

Ecology I

Biomes

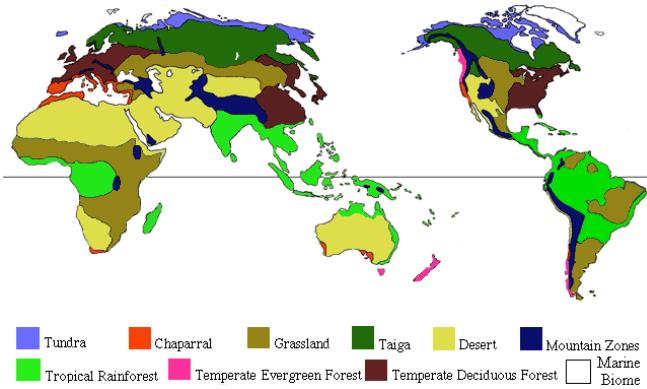
March 27, 2008

Some definitions

- **Ecology:** The study species distribution and abundance and the interactions between organisms and their environment.
- **Ecosystem:** A natural unit of physical and biological components.
- **Biome:** A broadly defined, continental scale ecosystem.

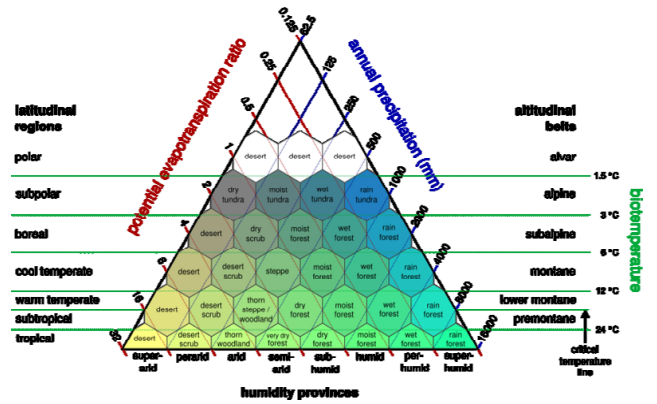
Biomes

Continental-scale ecosystems – similar, but not the same species throughout

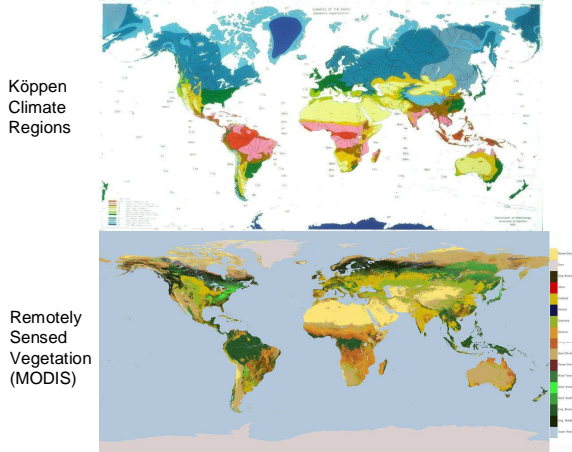


Climate rules ...

Holdridge Life Zone Classification



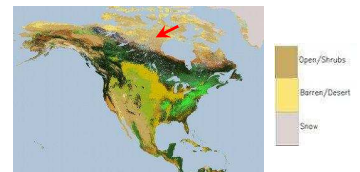
Climate region maps vs. vegetation maps



Tundra



- Above arctic circle
- Permafrost soils
- Treeless (stunted trees)
- 2-3 months growing season
- Usually dry (< 250mm)



Alpine Tundra



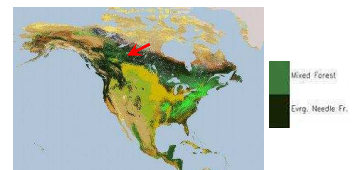
- Above Timberline
- Usually not permafrost soils
- Treeless (stunted trees)
- Short growing season
- Higher precipitation



Taiga / Boreal Forest



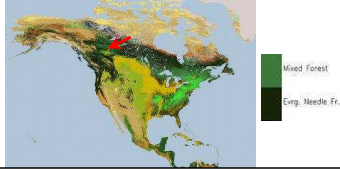
- Northern Forests
- Conifer dominated
- Birch, aspen, willow in wetter areas
- Severe winters and snowcover



Taiga / Boreal Forest



- Northern Forests
- Conifer dominated
- Birch, aspen, willow in wetter areas
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Subalpine Forest



- High elevation – Taiga equivalent
- Conifer dominated
- Severe winters and snowcover



Coastal Forests / Temperate Evergreen



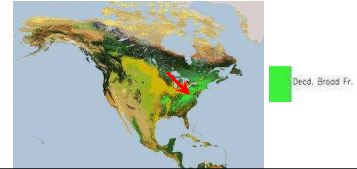
- Pacific Northwest & west-side of Rocky Mountains
- Conifer dominated or mixedwoods
- Wet winters and dry summers
- Mild, maritime climate



Temperate Deciduous Forest



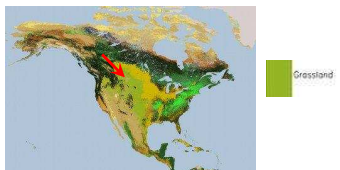
- Moist, warm summers
- No severe winters
- Maple, beech, oak, basswood hickory dominated (some conifers)



Grasslands / Prairies / Steppe



- Interior of continents
- 250-1000mm precip
- Continental climate



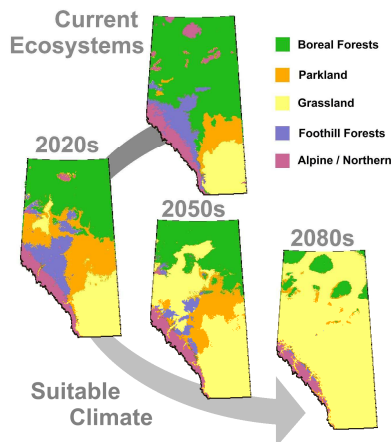
Deserts



- Minimal precip (<250mm)
- Extreme daily temperature ranges



Projected ecosystems of Alberta



These projections are just climate regions.
With your knowledge of ecosystem processes: What will really happen?
Reading: Chapter 25

Review Questions

- What are the main drivers of ecosystem composition at global as well as regional scales?
- Define biome and name 6 biomes that can be found in North America
- How do the following biomes differ climatically: Taiga vs. Coastal Forest, Coastal Forests vs. Temperate Deciduous Forest, Grassland vs. Desert?
- Why is 1000mm annual precipitation of some grassland ecosystems not enough to support trees?
- What are the most/least productive biomes with the largest/smallest wildlife populations? Why is that?