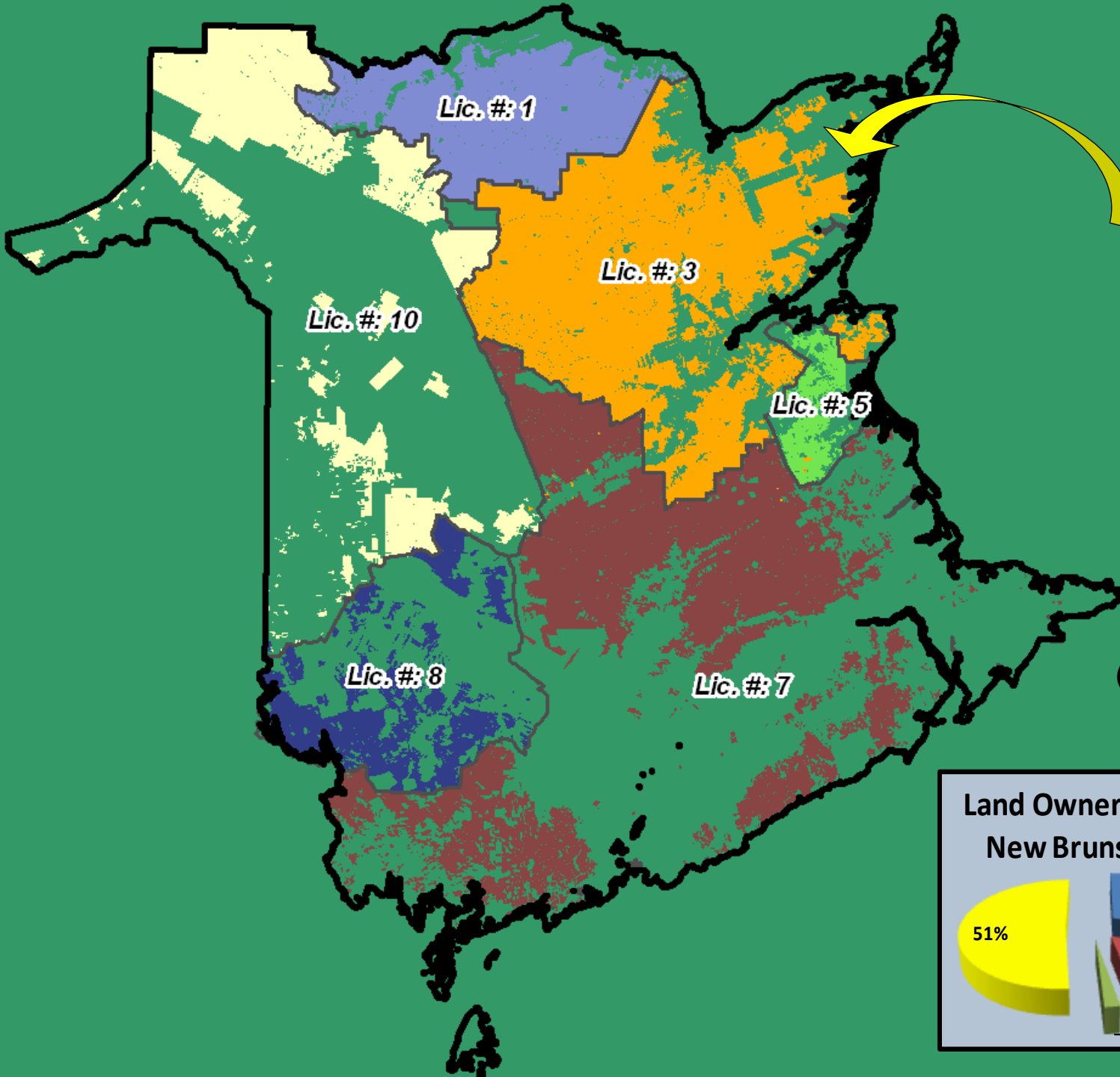
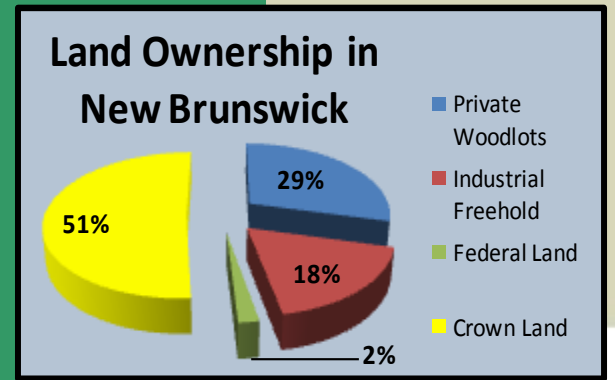


# Our Miramichi Forest and “Changes Over Time”

MVHS Environmental Studies – November 7<sup>th</sup>, 2014



*Fornebu Lumber Company Inc.* is the Crown Licensee responsible for forest management of License #3 covering approximately 1 million hectares (1/3 of N.B. Crown lands).



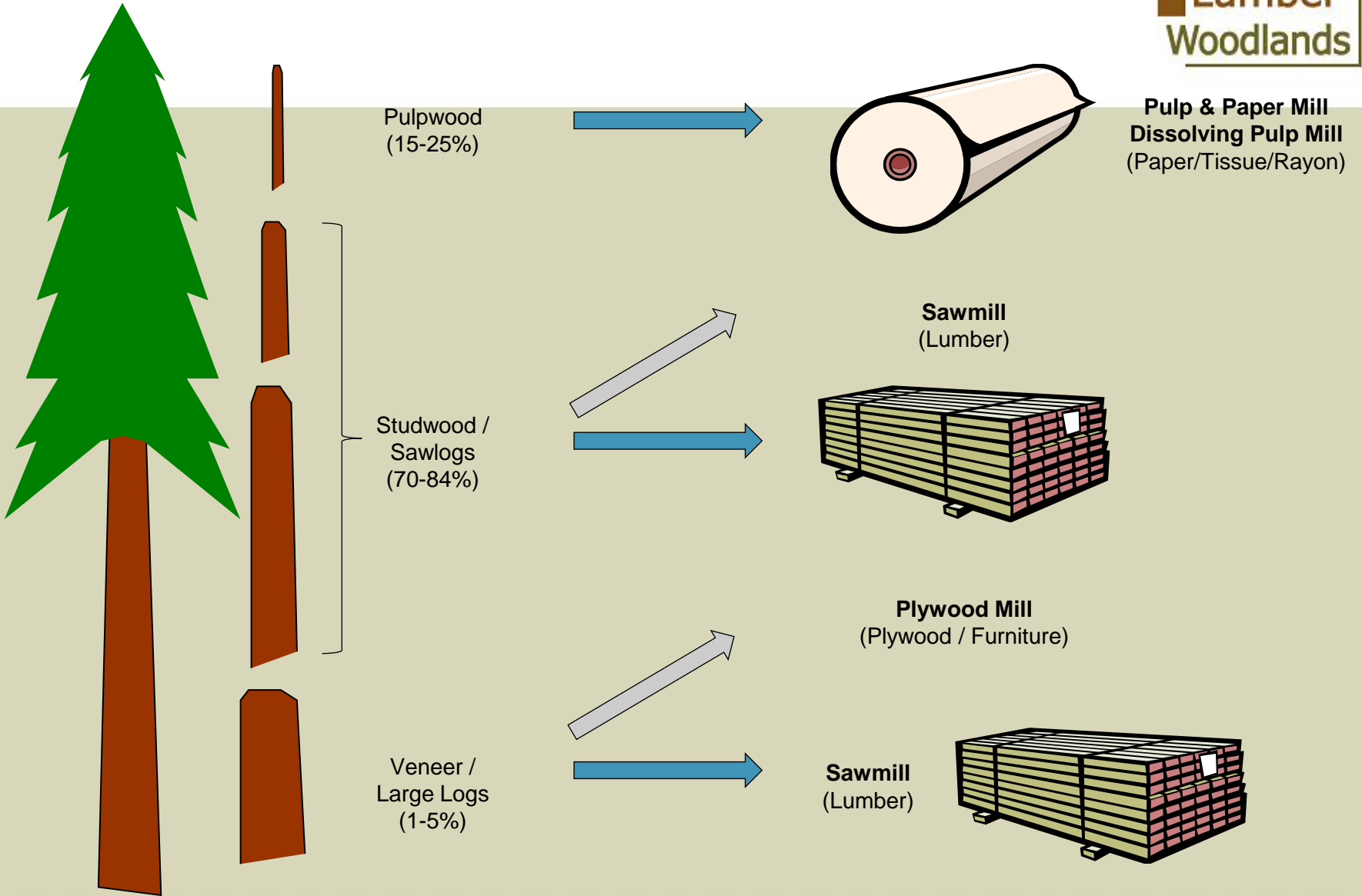
# Woodlands workforce



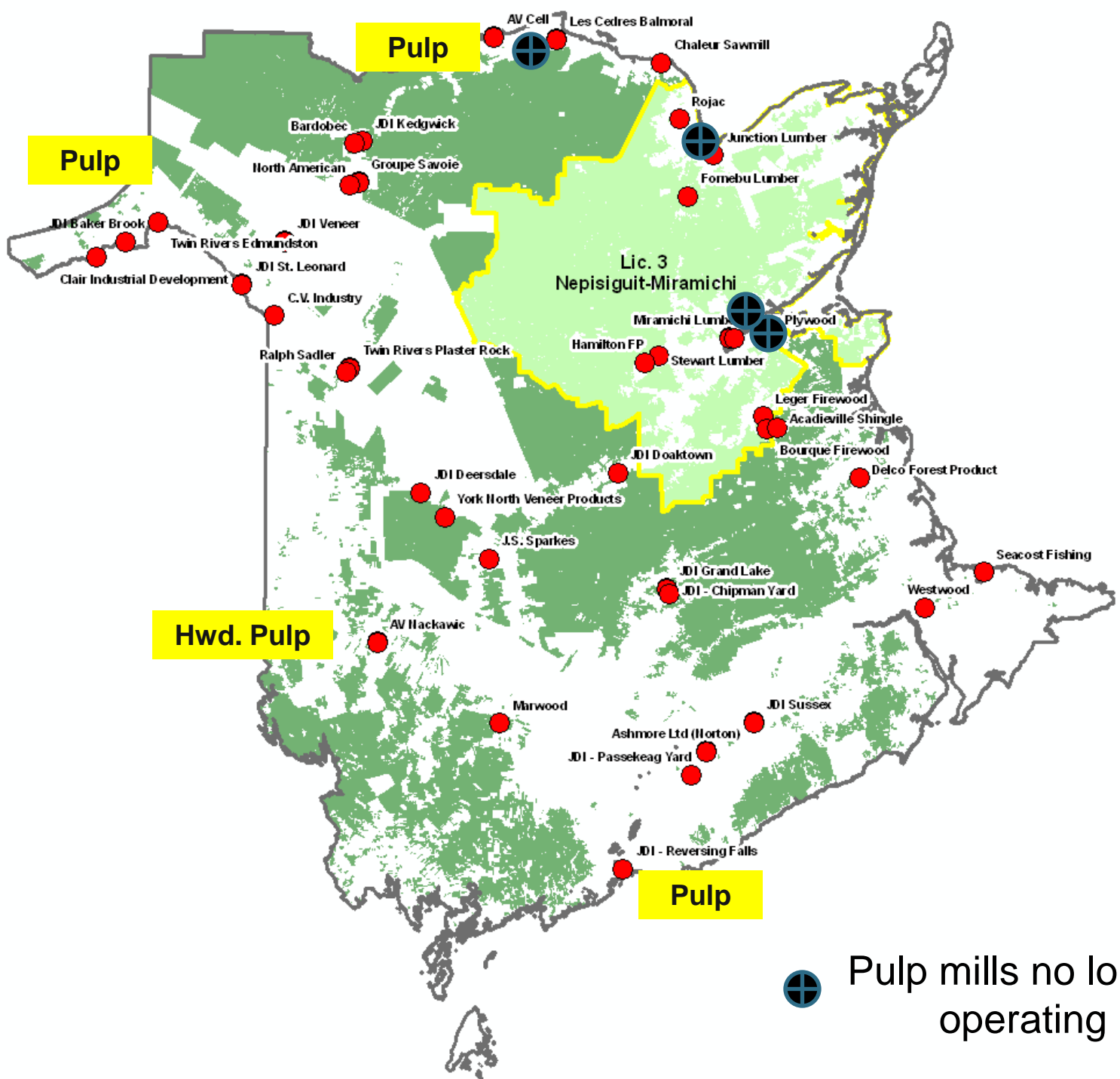
Approximately 800 people work in various occupations on License 3.



