

A scenic mountain landscape featuring a mix of evergreen and yellow trees in the foreground, with snow-dusted mountains in the background under a clear blue sky. The scene is captured from a low angle, looking up towards the peaks.

Roots and Resiliency: Fostering Forest Stewardship in a Canopy of Change

2025 Current Issue Topic
Presented by Camden Baker
(USFS)

Presentation Overview

Introduction(s)



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graph TD; A[Introduction(s)] --> B[Test Layout]; B --> C[Key Topics (6)]; C --> D[Questions];
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Test Layout

Key Topics (6)

Questions

Presenter Intro

- From Mayville, NY
- Ithaca College -> Marine Corps -> Colorado State University -> USFS
- Undergrad in Forestry, Master's in Natural Resource Stewardship (Forestry Science Specialization)
- Work experience: Urban Tree Care, Forestry Research Technician & Assistant, Wildland Firefighter
- Current position: Forester at the Northern Research Station's Forestry Sciences Lab in Irvine, PA





Topic Intro

6 Key Topics:

- Climate Change Projections
- Forest Health in a Changing Climate
- Inherent Rights of Indigenous Peoples to Land Stewardship
- Vulnerability Assessments and Adaptation Strategies
- Legislation and Regulations
- The Boreal Forest

Test Format

*** 25 questions derived from the Study Resource Material.**

**Multiple
Choice**

**Fill in the
Blank**

**1 Short
Answer (1-2
sentences)**

Climate Change Projections

- **The difference between climate and weather**
- Sources and characteristics of greenhouse gases
- Climate feedbacks
- Global wealth and emissions relationships
- Why there is uncertainty in climate projections and how to deal with it

