



Item 5 (b)

Update on boreal forest work

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BOREAL FORESTS

A GLOBAL TREASURE

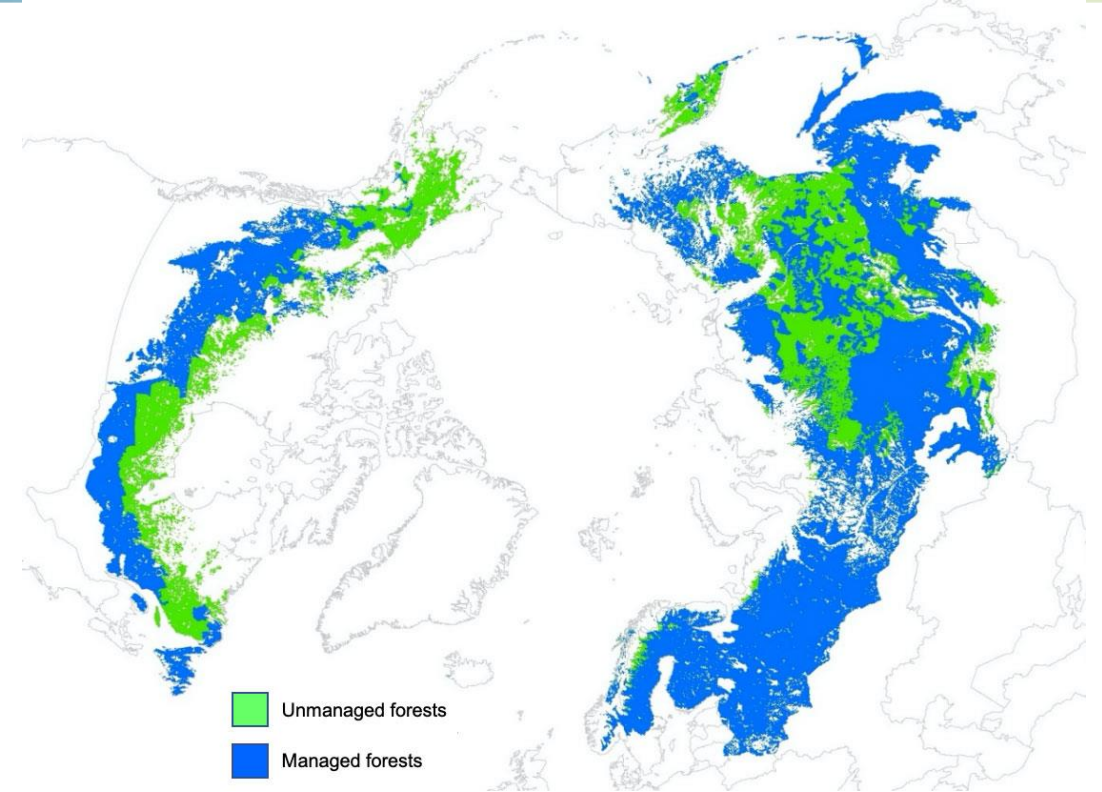
**Understanding why boreal forests
are critically important for our present and future**

Why Boreal Forests?

- 27% of the world's forests
- The planet “second lung”
- About 44% of all intact forest landscape
- A major global carbon storage and fluxes
- A major reservoir of freshwater
- A major source of sustainable wood and energy supply

→ Yet, boreal forests do not receive the attention they deserve.

→ In the context of CC, urgent need to increase our understanding of boreal forests.

