

# Ecology II

## Ecosystems & Ecosystem Processes

March 29, 2008

### Ecozones of Canada

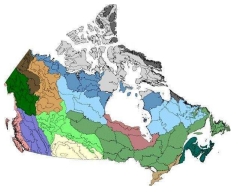
<http://www.ccea.org/ecozones/>



### National Ecological Framework for Canada

- 15 Ecozones
- 50 Ecoprovinces
- 200 Ecoregions
- 1000 Ecodistricts

- Widely used for the general description of Canada's biodiversity.
- Broad description of landforms, soils, climate, and vegetation at subcontinental scale
- Originally intended for national park planning, but later replaced by Ecoprovinces



### National Ecological Framework for Canada

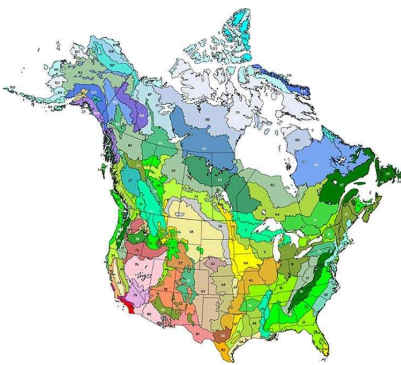
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- Used for broad scale conservation, e.g. Canada's National Park system

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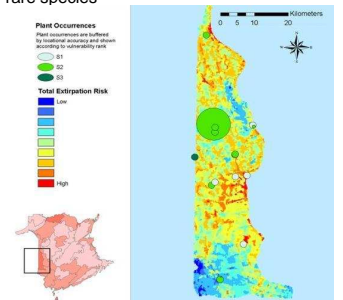
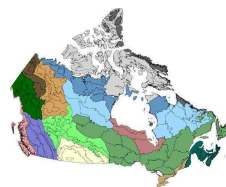


- International conservation activities & comparisons
- Often used as a basis for wildlife management and conservation

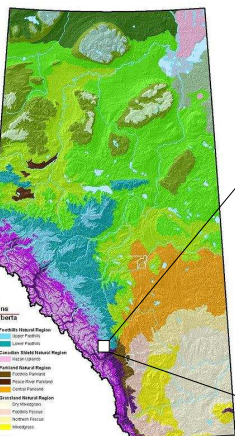
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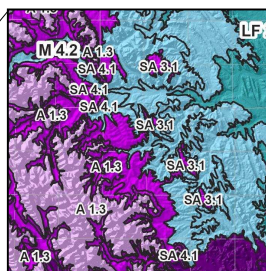
- Homogenous climate, soils, geology and vegetation communities.
- Also called Land Resource Areas used for natural resource management prescriptions.
- Detailed mapping and protection of rare species



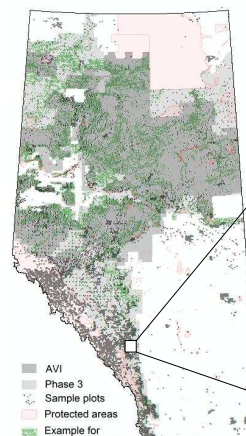
### Alberta's Natural Region System



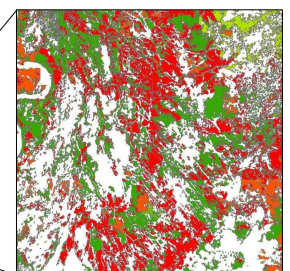
Tracks Elevation  
Used for resource management prescriptions & conservation of genetic resources



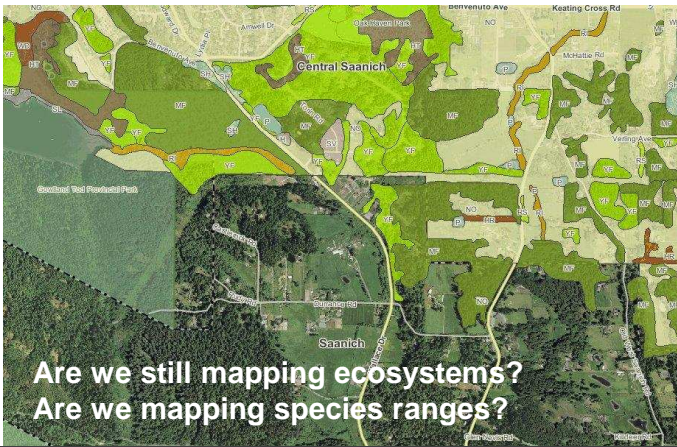
### Alberta's Vegetation Inventory



Stand level inventories – air photo and ground surveys  
Stand age, species composition  
Used for resource management



## High resolution vegetation mapping



Are we still mapping ecosystems?  
Are we mapping species ranges?

## Causes of change



### Disturbance types

- Fire
- Timber harvest
- Farmland conversion
- Insect outbreaks
- Floods
- Landslides
- Avalanches

## Secondary Succession

Typical Alberta boreal mixedwood succession: aspen/poplar to spruce



## Primary Succession

Starts without previous vegetation and soils: (1) **Hydrosere** succession



## Primary Succession

Starts without previous vegetation and soils: (2) **Xerosere** succession



## Levels of ecosystem classification

- **Biomes** (global classification)
- **Ecozones**
- **Ecoprovinces** (Canadian National Framework)
- **Ecoregions**
- **Ecodistricts**
- **Bio-geo-climatic mapping** (tracks elevation, AB & BC)
- **Topo-edaphic mapping** (maps potential for successional sequences).
- **Vegetation inventories** (tracks actual changes – land conversion, disturbance, succession – at high resolution)

## Review Questions

- Describe the Canadian National Ecological Framework for ecosystem classification. What are the units and how are they used? What is the basis for classification?
- Why have British Columbia and Alberta developed their own ecosystem classification systems? How are they different from the national system? What are their use?
- How does high resolution vegetation mapping work and what are those inventories used for?
- Name 10 Canadian ecozones, describe they location relative to each other, and explain how they differ.
- Describe the vegetation type and dominating tree species (if applicable) for each Canadian ecozone.
- What is the difference between a species range and a species distribution map?

## Review Questions

- Define *ecology* and *ecosystems*.
- Give examples for disturbance of ecosystems that we might see in Alberta
- Define *succession*.
- Explain what *primary* and *secondary* succession means.
- Explain what *hydrosere* and *xerosere* succession is.
- Describe a typical boreal forest succession in Alberta.
- **Self study:** If you are not familiar with the basic concepts of ecology, natural cycles of water, carbon and nitrogen, do review pages Chapter 25 (10<sup>th</sup> Edition) - basically high school level ecology.
- **Self study:** Read Chapter 26 at your leisure. This is just some more background to what was covered in class.