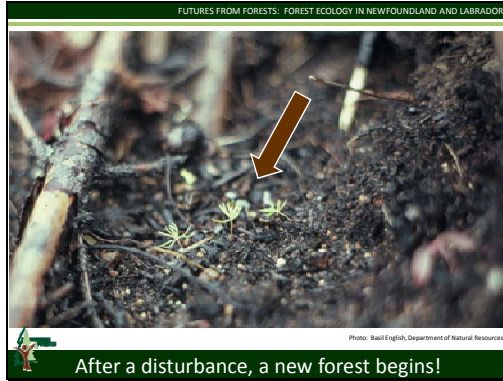
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•For further information:

- Hemlock looper
<http://imfc.cfl.scf.rncan.gc.ca/insecte-insect-eng.asp?geID=8846&ind=H>
- Balsam fir sawfly
<http://imfc.cfl.scf.rncan.gc.ca/insecte-insect-eng.asp?geID=6564&ind=B>
- Spruce budworm
<http://imfc.cfl.scf.rncan.gc.ca/insecte-insect-eng.asp?geID=12018&ind=S>

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- Young seedlings emerging from the forest floor. These seedlings now await the ideal conditions (sunlight, nutrients, and space) to grow into mature forest trees.
- This is why forests are called a **renewable resource**, as it is a resource that can replace itself and be sustained if managed correctly.

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