Unit 4 - Part 2

Biodiversity

Bill Nye - Biodiversity
Why is Biodiversity Important
https://www.youtube.com/watch?v=GK_vRtHJZ

Biodiversity STSE

Biodiversity

- The variety of life. An ecosystem with high biodiversity has many different species. An ecosystem with low biodiversity has few.

Sustainability

- the capacity of the biosphere to meet the needs of the present generation, without hindering future generations from being able to meet their needs.

Resilience

- the capacity of an ecosystem to respond to a disturbance by resisting damage and recovering quickly.

At Risk Classifications: See p. 14 for descriptions

- Extinct (ex: dodo bird, passenger pigeons)
- Endangered (ex: barrens willow)
- Extirpated (ex: wolverine)
- Threatened (ex: pine marten, woodland caribou)
- Vulnerable (ex: polar bear)

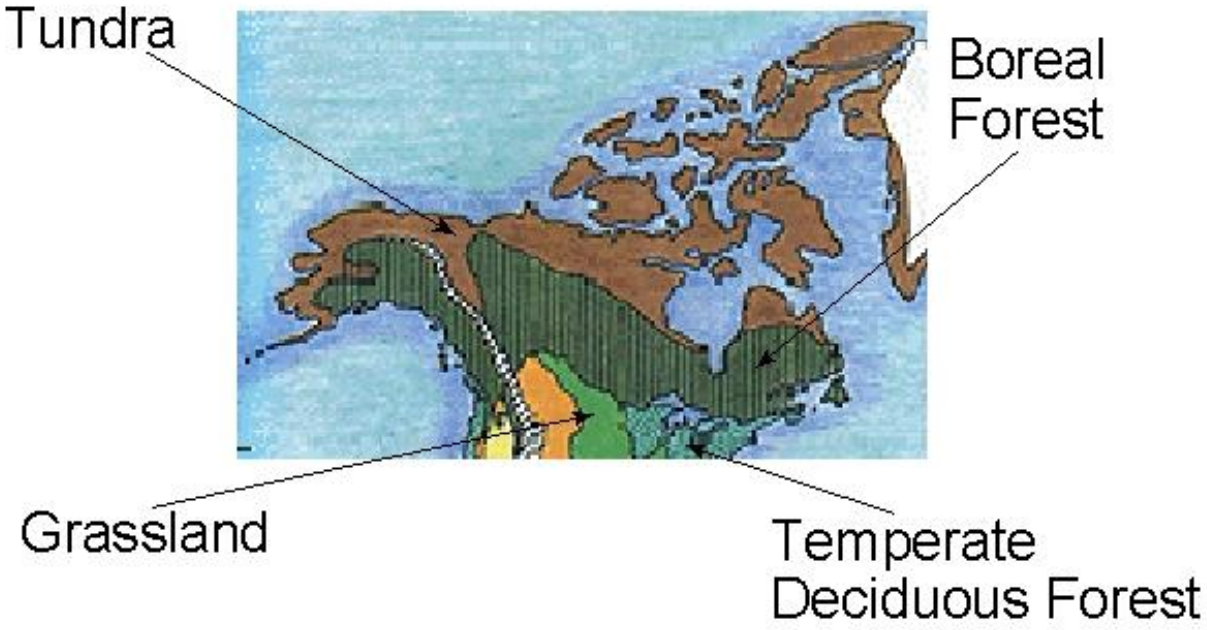
(Read P. 14- 15 and do questions #1-2)