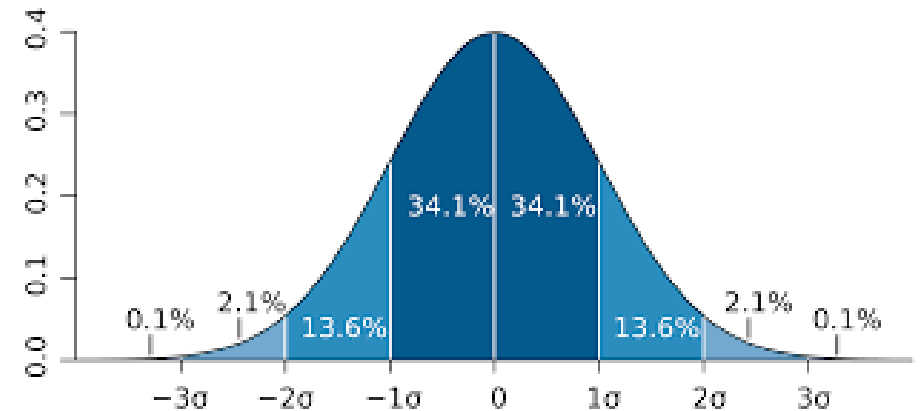
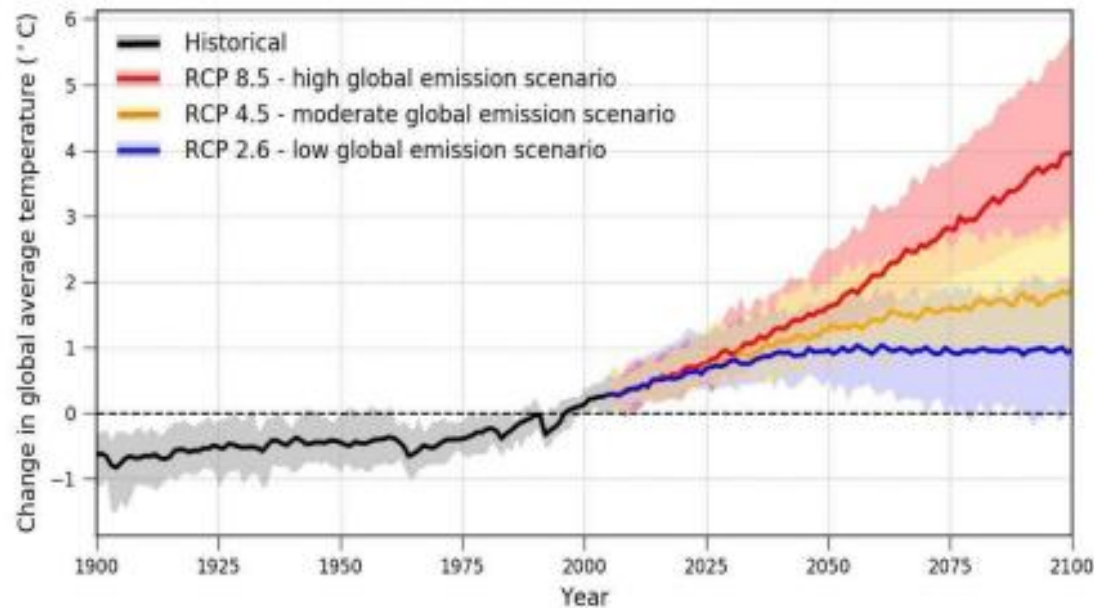
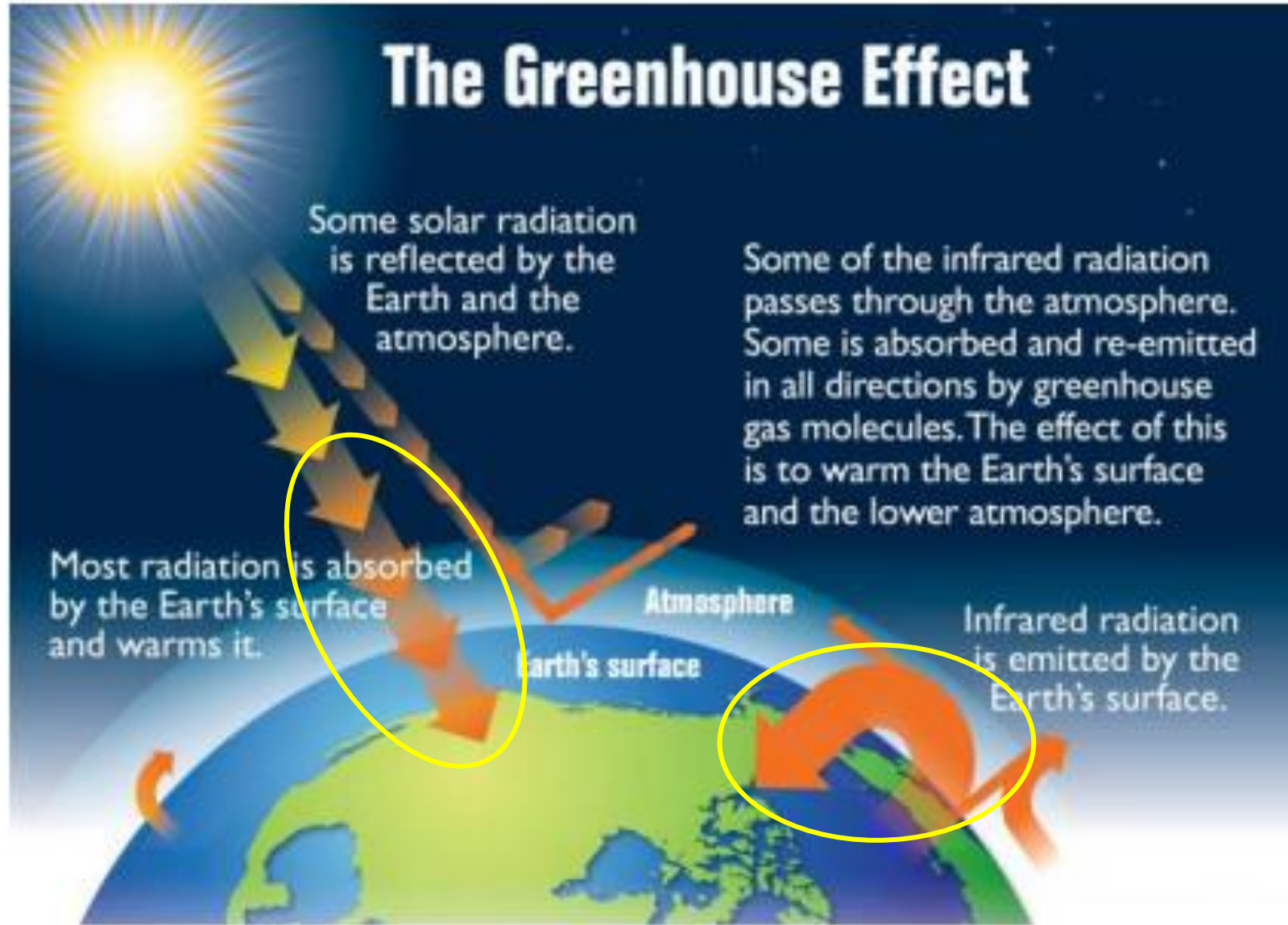


Figure 1. This figure shows changes in global average temperature, relative to the 1986 to 2005 reference period, simulated by 29 global climate models from the Coupled Model Intercomparison Project, Phase 5 (CMIP5).