# Utilization and Wood Allocation







65,000 years ago – cold trend



15,000 years ago –  
warming trend



15000 Before Present (BP)  
warming trend

Shrub birch, willows, ground plants

Spruce - 10000 - 9000 BP

Larch - 9000-8000 BP

Balsam fir, poplar & white birch -  
9000 - 8000 BP

Jack Pine & Red Pine - 9000-8000 BP

Red Oak - 8000 BP

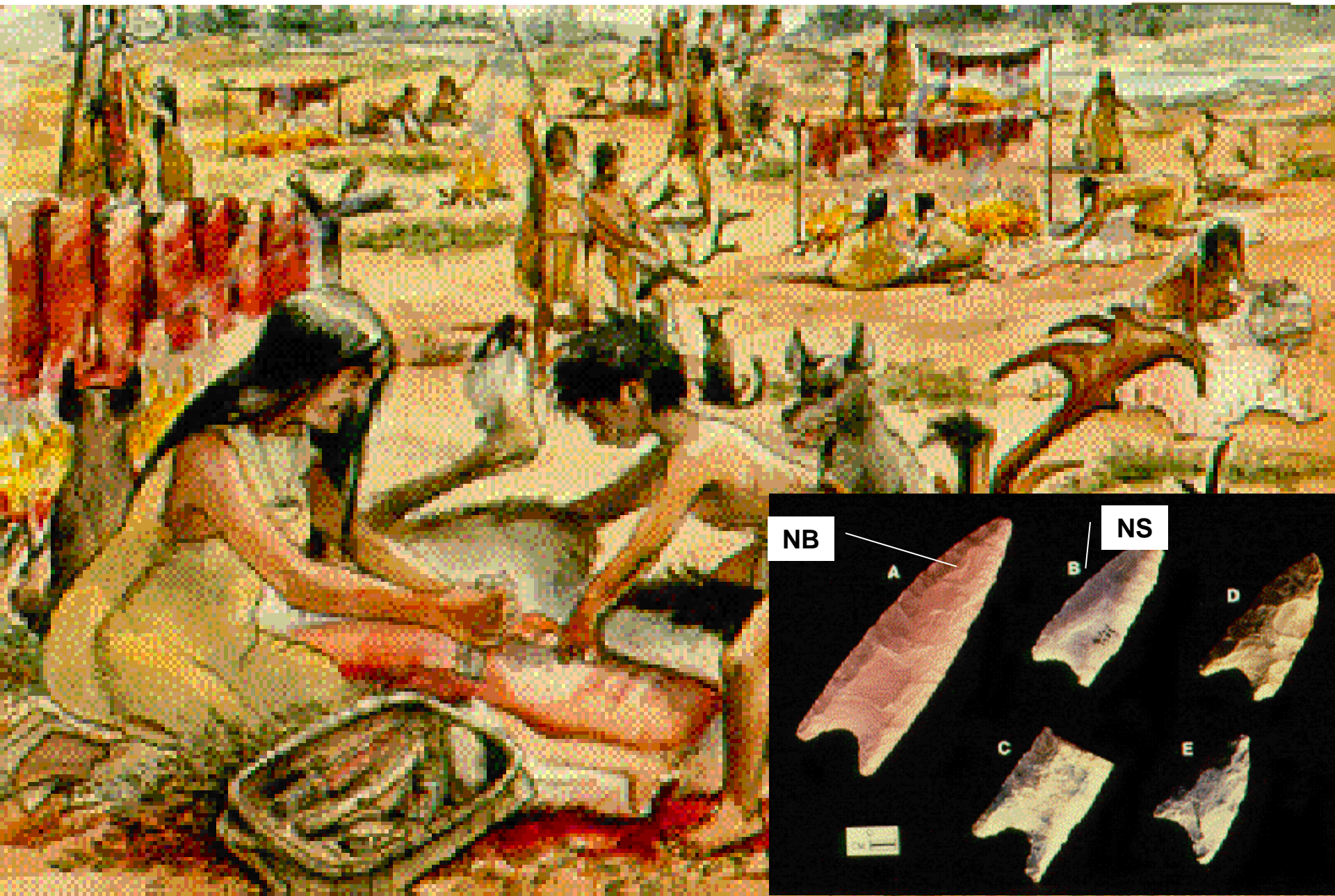
White Pine - 7000 BP WP More  
abundant 5000 BP than present

Hemlock - 6000 BP 5000 BP  
drastic decline in Hemlock (disease?)  
3000 BP achieved its present range.

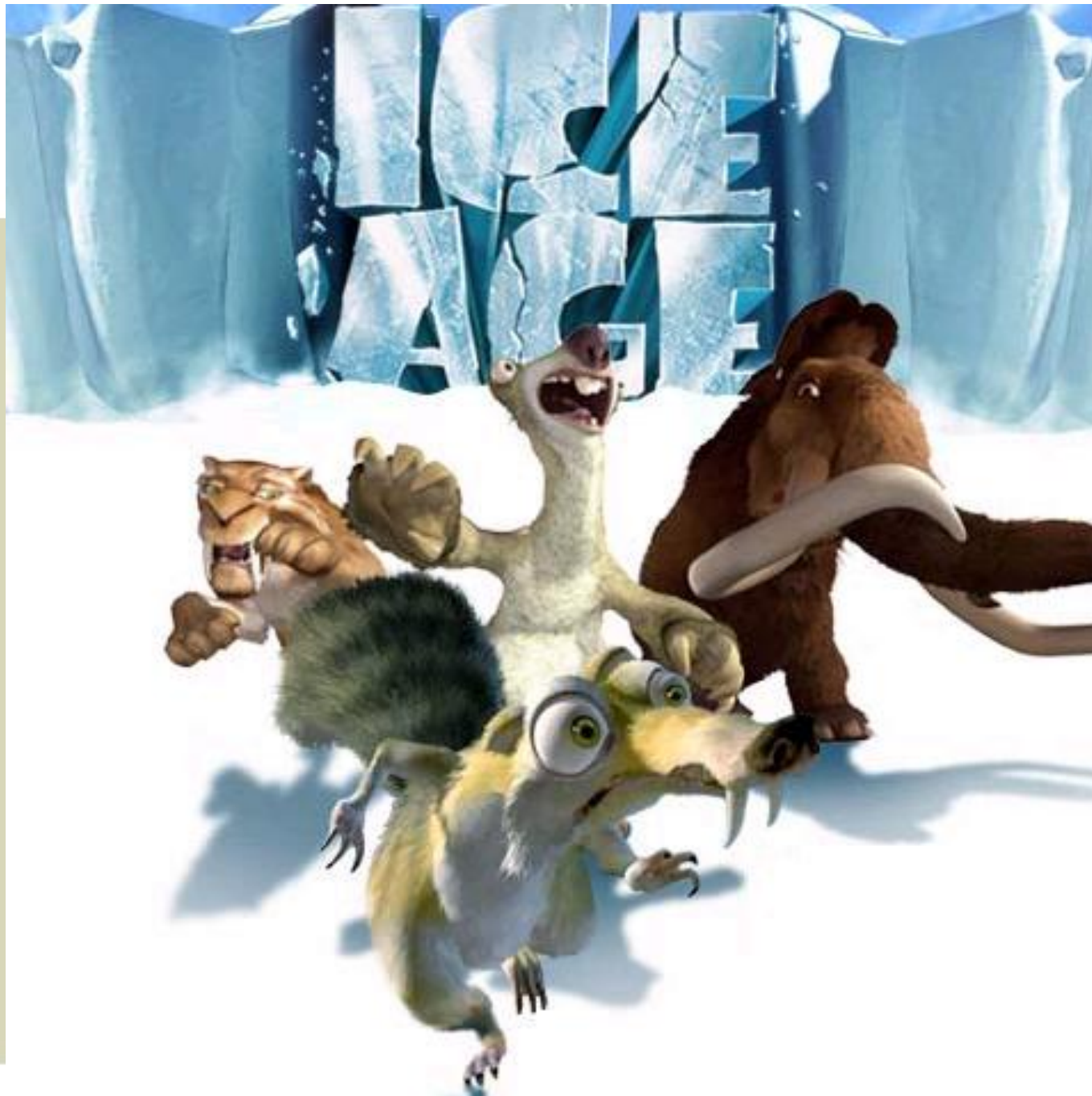
Beech - 5000 BP

Hickory and Chestnut?????

**Paleoecology**







**Some animals became extinct.**

Prior to:  
Guns, poisons,  
pollution,  
roads,  
bounties on  
them, or  
Europeans  
being here.  
Note: Even  
before farming,  
forestry,  
mining,  
subdivisions  
and shopping  
centers !



**Mass extinction**  
**Hyper Disease?**



# North American Mammoth Locations.

All mammoth species are included.

All are extinct.





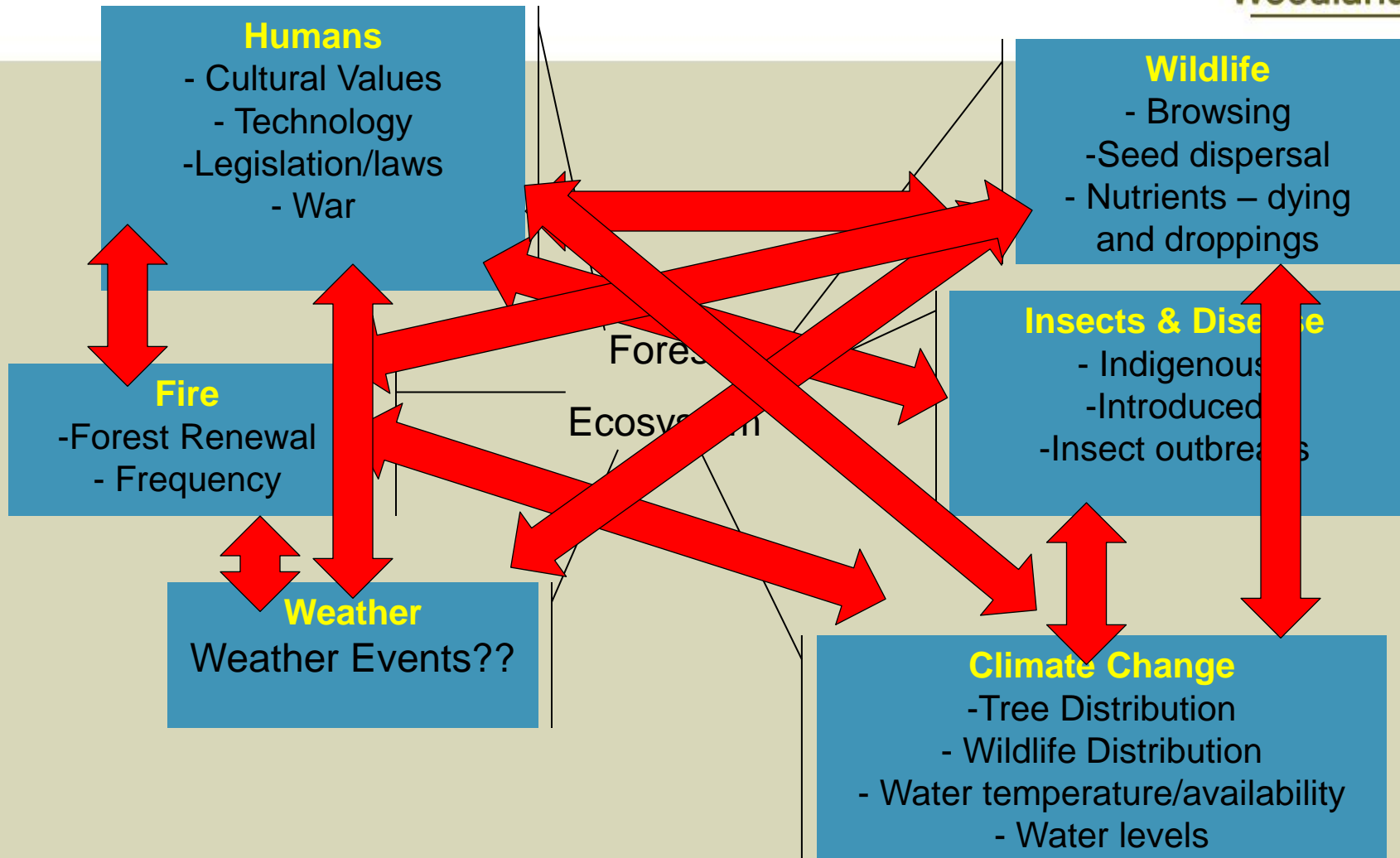


# Wildlife reacts to "stress" as well



Am I going  
to survive?