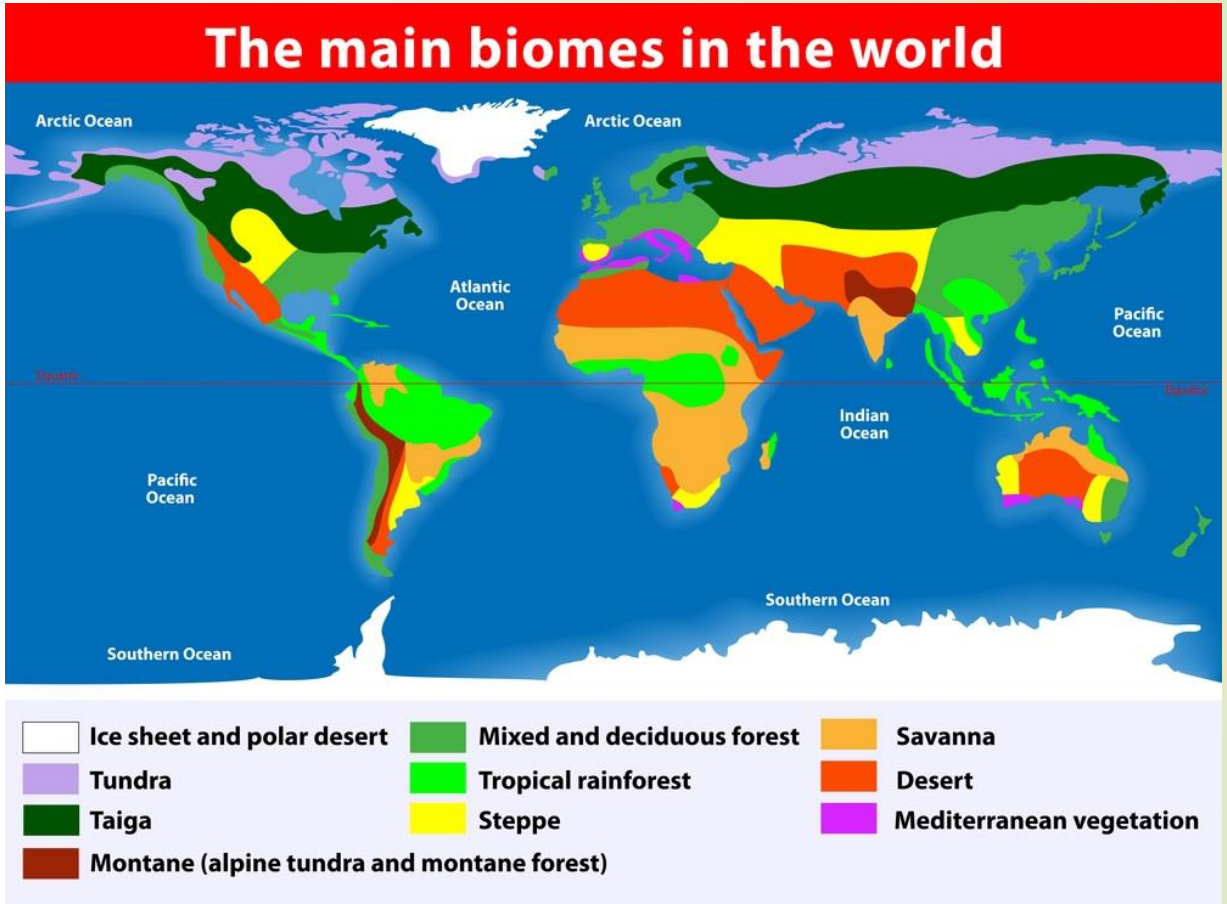
Case study: Page 10-13 do questions #1, 2, 3, 4a, 5

Biomes

- A large community of plants and animals that occupies a distinct region. Terrestrial **biomes**, typically **defined** by their climate and dominant vegetation, include grassland, tundra, desert, tropical rainforest, and deciduous and coniferous forests.

Four Major Biomes in Canada





Read pages 86-93

- Do worksheet Chapter 3.1 Canadian Biomes

Major identifying characteristics

Characteristics	Biomes				
	Tundra	**Boreal Forest (Taiga)**	**Deciduous Forest**	**Grassland**	**Temperate coniferous forest**
Soil	1. Permafrost (Layer of soil that never thaws) 2.Active layer is above permafrost	1. There is more organic matter in the soil. 2. The conifer needles produce acid which makes the soil very acidic	1. High temperatures which allow faster decomposition and richer soil. 2.	Rich fertile soil With high concentration of nutrients	soil very acidic
Precipitation	1. Cold desert, receiving 10-12 cm rain/yr.	1. About 40 cm rain/yr.	Up to 100cm/yr	25-75 cm rain/yr	75 cm rain/yr
Types of plants	1. Short growing season	Dominated by conifers	More plants can grow, dominated by maples and oaks	Fescue grasses	Fir, sitka & western hemlock

Characteristics	Biomes				
	Tundra	**Boreal Forest (Taiga)**	**Deciduous Forest**	**Grassland**	**Temperate coniferous forest**
Types of plants	1. Short growing season 2. Plants have fibrous roots, cannot penetrate permafrost 3. Plants must flower and seed before winter 4. colder part support lichens and moss 5. southern part support tall grass, small shrubs. And stunted conifers	Dominated by conifers No permafrost, permit bigger plants with deeper root system	More plants can grow, dominated by maples and oaks	Fescue grasses	Fir, sitka & western hemlock
Types of animals	Support small # of animals like caribou, arctic foxes, Lemmings & wolverines	Seed eating birds, Squirrels, Voles, deer	Many plants support many animals e.g., insects, amphibians, lizards, birds and mammals(deer and moose)	Grasshoppers, bison, vole, mice, snakes, hawks, wolves	Same animals as in boreal
Location	Northern coastline, Hudson bay & James bay	It is found in every Province	Easter and central Canada, Southern Ontario	Same area as deciduous but to the West.	West of British Columbia
Climate	Very cold	1. Has rapid temperature change	Higher temperatures	Variable temperatures	Variable temperatures

Discussion

- Where else would find a forest like we have here?
- Where else would you find a caribou?
- What are the main abiotic factors of this ecosystem?
- What is the dominant flora? Fauna?
- What are the threats to sustainability?