The Greenhouse Effect



Why does an increase in greenhouse gases cause a shift in Earth's radiation budget?

Forest Health in a Changing Climate

- Climate change tree mortality: primary and secondary mechanisms
- How to quantify drought
- Impacts of native and invasive pests and pathogens
- Primary and secondary impacts of high and low intensity wildfires



How does fire impact forests and wildlife?

Wildfires are inevitable, but not all fire is harmful to forests. Low-intensity fires can naturally "clean" and thin the forest by removing flammable and thick vegetation on the forest floor. The result is improved habitat for wildlife, healthier soil and new growth of native plants.

It also helps reduce the risk of large-scale high-severity fires that burn through the forest—from the floor to the canopy—with intense heat. High-severity fires across large landscapes can be devastating for wildlife, habitat and surrounding communities.

High-Severity Fire

Low-Intensity Fire

*Can be okay, too!

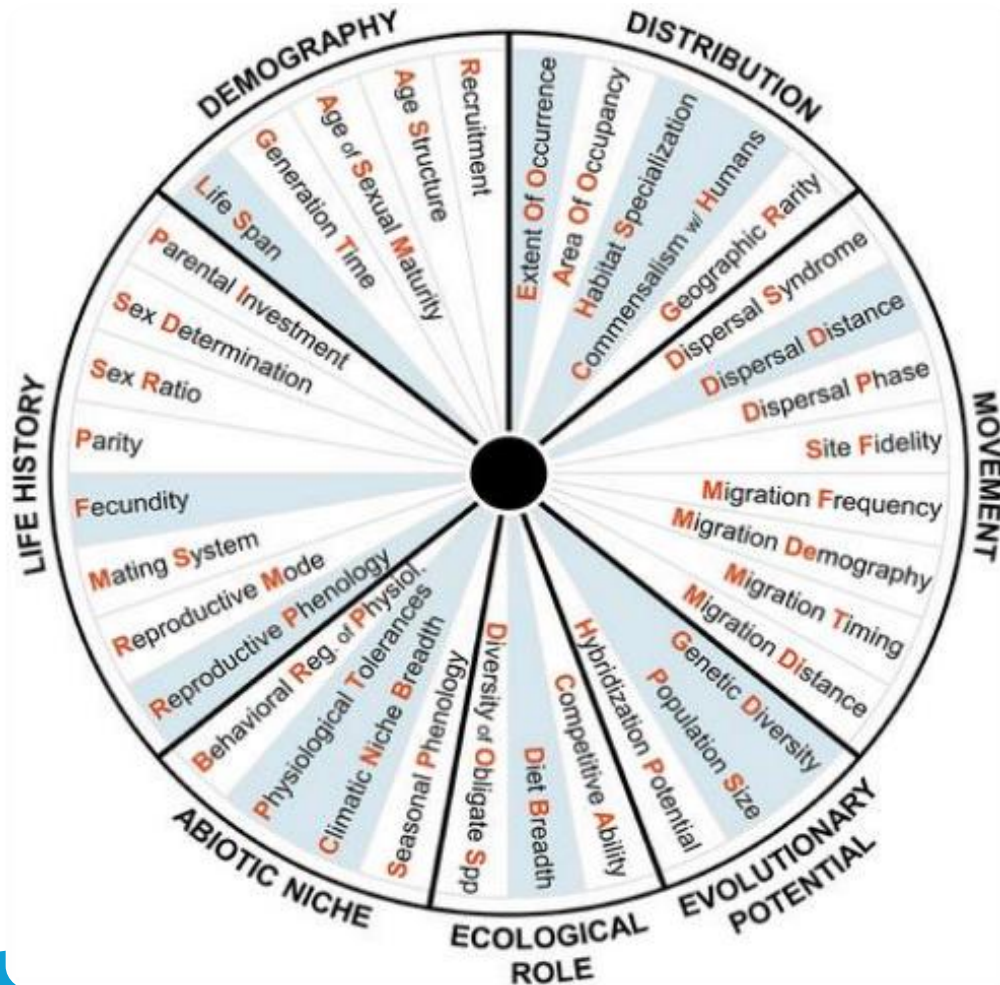


Inherent Rights of Indigenous Peoples to Land Stewardship

- Know the themes in the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP)
- Understand what Traditional Ecological Knowledge (TEK) is and how it compares to the Western scientific method
- Pay attention to modern examples of Traditional Land Stewardship
- Think about how these two approaches can be woven together and pay attention to the resources that talk about this concept