All of these boxes are interconnected and changes can cause stress on wildlife, plants...and us



# Extinct Animals – New Brunswick Since European contact

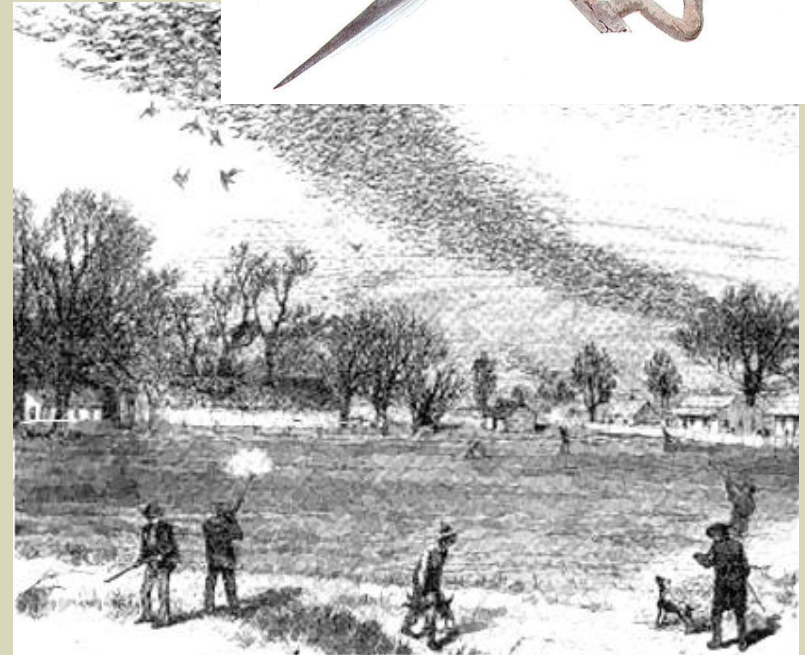
Some estimate there were  
3 to 5 billion birds

They were “excessively” hunted (poor  
person’s food?, fun, and even pig  
food)

On September 1, 1914, Martha, the  
last known Passenger Pigeon, died

Another significant reason for its extinction was deforestation.

The birds traveled and reproduced in prodigious numbers, satiating predators before any substantial negative impact was made in the bird's population. As their numbers decreased along with their habitat, the birds could no longer rely on high population density for protection. Without this mechanism, many ecologists believe, the species could not survive.





### Labrador Duck

- Meat tasted bad
- Eggs and feathers valued?
- Humans consumed their food – mussels, other shellfish



### Great Auk

Food, eggs, down,  
bait for fishing  
1844 last pair were  
killed



### Sea Mink

Fur trade  
Last known  
specimen may  
have been in NB on  
1890?



**More extinct NB Animals  
Since European contact.**

*What do they have in  
common?*





Camp Exchange — The Home Camp in summer, above, and winter, right.

**Arthur Pringle – Big Game hunting guide  
Bald Mtn area – early 1900's**







r  
t  
i  
b  
t  
t  
b  
a  
e  
r  
r  
t  
t  
t  
E  
i  
a  
r



E  
L  
M  
r  
s  
E  
f  
c  
E  
v  
u  
a

FIGURE 12, 1911



# Extirpated

Once lived in a place but is now  
found somewhere else



r  
t  
i  
b  
t  
t  
b  
a  
e  
r  
r  
t  
t  
t  
E  
i  
a  
r



# Extirpated



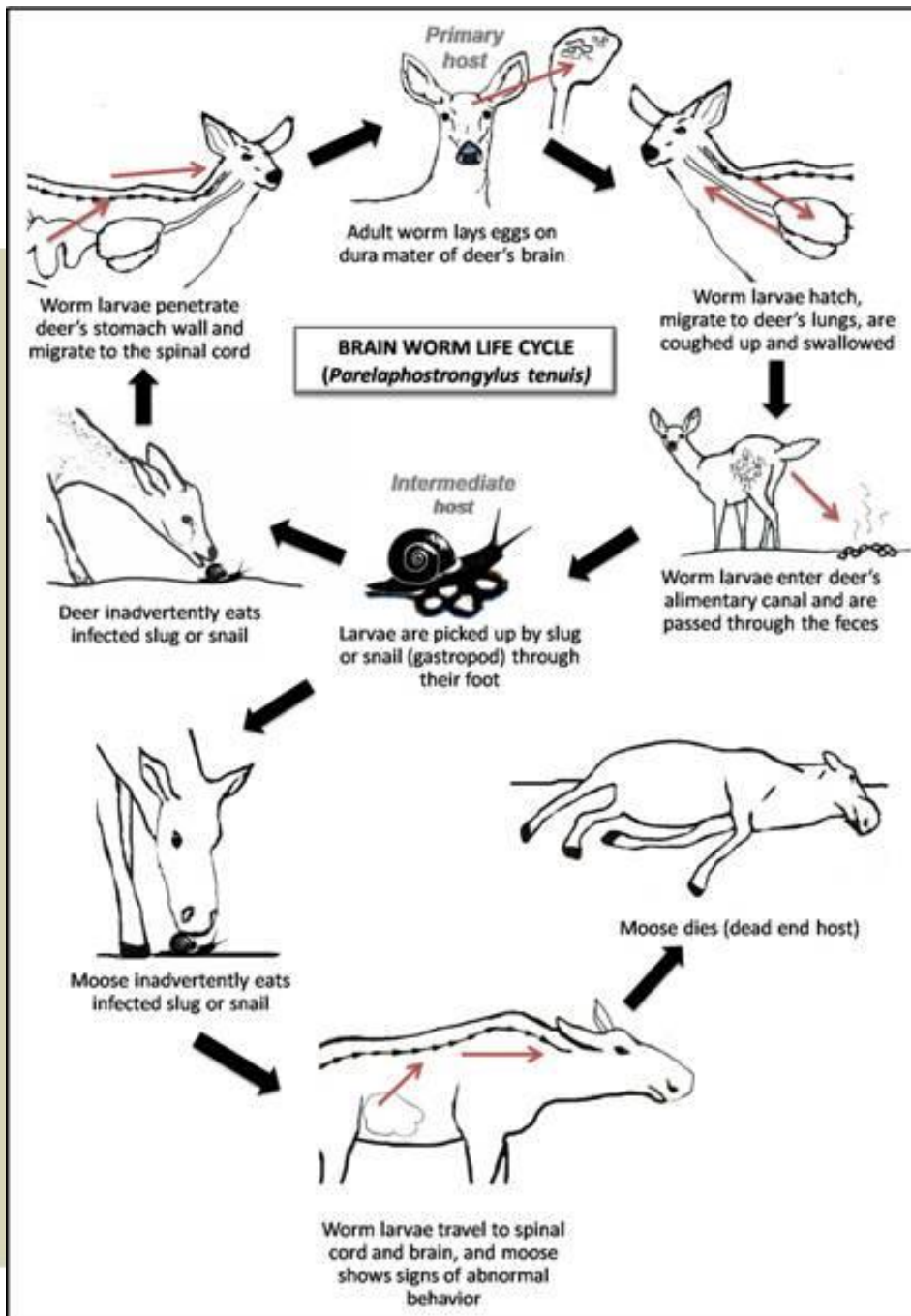
**The Maritime population  
is considered extirpated.**

Sometimes, non-native animals, or plants, naturally fill a void left by wildlife that is extinct or extirpated.

Sometimes an animal or plant moves in and it seems like it belongs here.







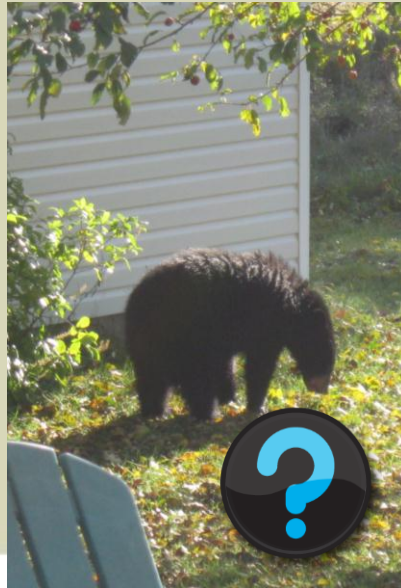
**What “stresses” might White Tail Deer place on other wildlife?**

***P Tenuis***

The brainworm present in the eastern white-tailed deer prevents other ruminants like moose and caribou from entering their territory and creating a competitive environment.

It can also kill sheep and goats.

# What “stresses” might White Tail Deer experience?







- Eastern Coyotes are coywolves (hybrid)
- Appears they are an emerging “species”
- Adaptable like coyotes
- Hunt in packs and take down large game like wolves
- Bolder and more intelligent than regular coyotes?





**Western Coyote**

**58 lbs 6 oz – Near Dalhousie**





**86 lbs – Near Caraquet**

## **Extirpated?**

**Wolves were considered extirpated from NB. ( 15 shilling bounty on them in 1858...last one was killed in 1876)**

**Extirpated animals and plants can “re-colonize”**

# Laws and our value of wildlife



**6 years later**

**66<sup>th</sup> Annual Report of the Crown Land Department  
of the  
Province of New Brunswick  
For the year ended 31<sup>st</sup> October 1926**

***Beavers have been protected for a number of years back, some years ago permits were granted in limited number to trap them in season, but this resulted in abuses and was discontinued. I humbly submit that the close season on them be extended another three years.***

**In that same report...**

***Paid out a bounty of \$13,946 on 2790 wildcats killed  
We have been asked to increase the bounty from \$5 to \$10, but I could not recommend this as I believe the drain on the treasury is now too great.***

***I recommend that the close season for partridge be continued for another year as they are apparently as scarce as they have been for the last two or three years***

---



*They thrive best where forests are kept young and vigorous by occasional clear-cut logging, or fire, and gradually diminish in numbers as forests mature and their critical food and cover resources deteriorate in the shade of a climax forest.*

**Predation – owls, goshawks**

**Winter – At least 10% perish**

**Weather - Tough winter – hens may not produce as many eggs in Spring  
- Injuries during escape**



*The factors responsible for these periodic fluctuations remain poorly understood, and appear to involve a number of different factors interacting with one another in different ways at different times. The one factor which does not appear to be important is hunting during the period of fall dispersal.*





What happened to  
the beaver population  
“rebound”?