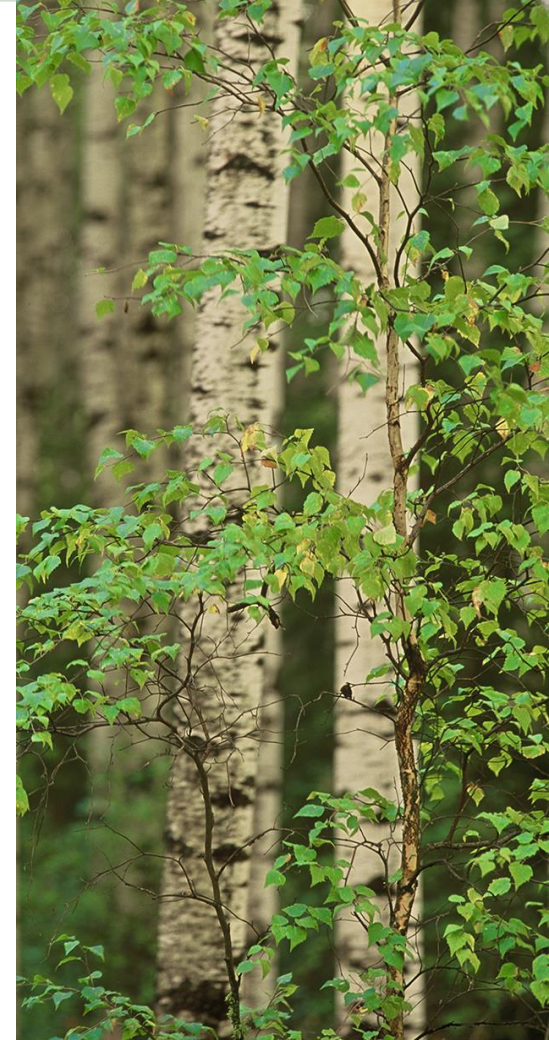


What are Boreal Forests?

- **The boreal biome:**

- **northern hemisphere**, ca. between 50° to 60° - 70°N latitude
- **Seasons:** short, moist, moderately warm summers and long, dry, cold winters
- **Soils:** thin, nutrient poor, acidic
- **Flora:** cold-tolerant conifers and some broadleaves

- They cover 1.37 billion ha, 27% of world's forest
- They contain 24% of world's trees (0.74 trillion)



Boreal Forests and the Environment

- **Hotspot for global biodiversity:**

- Largest areas of wilderness
- Global refuge for many species
- Over 100 000 species
(95% arthropods and microorganisms – 20% identified).
- No species listed as extinct, 8 threatened.



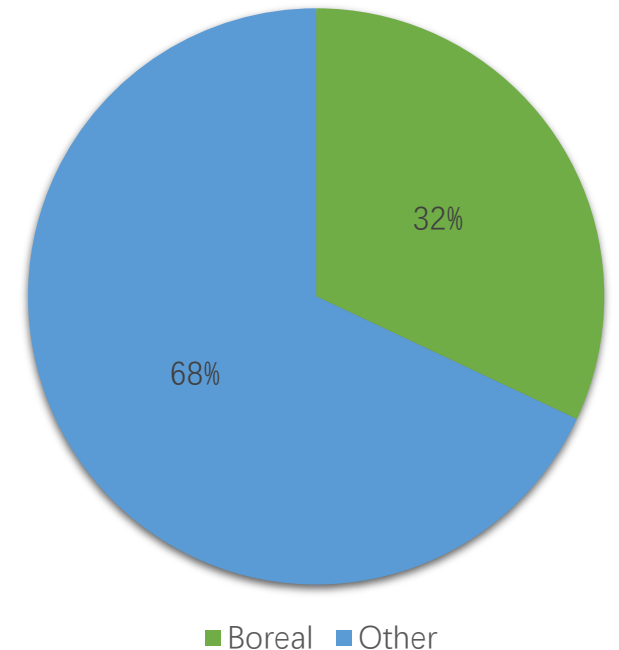
- **Boreal forests and their wetlands:**

- largest surface reservoir of freshwater on earth,
benefitting southern regions (water, agriculture, hydro-power)

Boreal Forests and the Environment

- **A major store and sink of carbon:**
 - 32% of global terrestrial carbon stock (peat, soils, permafrost)
 - The boreal biome stores an equivalent to 75% of atmospheric carbon stock
 - Sequester 20% of carbon sequestered by world's forests
 - **Small changes in boreal soil carbon stocks will significantly affect atmospheric carbon levels**