Adaptive Capacity “Wheel”



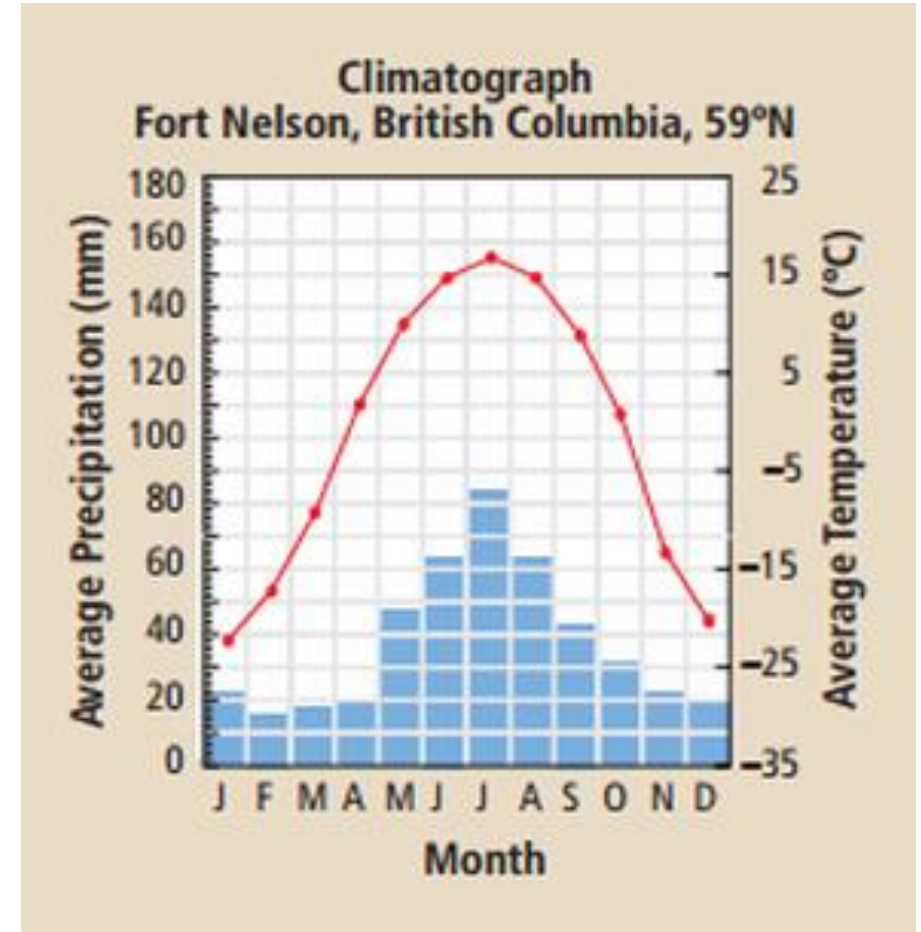
Vulnerability Assessments & Adaptation Strategies

- Describe a forest vulnerability assessment, including its purpose and steps.
- Analyze climate change adaptation strategies for forests, including assisted species migration, selective breeding, and /or afforestation.
- Define adaptive capacity in relation to forest communities.
- Distinguish how various ecozones face differing levels of vulnerability and explain which ecological factors drive this vulnerability.

Phenology: Why it's more complicated than “it's just getting warmer”.