We are not starving

Laws



We have made some great habitat for them

No \$ in trapping

No current desire to wear furs





# NB Species and Canadian Species at Risk Act



**1. Know the species under the most stress  
(animals and plants in our training and green  
book supplement)**

**Species at Risk Act – SARA**

**NB Endangered Species Act**

**COSEWIC list depicts which species are at risk (Committee on  
the Status of endangered wildlife in Canada)**

**Internet, news articles related to wildlife under “stress”**



|                    |   |            |   |
|--------------------|---|------------|---|
| Southern Twayblade | 8/1/2009 Cranberry Lease                  | <Null>     | Reported by Ocean Spray Environmental Assessment  |
| Wood Turtle        | 7/1/2009 Cains R./Sabbies                 | <Null>     | James McKervill ( camp partner ) in discussion with TVB noted that wood turtles use island for nesting purposes. Many turtle tracks, sand mounds in the area. |
| Wood Turtle        | 5/29/2010 Bartibog                        | <Null>     | Reno Sonier noted turtle while he was fishing.  |
| Wood Turtle        | 5/30/2010 Cains river                     | <Null>     | Rick Gorges and Phil Riebel noted turtle while they were canoeing.  |
| Common Nighthawk   | Former                                    | Tony       | Noted a pair of nighthawks flying over a field.   |
| Common Nighthawk   | 6/15/2010 Douglastown Tower Road          | Vanbuskirk | billy Donahue reported a night hawk at this location  |
| Common Nighthawk   | 6/17/2010 Blackville Area                 | Vanbuskirk | Billy Donahue reported several night hawks in the evening in this area.   |
| Canada Lynx        | 7/20/2010 Rennie Road Area                | <Null>     | Lynx crossed road and then stared at me from the woods. Could not get camera ready in time!   |
| Wood Turtle        | 5/11/2011 Nepisiguit River Road           | Vanbuskirk | Reported by Howard Russell - Wood turtle  |
| Canada Lynx        | 6/21/2011 Cains Road                      | <Null>     | Howard Russell took a picture of a Lynx enjoying St.Patrick's Day!  |
| Wood Turtle        | 3/17/2012 Fraser Burchill Road            | Vanbuskirk | Billy Donahue reported a wood turtle at this location.  |
| Wood Turtle        | 6/20/2012 Prison Farm Rd. Underwood brook | Vanbuskirk | Billy Donahue reported his second turtle of the day.  |
| Wood Turtle        | 6/20/2012 Road                            | Vanbuskirk | Howard Russell noted a wood turtle.   |
| Wood Turtle        | 6/16/2012 Rd. Old mullin Stream           | Vanbuskirk | Jean Godbout noted a wood turtle.   |
| Wood Turtle        | 6/16/2012 Renous Hwy.                     | Vanbuskirk | Peter Dignam noted a turtle on the roadside.  |
| Wood Turtle        | 7/16/2012 Whitney Brook                   | Vanbuskirk | 4 nighthawks flying over field beside house   |
| Nighthawk          | 8/1/2012 Douglastown                      | Vanbuskirk |   |





# How Do Bats Help People?

---



Bats **eat bugs** so the bugs don't bug people! Bats keep the insect population down. One small brown bat can eat 1,000 mosquitoes in one hour!



**Endangered (threatened COSEWIC)**

**Common Nighthawk (species in our green book supplement  
“Wildlife, Special Sites and Invasive Species Guide”)**



- flying insects are its preferred food
- Nests on the ground. Eggs and young are susceptible to predators

Areas surveyed over the last three generations have shown an almost **50 percent decline** in the species! Reasons for its decline may include **reductions in the number of insects** and **loss of the open habitat** in which it thrives.



# Questionnaire



## ATLANTIC SALMON

**Gaspe- Southern  
Gulf of St. Lawrence  
Population  
“Special Concern”**

*You can make a difference:  
your comments are important!*



# Adding a population to the **LIST OF WILDLIFE SPECIES AT RISK**

---

The process of listing a species under the *Species at Risk Act* consists of several steps. It starts with a status assessment by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) and ends with a government decision whether or not to add the population to the List of Wildlife Species at Risk.

If it is listed as special concern:

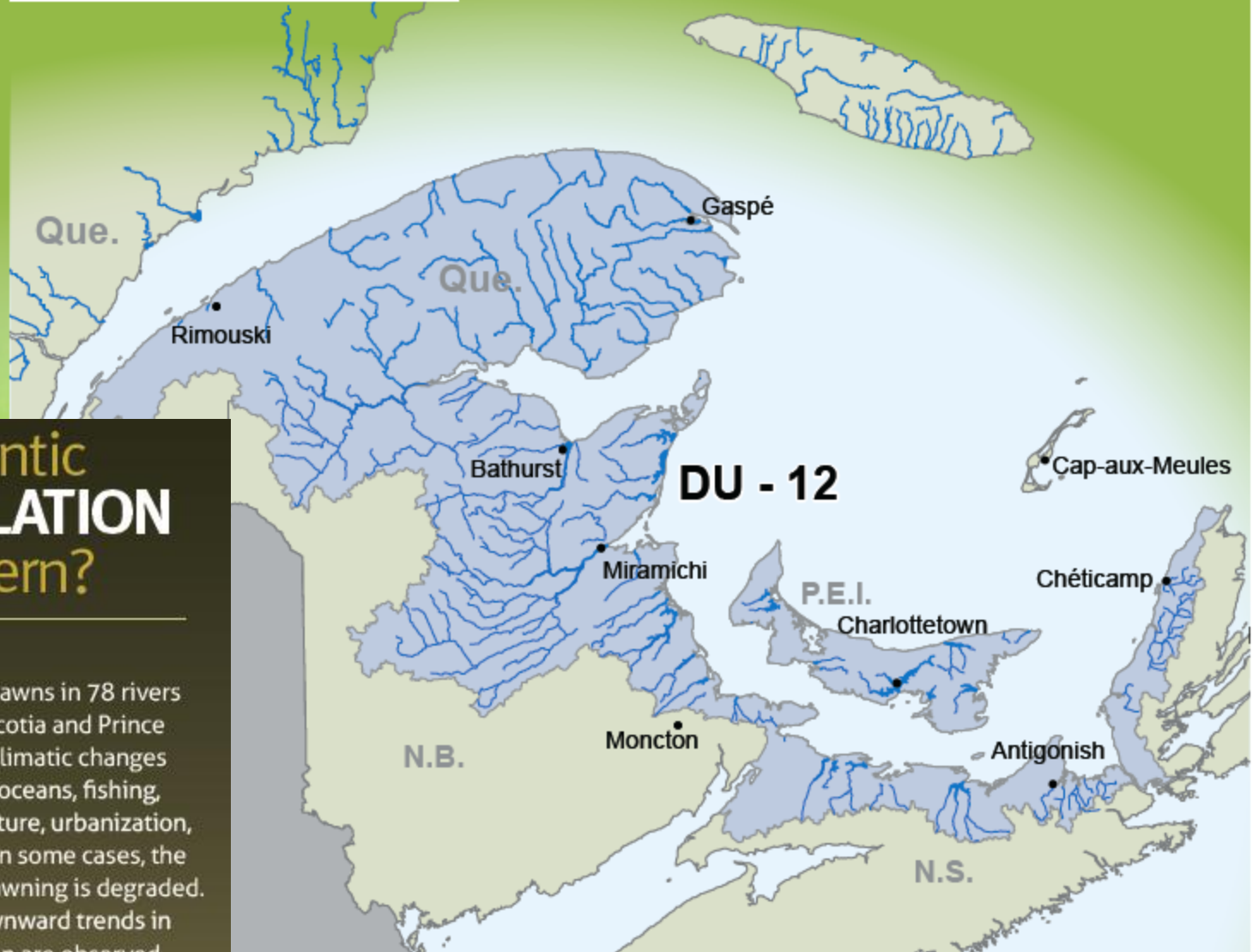
Management Plan must be developed to reduce threats and set goals and objectives

Plan would be in cooperation with provinces and Aboriginal people



- Main salmon rivers
- Designatable Unit (DU)**
- 12 - Gaspé-Southern Gulf of St. Lawrence

**Range**  
of this Atlantic Salmon population  
(Gaspé-Southern Gulf of St. Lawrence)  
targeted for this consultation



## Why is this Atlantic Salmon **POPULATION** of special concern?

This Atlantic Salmon population spawns in 78 rivers in Quebec, New Brunswick, Nova Scotia and Prince Edward Island. It is threatened by climatic changes and environmental changes in the oceans, fishing, obstructions in fresh water, agriculture, urbanization, aquaculture and invasive species. In some cases, the freshwater habitat required for spawning is degraded. For this population, significant downward trends in the number of small or large salmon are observed.









# Red Spruce















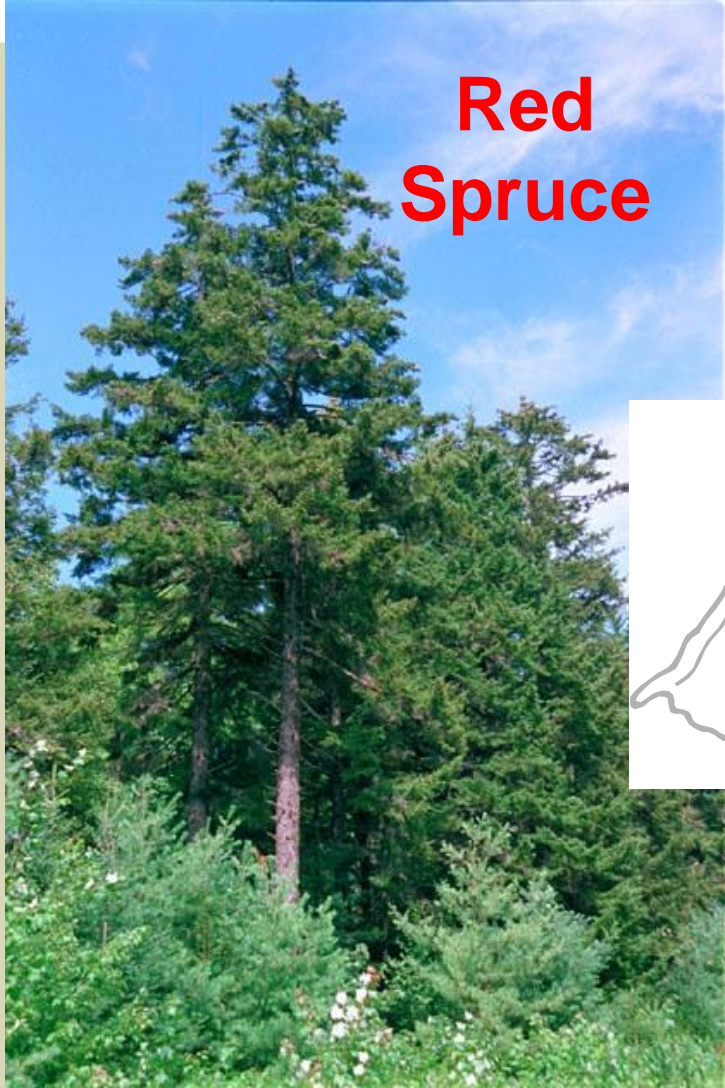
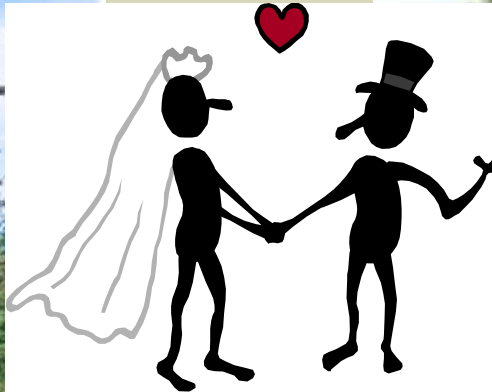