Terrestrial carbon stock



Boreal Forests and the Economy

- **Critical driver of sustainable and climate friendly economic development**
 - (1 – 2% GDP)
 - \approx 45% of world's stock of growing timber
 - \approx 17% of total global harvest
- Growth and yield are larger than ever
- **Key player on export market:**
 - lumber 33%; wood-based panels 16%; paper & paperboard 26%; pulp 21%
- **Non-market value of environmental- and socio-economic benefits (carbon, flood control, water, etc.) much greater than all combined market values.**
- NWFP (recreation, berries, mushroom, hunting, fishing) also substantial



Ownership and Management of Boreal Forests

- **Forest ownership patterns:**

- Mostly public in North America and Russia, but 70 to 80% private in Finland, Norway, Sweden, mainly small forest owners

- **Forest management:**

- Mostly actively managed
 - (35-40% Canada; 58% Russia; 90% Finland, Norway, Sweden)
- Extensive to intensive → over 23% increase growing stock volume
- 8 – 11% of forest areas are under protection
- Emergence of innovative FM practices:
 - forest ecosystem-based management;
 - continuous cover forestry



Threats, Trends and Climate Change

- **Natural and human-caused disturbances:**

- Wildfires → main cause (2015: 0.5% \approx 6.03 mio. ha)
(Canada 2023 \approx 18.5 mio. ha \approx 9x annual av.)
- Pest infestation - pest-caused timber losses may be as much as 1.3–2.0 times the mean annual depletions due to fires
- Resources extraction
- Infrastructure, urban expansion

comparatively, less affected than other forest biomes

Exacerbated by climate change



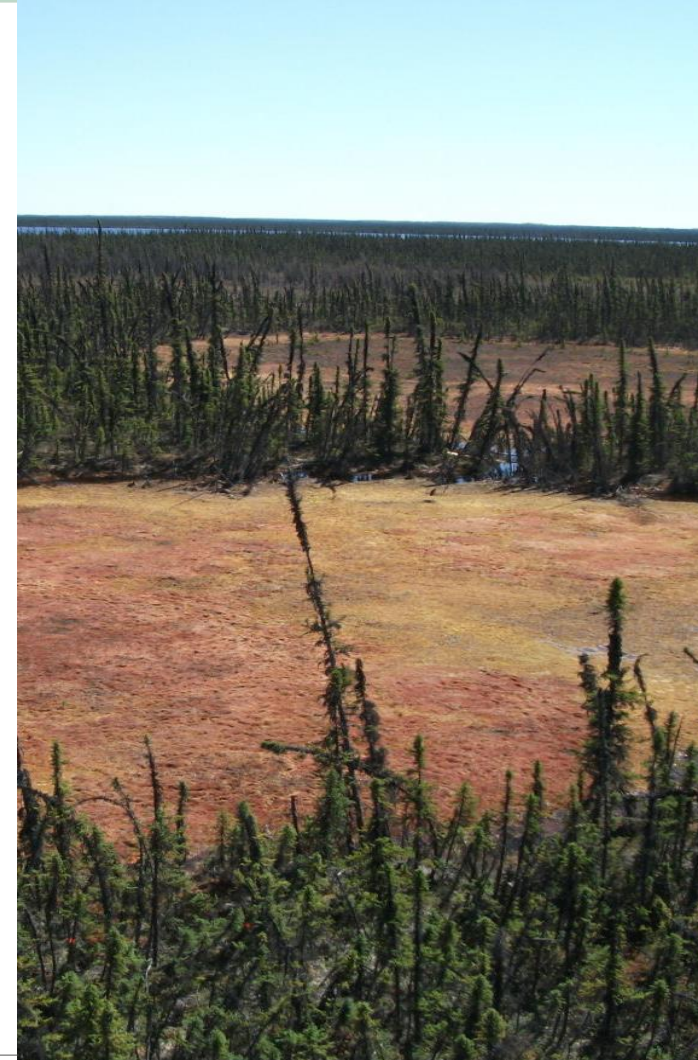
Threats, Trends and Climate Change

- **Climate change:**

- Boreal region is warming twice as fast as others
- Projection by end of century ↗ 4° to 11°C
- Expected reduction of precipitation
- Change in biodiversity, e.g., shift of species