Life cycle (East of the Rockies)

Stage/Month	J	F	M	A	M	J	J	A	S	O	N	D
Egg								■				
Larva		■	■	■	■	■	■		■	■	■	■
Pupa							■					
Adult								■				



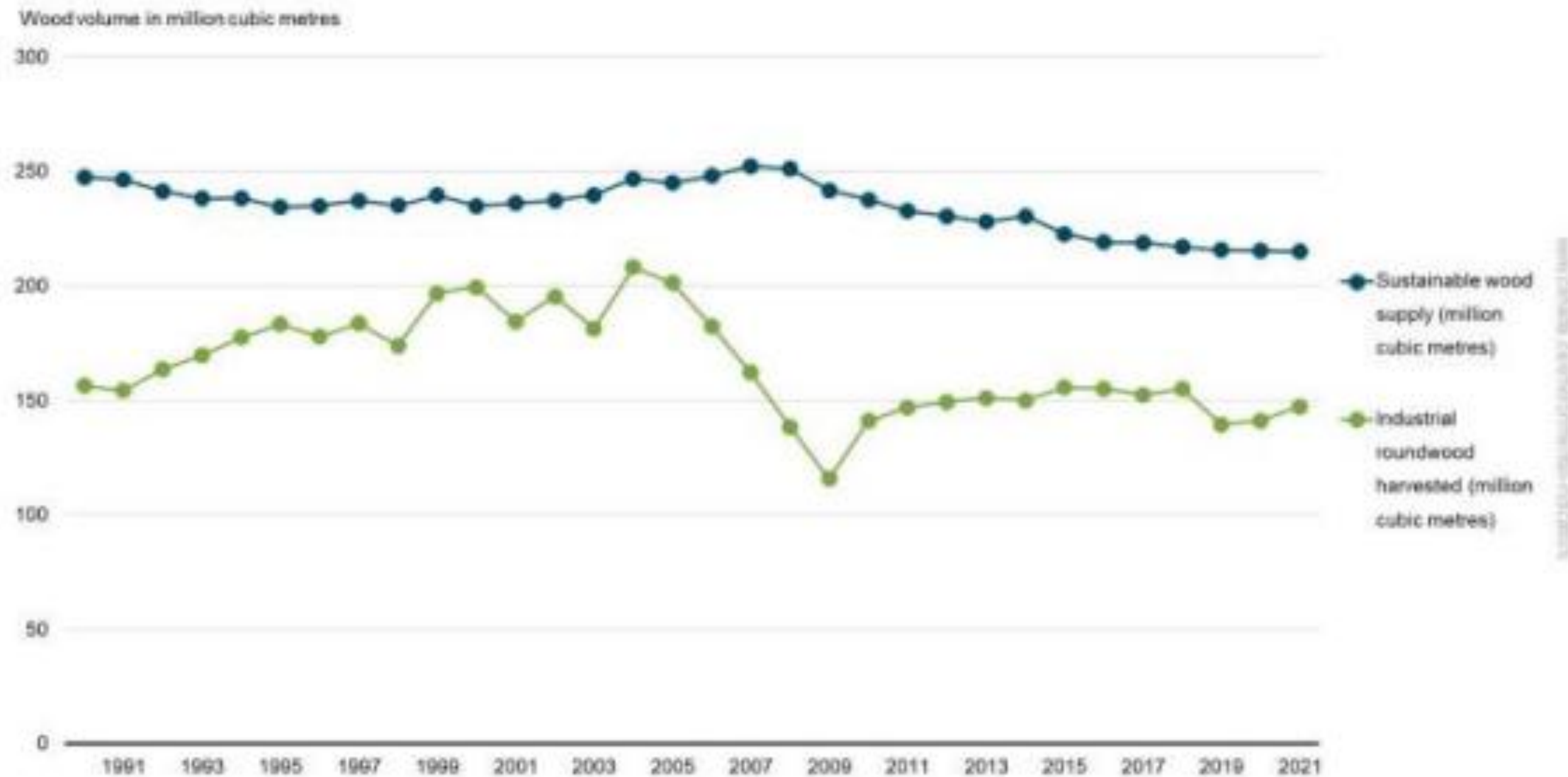
Legislation & Regulations

- Know what values must be factored into Sustainable Forest Management (SFM) and the ethical management practices that promote those values
- How policies and organizations in Canada promote SFM on public lands
- Understand what the Paris Agreement is, and which parts directly pertain to forest management
- Analyze the impacts of global and regional programs that reward carbon sequestration forestry management practices



Image from "The Forests of Canada" collection, Natural Resources Canada, Canadian Forest Service, 2003.

Figure 1. Maximum sustainable wood supply and annual harvest of industrial roundwood, Canada, 1990 to 2021



The Boreal Forest

- Know how it is classified, where it's located, and its climate
- What disturbances shape the boreal forest and how they are expected to shift
- Know what vital ecosystem services the boreal forest provides and how they are valued
- Pay attention to how the organisms in this ecozone interact with each other and their environment



Questions?