# Black/Red Spruce “Hybrid”

Red  
Spruce



Black  
Spruce





## 2. Notify supervisors when you see nest, den or special habitat sites



**2. Notify supervisors when you see nest, den or special habitat sites**





**TWO WEEK  
SUBMISSION**

Map: 4825

Block: 203OPMR0010CC Photo: 05503-96

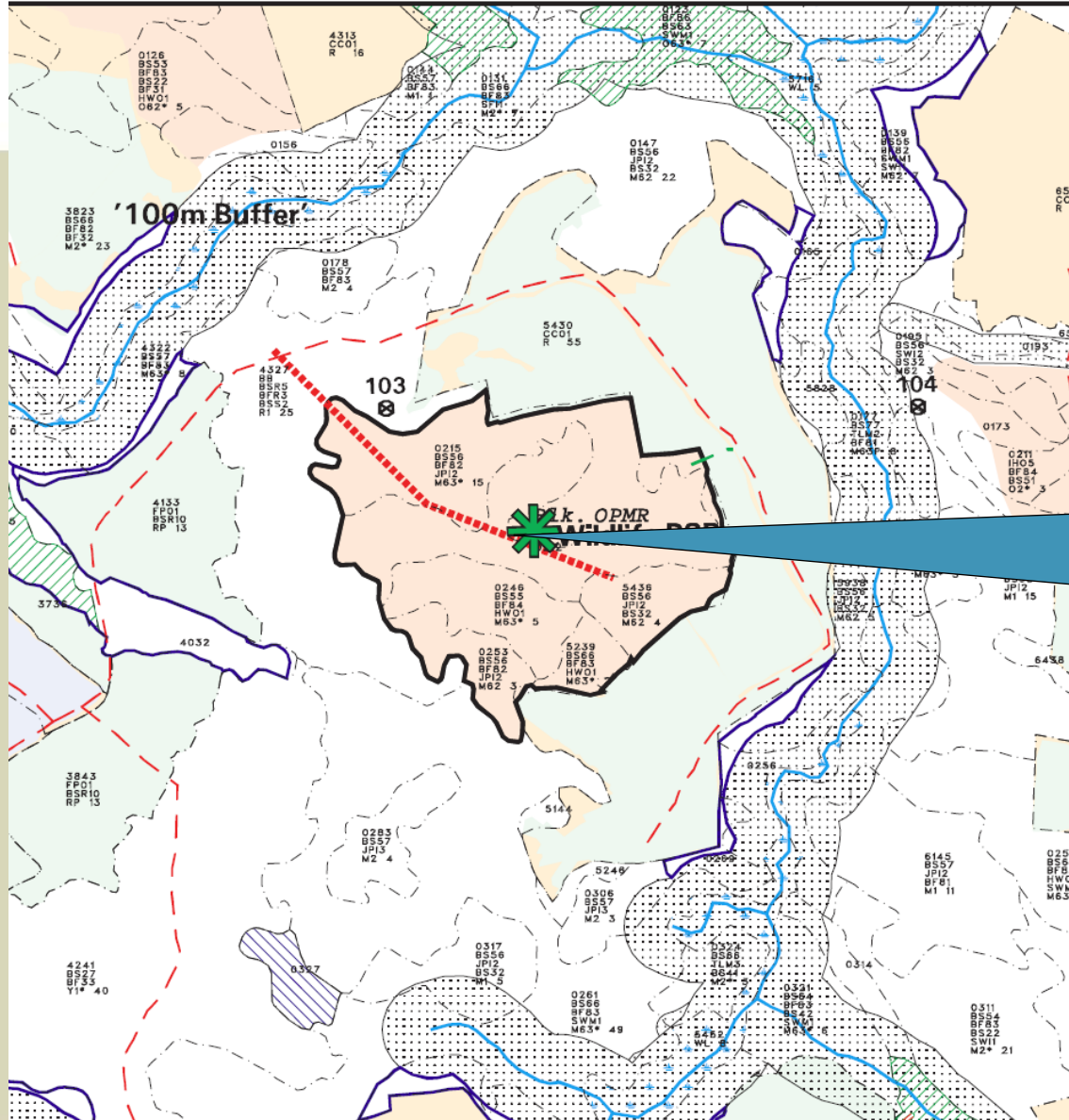
Gross Area: 38.8

Scale: 1:12500

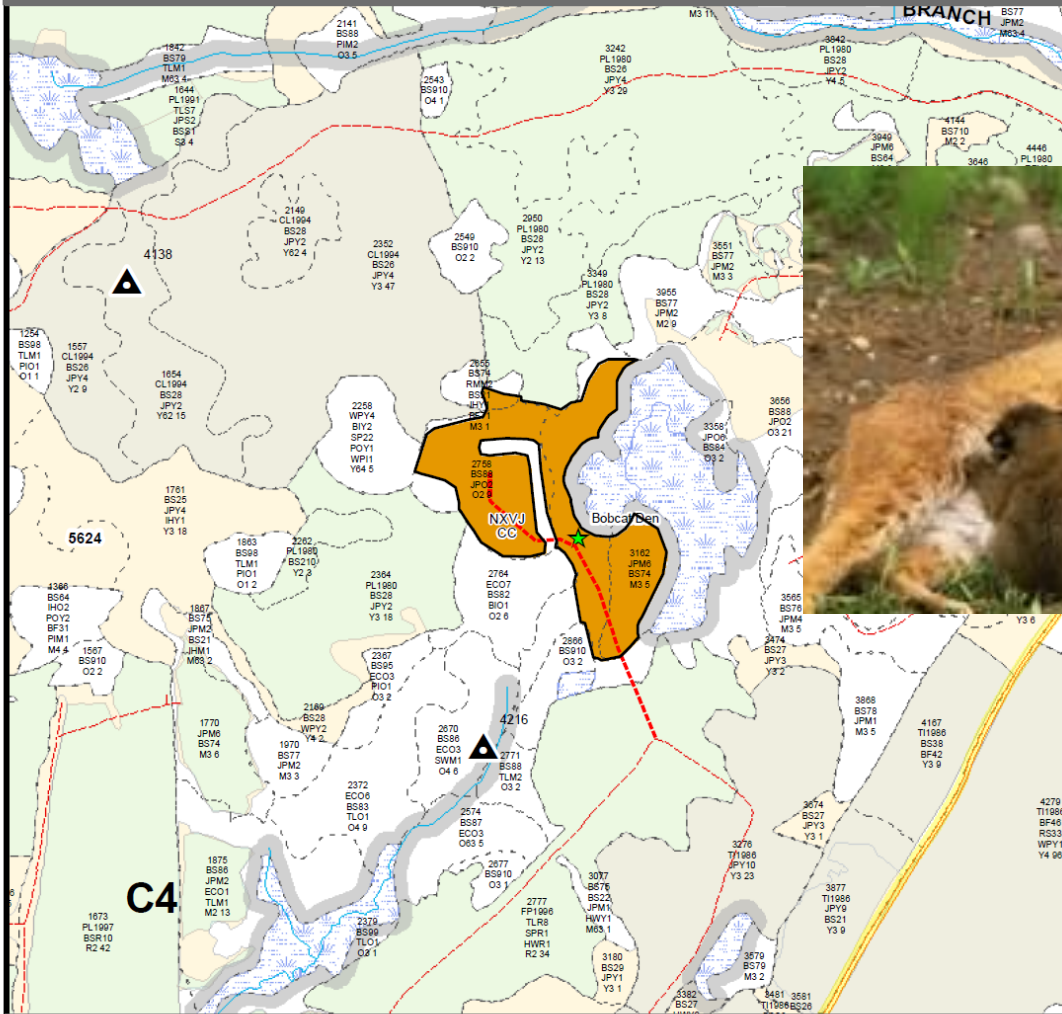
Net Area:

Date: June 08, 2010

**Fornebu  
Lumber  
Woodlands**



**Nest site is marked  
in our GIS system.  
Operating plan  
comment  
- Hawks nest on block.**



Treatment: **CC**  
Proposed Operator:  
Landbase: **General Forest**  
Location: **Bartibog**



| Species      | Volume (m3) |
|--------------|-------------|
| Spr,Fir,Jp   | 1512        |
| Tol. Hwd     | 3           |
| Int. Hwd     | 96          |
| Poplar       | 10          |
| Cedar        | 21          |
| Pine         | 30          |
| Hemlock      | 0           |
| <b>Total</b> | <b>1672</b> |

- Fornebu Holdings
- Watertable
- <VALUE>
- 0 - 0.1
- 0.100000000 - 114.4042178
- AcadianForest
- DesignatedRoads
- 10 m Contour (DEM)
- ConservationForest
- Sugary\_Leases
- Family/Leases
- Camp\_Leases
- Wetland
- Nonforest\_New
- Planting
- Thin/Clean
- Harvest\_All\_To\_2010
- Snowmobiletrails
- ATVtrails
- SNBtrails

Comments: **Keep ROW <= 15 m through Plantation.**  
**Confirm Bobcats have left the den before road building commenced.**



If an animal is under stress, even little things can make a difference! Example – Endangered wood turtle



3. Discourage any introduction of “non-native” species





**Introduced  
as a sport  
fish**



**Late 1800's  
introduction**



**Introduced  
...or arrived  
by floods.  
2004  
season  
opened**



## Nightcrawlers Ruining Northern Forests?



Earthworms have long been considered a friend to farmers and home gardeners, playing a vital role in soil quality. However, recent studies have shown that glaciated forests in North America—forests that evolved without native earthworms--now face the invasion of European earthworms from agriculture and fishing.



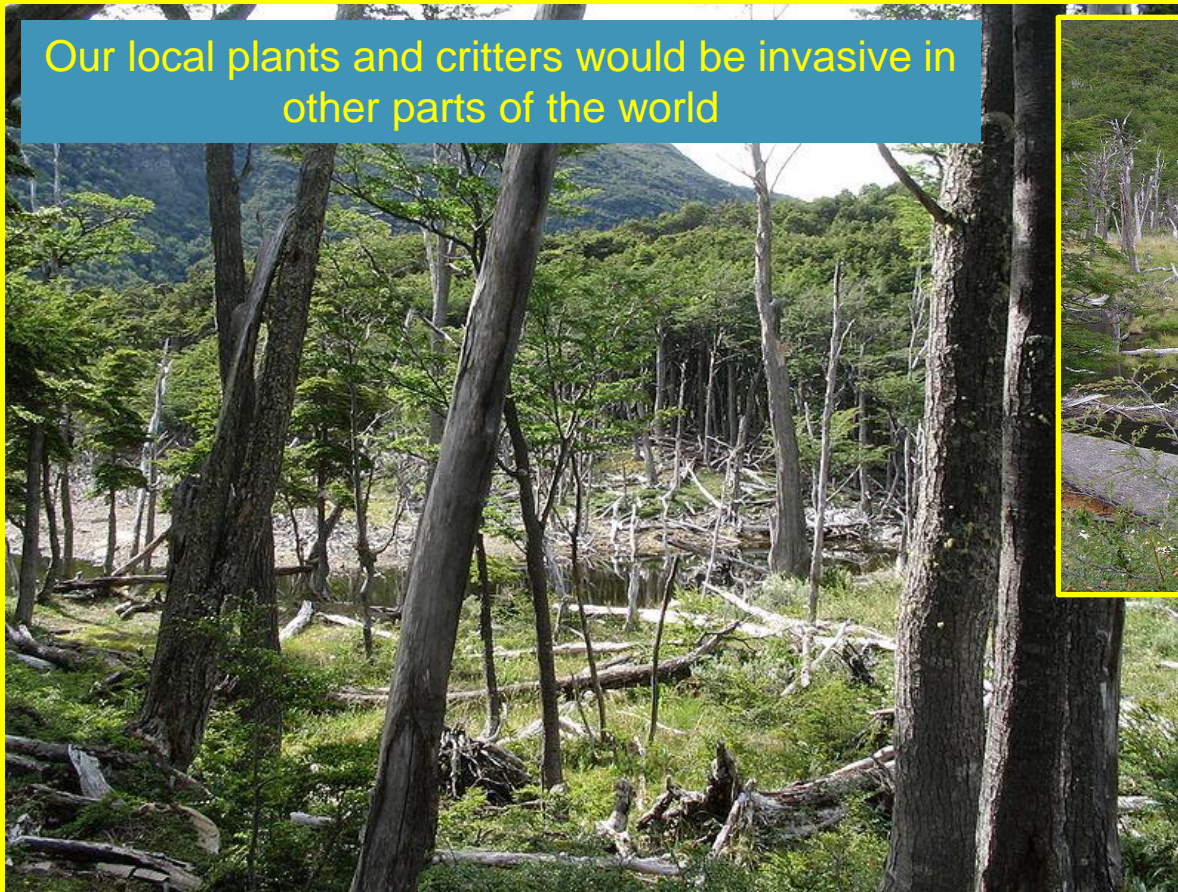
A photograph of a dense forest of beech trees. The trees are tall and slender, with green leaves. The ground is covered in fallen leaves and low-lying vegetation. A blue text box is overlaid in the upper right corner of the image.