- Permafrost thawing (30 to 40% of boreal forests) – huge stock of carbon – if released – major impact on CO₂ level and CC
- Higher temperature and CO₂ → ↗ growth → ↗ C sink?
- Balance between release of carbon and sink still unclear

- **Urgent need for better monitoring and understanding**



Forest policies and knowledge gaps

Forest policies

- Traditionally based on economic growth through the provision of secured timber supply to the industry
- Increasing societal demand for preserving ecosystem services and biodiversity
- Novel approaches explored for multifunctionality



Forest policies and knowledge gaps

Knowledge gaps:

- Resilience of boreal forests against CC and extraction.
- Better understanding of the dynamic of boreal soils and carbon fluxes.
- Better evaluation of the global and local role of boreal forest and their services provided.
- Common usage of terms and definitions.

→ Need to inform climate and forest policies



Increasing the understanding and visibility of boreal forests



Boreal forests: *one of the world's most critical ecosystems*

Remoteness and comparatively good conditions
→ poor international visibility

However:

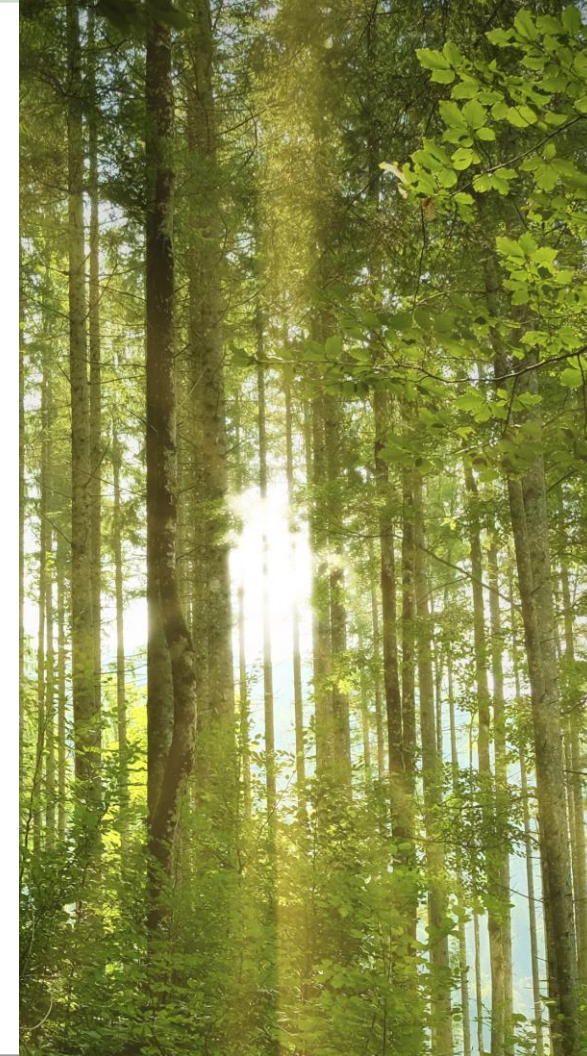
- Scientists are concerned about the fate of this fragile ecosystem – small changes could have global and devastating impact (e.g.: permafrost)

Increasing the understanding and visibility of boreal forests

Way forward:

- Need to increase attention by addressing knowledge gaps through improved monitoring of boreal forests:
 - Commonly agreed definition for a more accurate delineation
 - Monitoring impact of climate change and forest management across the biome
- Collection of boreal forest specific data
- Joint effort, harmonization of monitoring approaches

**Boreal forest clearly deserve more attention,
especially in the face of climate change**



Boreal Forests

Thank you!