## Beech bark disease

- Documented in Europe in 1849.
- At first, it was believed that the insect was the main cause of the disease. (non-native insect)
- 1890 European Beech trees brought to Halifax
- 1914 fungus was associated with the disease.



Our local plants and critters would be invasive in other parts of the world



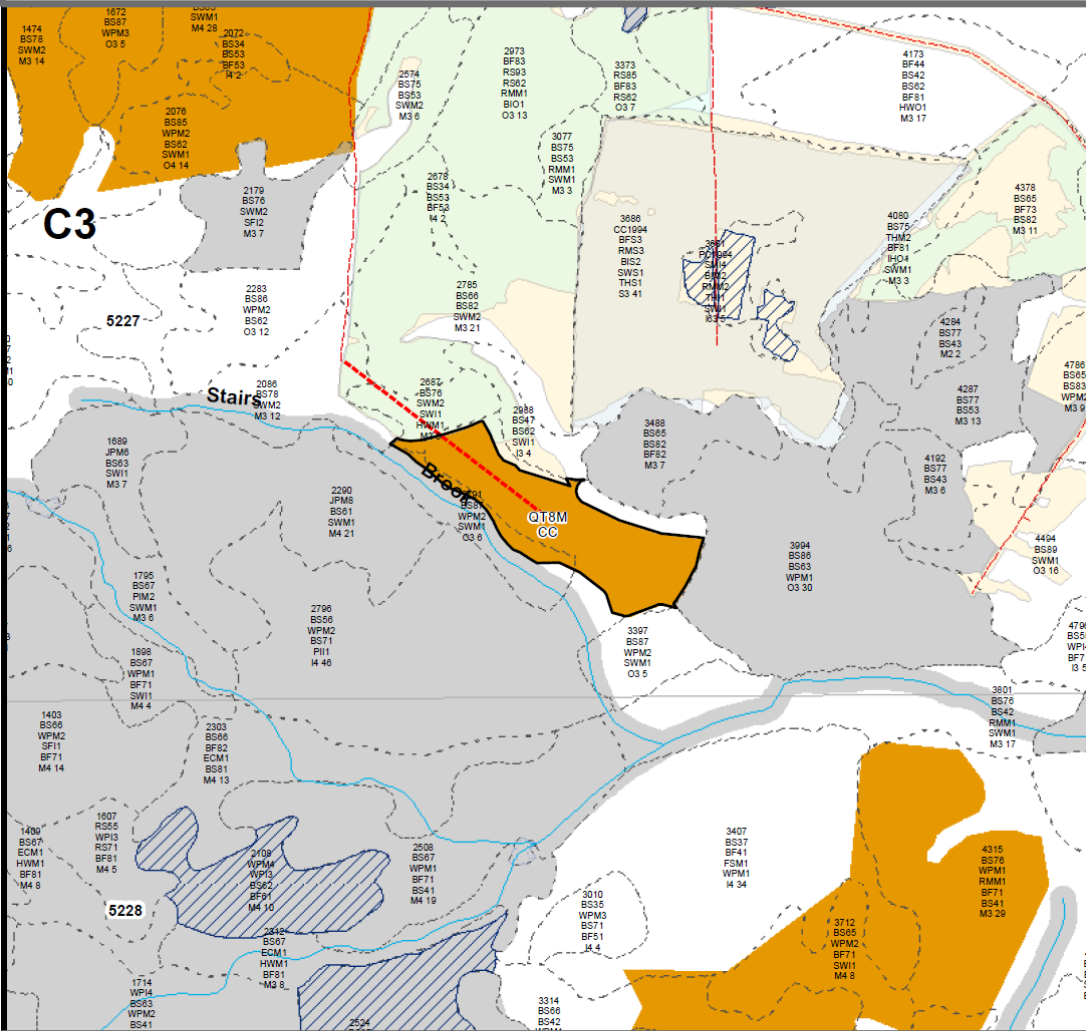
What “stresses” did the beaver bring to this ecosystem versus our ecosystem?

**Beavers were introduced to Chile and Argentina in 1946** to develop a commercial fur trade. The project failed and beavers were released into the wild. "The change in the forested portion of this area is the largest landscape-level alteration in the last 10,000 years"

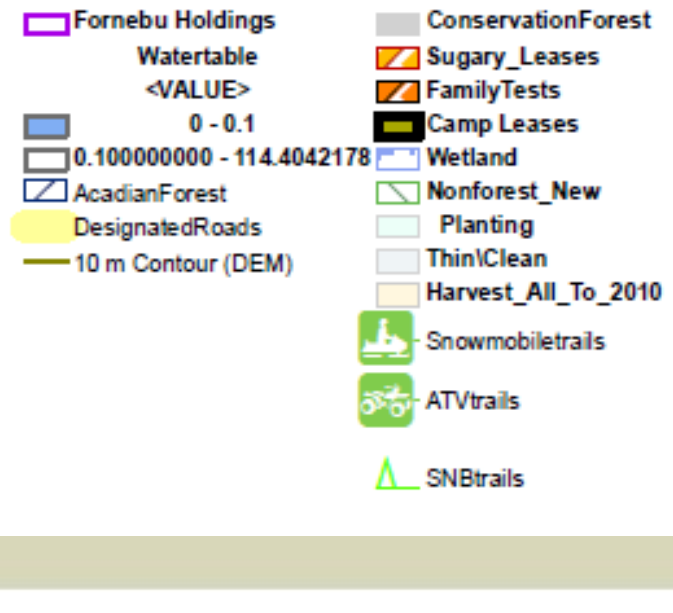
- Flooded areas not meant to be flooded!
- Made wetlands where none were needed
- Cut down trees that did not respond to growing back as suckers
- Wide scale destruction since beavers have no natural enemies in their new home.
- threaten 16 million hectares of native forest (approx 2 NB's)



# Protection of Forests with Exceptional conservation Value



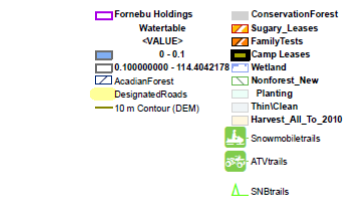
**4. respect mapped habitat areas**



Treatment: **CC**  
Proposed Operator:  
Landbase: **General Forest**  
Location: **Sheephouse**

**Species Volume (m3)**

|              |             |
|--------------|-------------|
| Spr, Fir, Jp | 1157        |
| Tol. Hwd     | 37          |
| Int. Hwd     | 37          |
| Poplar       | 0           |
| Cedar        | 0           |
| Pine         | 257         |
| Hemlock      | 0           |
| <b>Total</b> | <b>1488</b> |



Comments: **Keep ROW <= 15m through PL area**





**5. Support and assist studies that help us better understand wildlife and ecosystems**





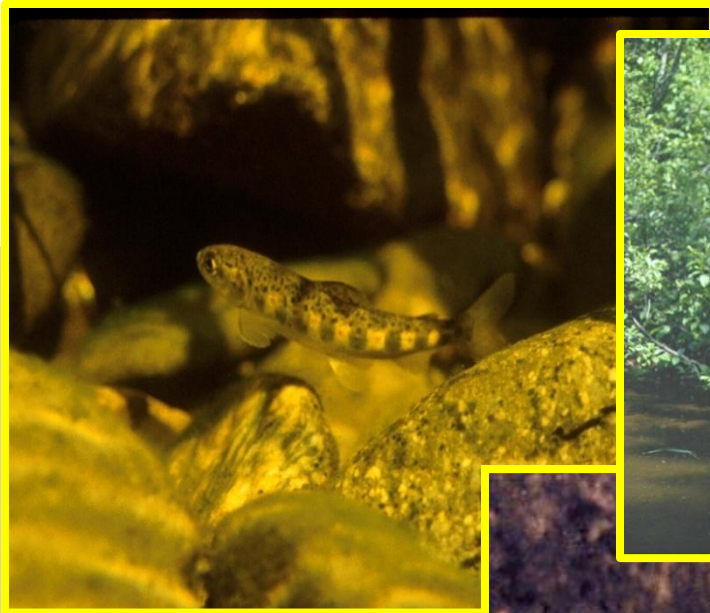
Cabela's

Catamaran Brook Research  
Commenced in 1989 – salmon focus & forestry focus





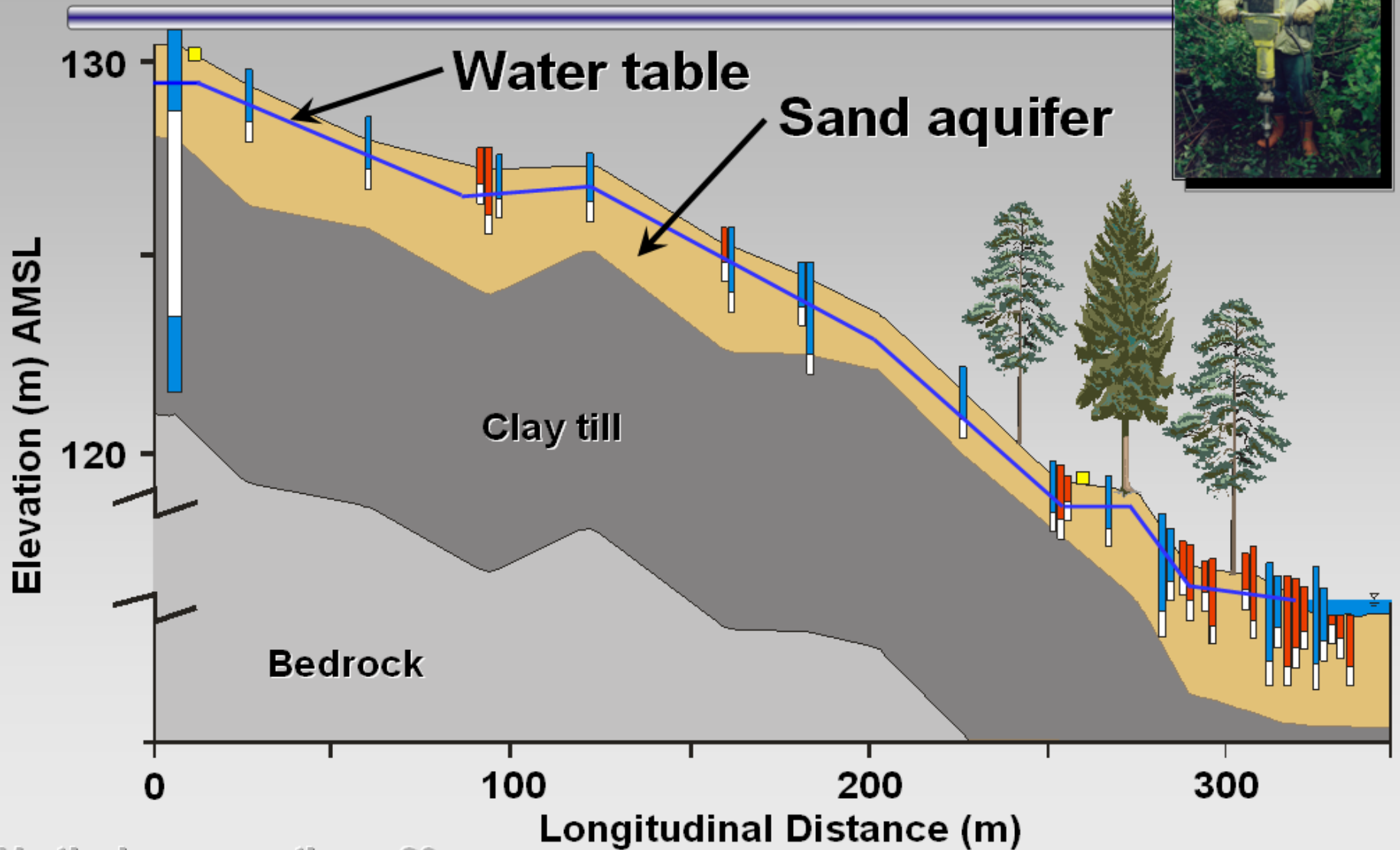




To date, over 70 publications and 26 theses have been published resulting from research conducted at Catamaran Brook.



# Site instrumentation



Vertical exaggeration = 20 x

# Conclusions Continued

---

- 5) **Modelling showed that buffer strips  $> 15$  m wide provide sufficient thermal protection 7 - 8 years post-harvest**
  
- 6) **Buffer strip guidelines in New Brunswick appear sufficient to mitigate groundwater temperature increases related to clearcutting**









A photograph of a snowy forest. In the center, a large tree trunk has a significant hole in it, likely made by a woodpecker. The ground is covered in snow, and other trees are visible in the background. A yellow rectangular box is overlaid on the right side of the image, containing the text "Woodpecker Study".

# Woodpecker Study











# Summary

- Standing dead wood in cutblocks is beneficial to woodpeckers
- Important to maintain large patches of mature forest in landscape



1. Move machinery away from the area
2. Contact supervisor – we will contact DNR biologist
3. Figure out best new work area

4. Area will be mapped as a den site and work will proceed at a later approved time.

**What might have happened in 1926?**

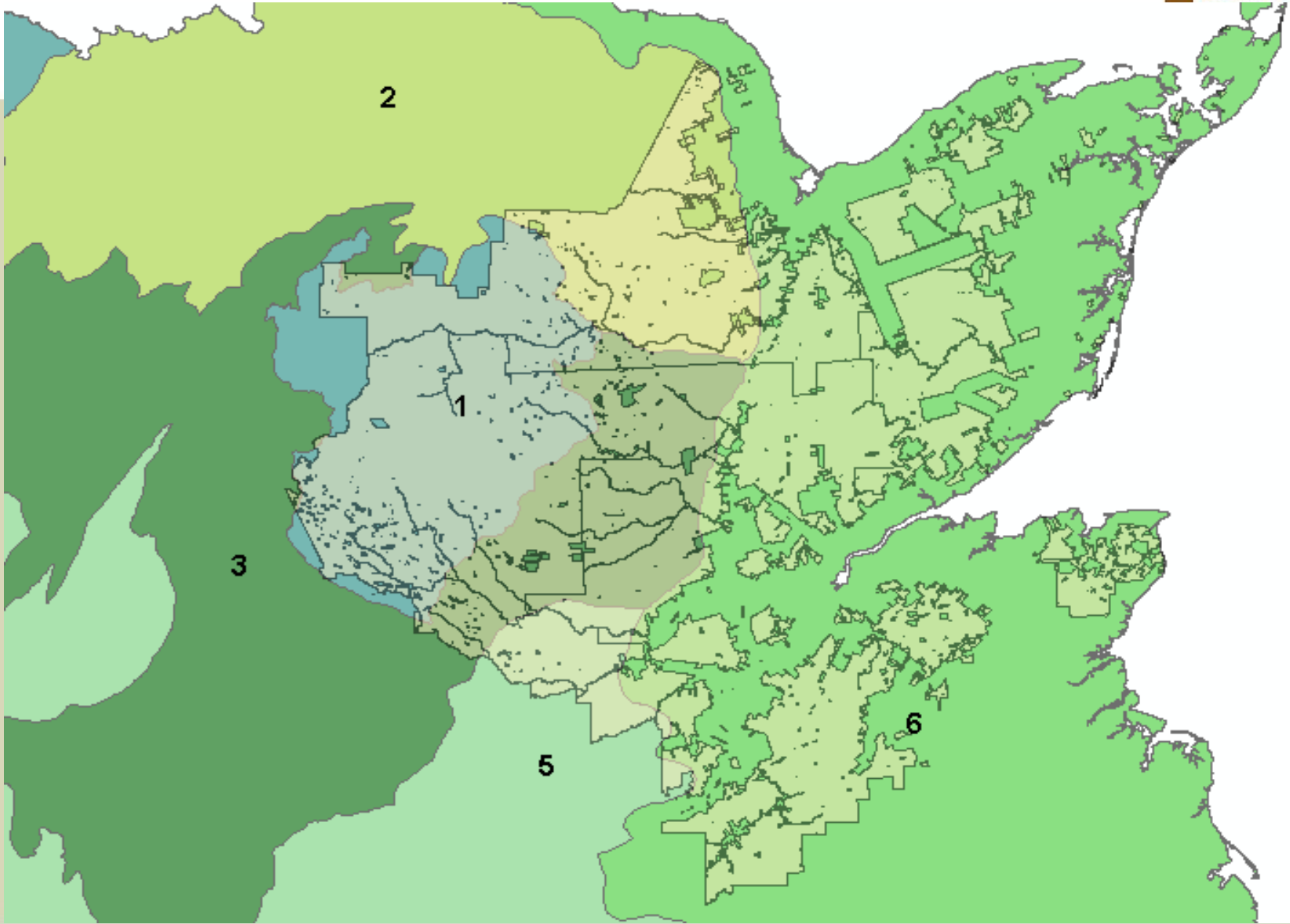




# **20<sup>th</sup> Anniversary of The Christmas Mountains Blowdown**

# Eco Regions on License 3

Fornebu  
Lumber

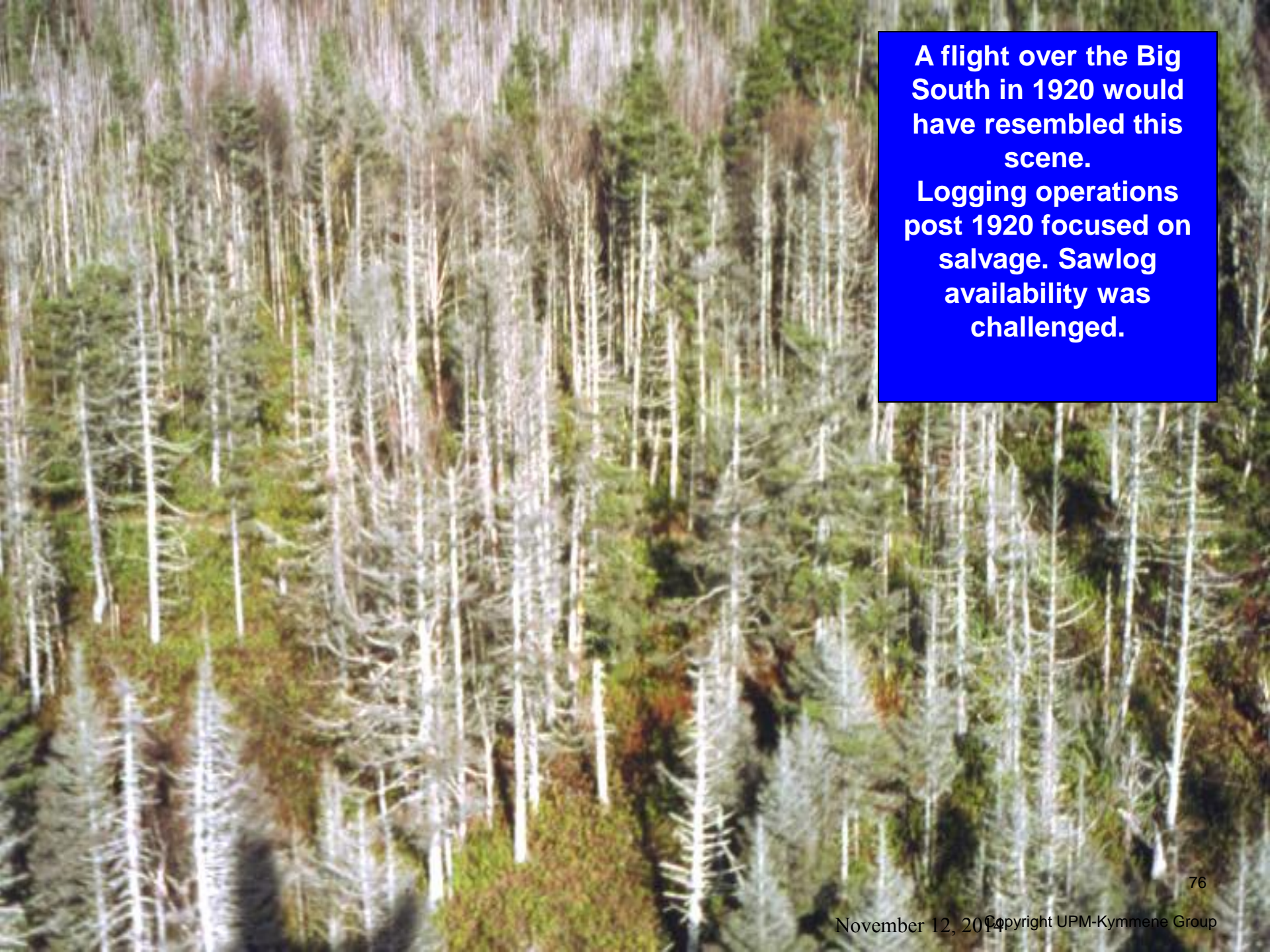




# 1914 – 1921 - Budworm







**A flight over the Big South in 1920 would have resembled this scene.**

**Logging operations post 1920 focused on salvage. Sawlog availability was challenged.**





**" Represents present condition on ridges of North Pole and Upper North Branch Little SW Miramichi drainage. Stands of this kind will take at least 40-50 years to develop spruce and balsam 10" on the stump."**

*Gibson report 1935*



**1940 — B.W. Flieger**

**" the forest now and from now on needs a thinning. There is no way of doing this work artificially in the near future."**

*"The large game animals have deserted the area so thick is the cover and so changed is the feed."*











**1970's & 1980's**













50,000-100,000 trees/Ha.



2000 trees/Ha.







30 7'92

November 12, 2014



70 year old Balsam Fir









**Nov.7, 1994**







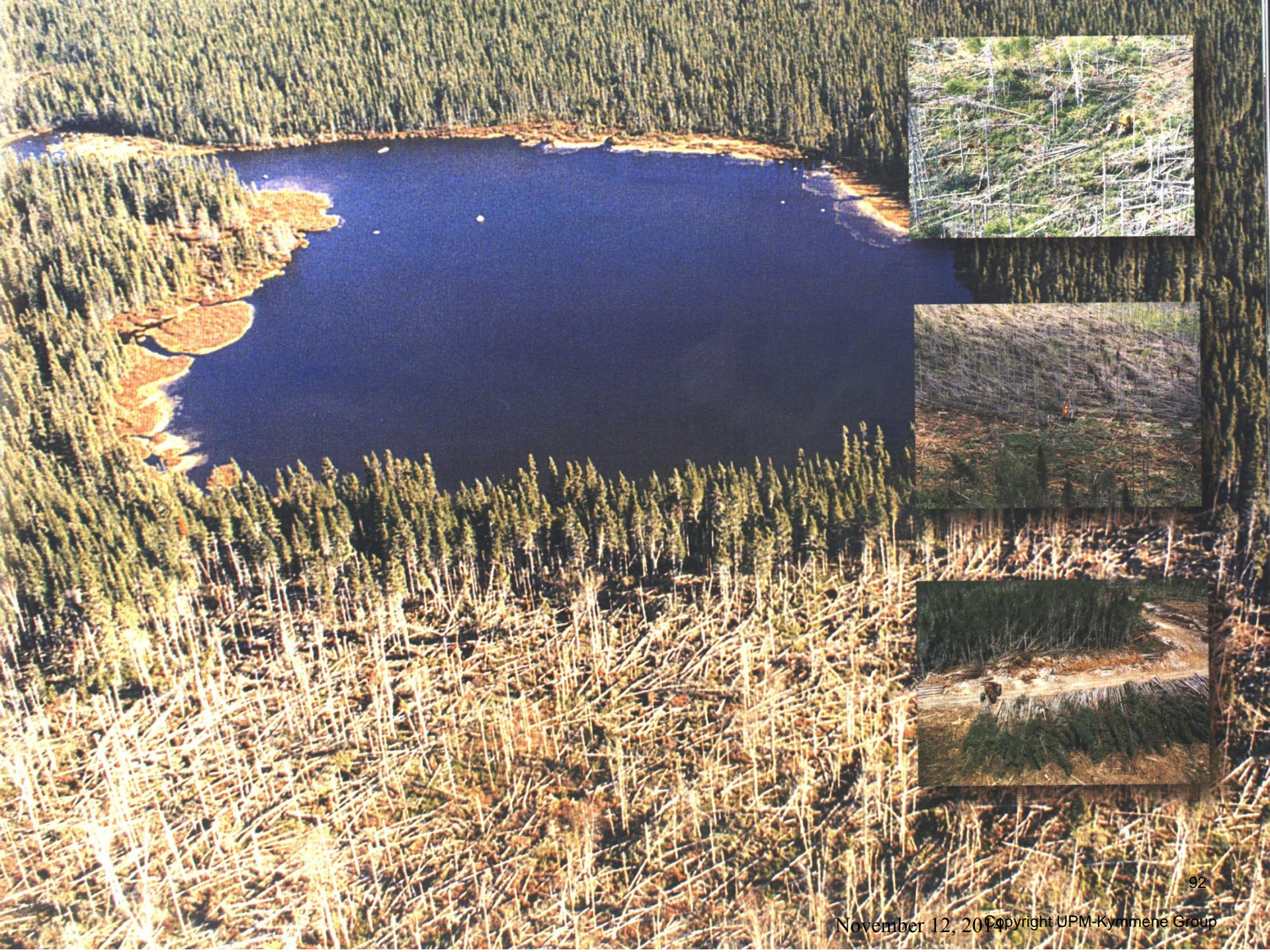












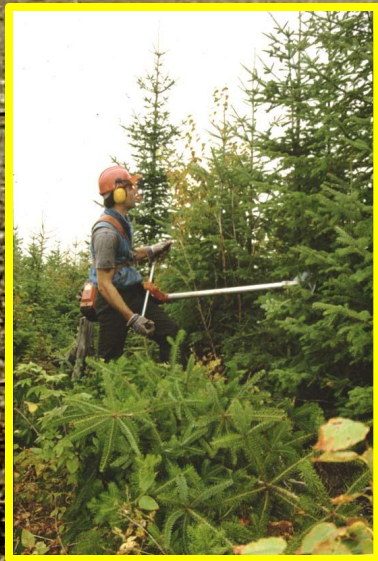






















# Bicknell's Thrush and High Elevation Land Bird Studies









**2000 km migration**

# Bicknell's Thrush Winter Range























## Adams Brook Site History

Clear Cut 1966



Pre-Commercial Thinned  
1986



Commercial Thinned 1997



"Potential" Final Harvest in  
2014













# Forest Values





## Forest Values - People

We work with a variety of individuals and groups with interests in the forest











**TOTAL REVENUE- DEER     \$ 1,285,267**

---

**MOOSE:** Bag Limit: 1 moose per year (either sex)

Season:            22, 23, 24 September

Licence Fees: \$72 Resident  
                  \$37 Resident Senior  
                  \$548 Non-resident

Licence Revenue: \$551,909

Application Fee: \$6.30 Resident telephone/online  
                      \$26.25 Non-resident telephone  
                      \$10.50 Walk-in (office)

Application Revenue: \$487,190

**TOTAL REVENUE- MOOSE:    \$1,039,099**





1959 – 225 sold

1963 – 8210 Sold



# 7,100 KILOMETRES

Bright, blue skies are ahead and there's a tingle in the air you can feel on your cheeks. The trails are finally open and the snowflakes are flying around your 'sled.' You feel the anticipation as you get ready for the ride of your life.

Experience New Brunswick; the winter wonderland of Canada's East Coast. Your ride could take you along any of the thousands of kilometres of freshly groomed trails. And our provincial and zone maps will help you plan the perfect snowmobile odyssey.

So come experience it for yourself. Those who have, call it White Gold!

### DISCLAIMER

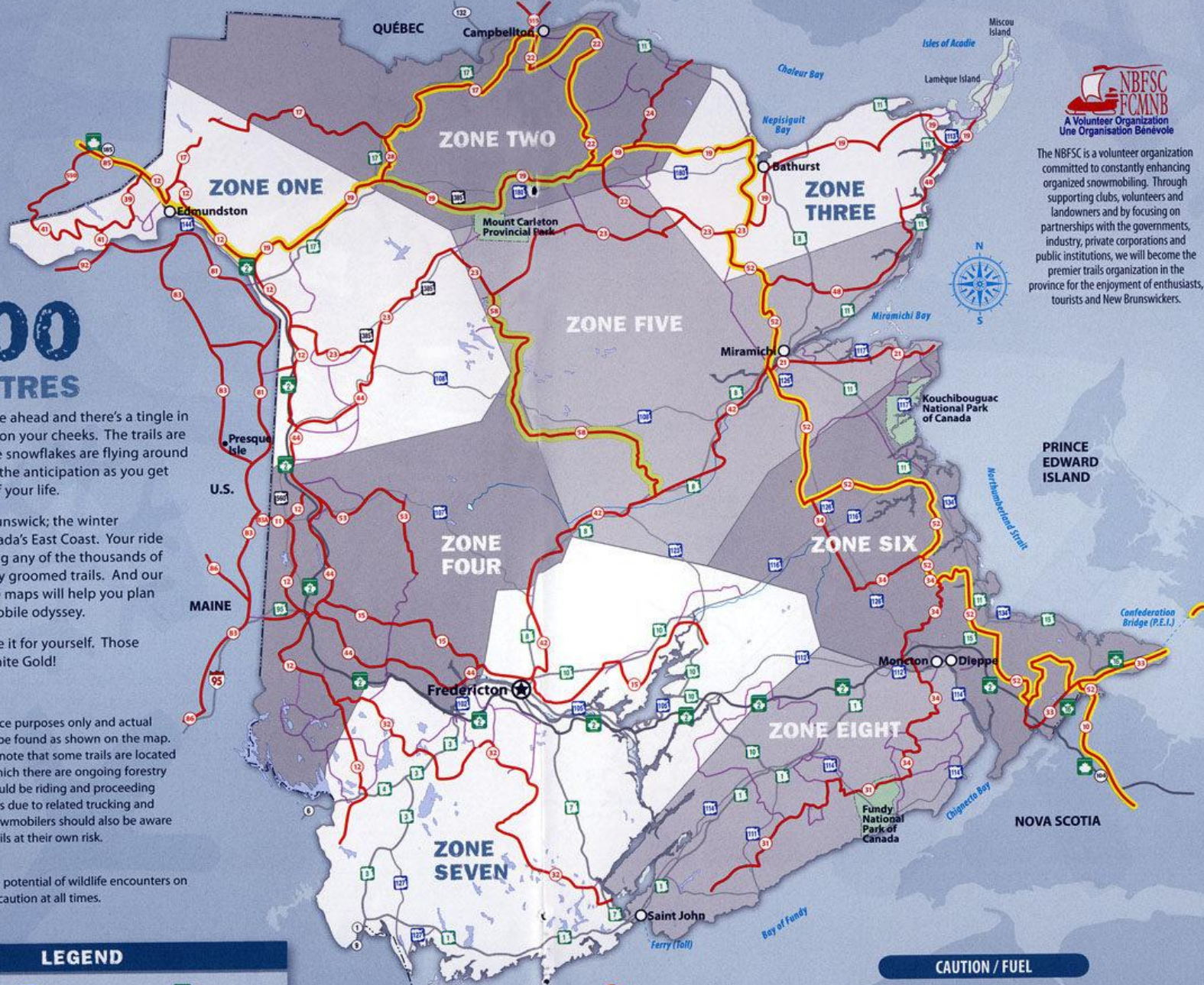
This map is for reference purposes only and actual trail location may not be found as shown on the map. Snowmobilers should note that some trails are located on Crown Lands on which there are ongoing forestry operations. Riders should be riding and proceeding with care on these trails due to related trucking and equipment traffic. Snowmobilers should also be aware that they ride on all trails at their own risk.

### WARNING

There always exists the potential of wildlife encounters on all trails. Use extreme caution at all times.

### LEGEND

|                  |                   |                                 |
|------------------|-------------------|---------------------------------|
| Capital          | Collector Highway | Trans-Canada Highway            |
| City             | Local Highway     | Arterial Highway                |
| Connector Trails | Provincial Trails | Trans-Canadian Snowmobile Trail |



The NBFS is a volunteer organization committed to constantly enhancing organized snowmobiling. Through supporting clubs, volunteers and landowners and by focusing on partnerships with the governments, industry, private corporations and public institutions, we will become the premier trails organization in the province for the enjoyment of enthusiasts, tourists and New Brunswickers.

### CAUTION / FUEL

On Provincial Trail #19 and Provincial Trail #58, between the points indicated, there is no fuel available for 120 km (75 mi.)

DO NOT PROCEED if these distances exceed your snowmobile's fuel range, if there is bad weather forecast or if it is after daylight hours.

CHECK TRAIL CONDITIONS before you ride: [www.nbfs.com/506-325-2625](http://www.nbfs.com/506-325-2625).







J  
er  
nds



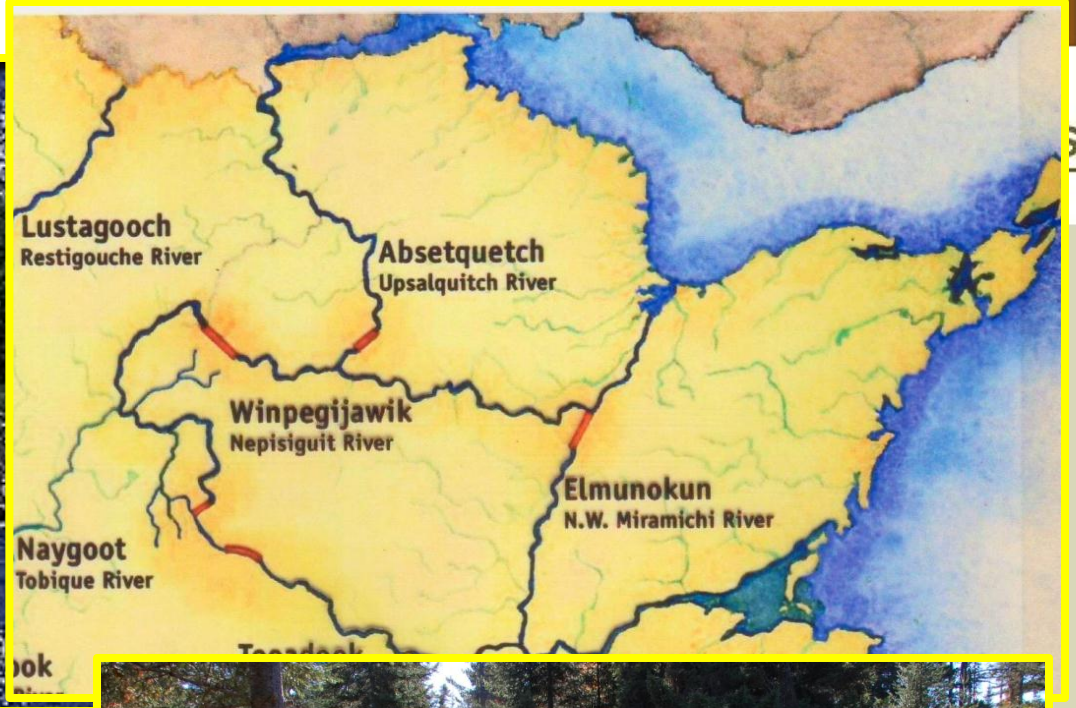
\$140,000,000  
business in  
NewBrunswick





\$50,000,000 business







# Ancient Native Portage Trails Project

A Special Project

By

Canoe Kayak NB