Discussion

- Compare the biotic and abiotic characteristics of one of these ecosystem, such as forest or pond ecosystem .

- Abiotic factors: temperature, soil (nutrients - organic and inorganic), latitude, sunlight, space, oxygen, water

- Biotic factors: vegetation, animals (disease, living and decomposing, predator-prey, competition)

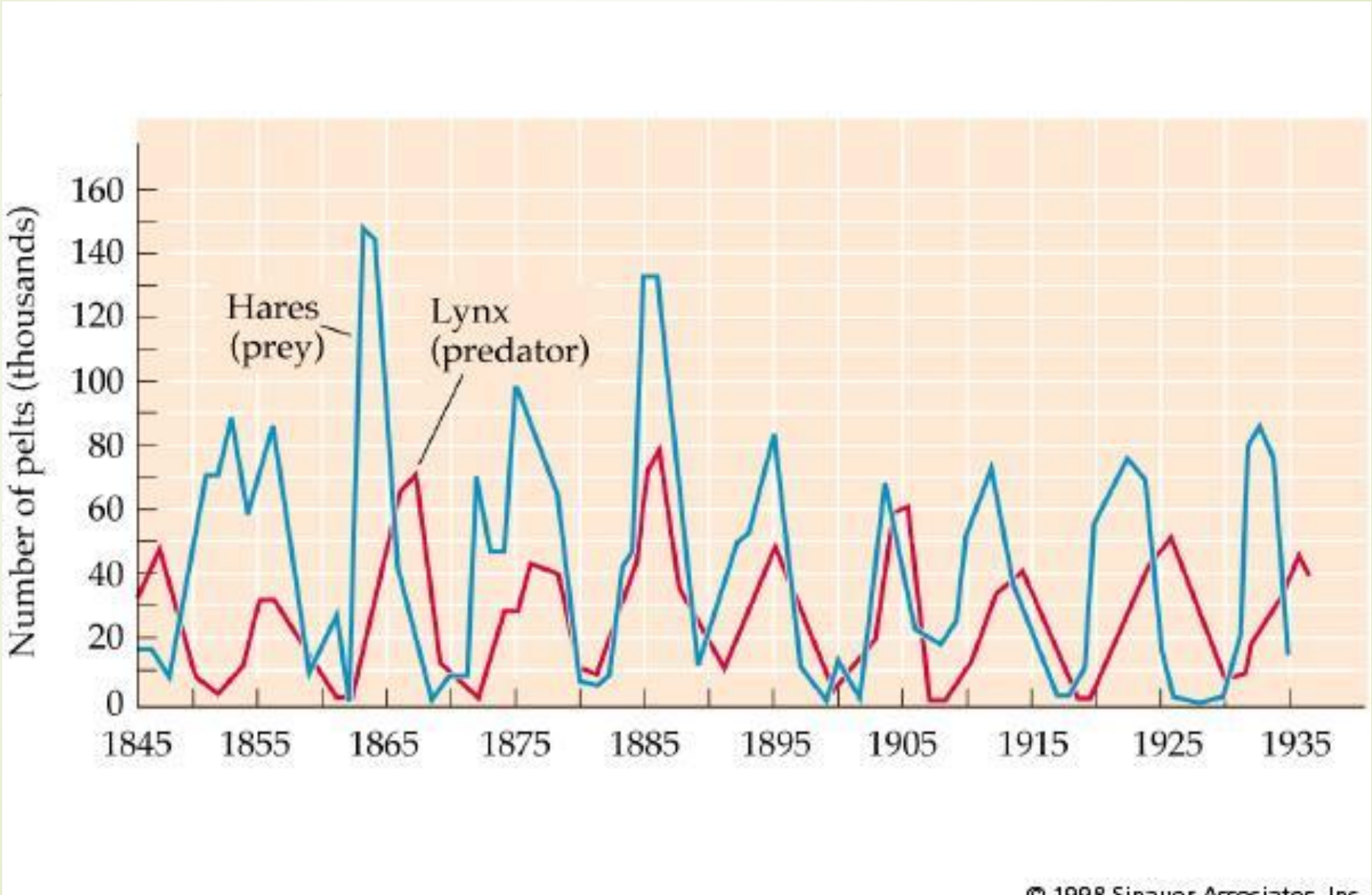
Canadian Biomes vs World Biomes worksheet

Limiting Factors Keep Populations in Equilibrium:

There are two categories of Limiting Factors:

- Density-Independent Factors
  - Any factor in the environment that does not depend on the number of members in a population in an area.
  - Usually abiotic
  - Ex: fires, droughts, extreme storms, floods, pollution due to human activity etc.
- Density-dependent factors
  - Any factor in the environment that depends on the number of members in a population in an area.
  - Usually biotic.
  - Ex: disease, predation, competition for resources (space, food, water)

Predator-Prey Relationship between the Arctic hare and the lynx.



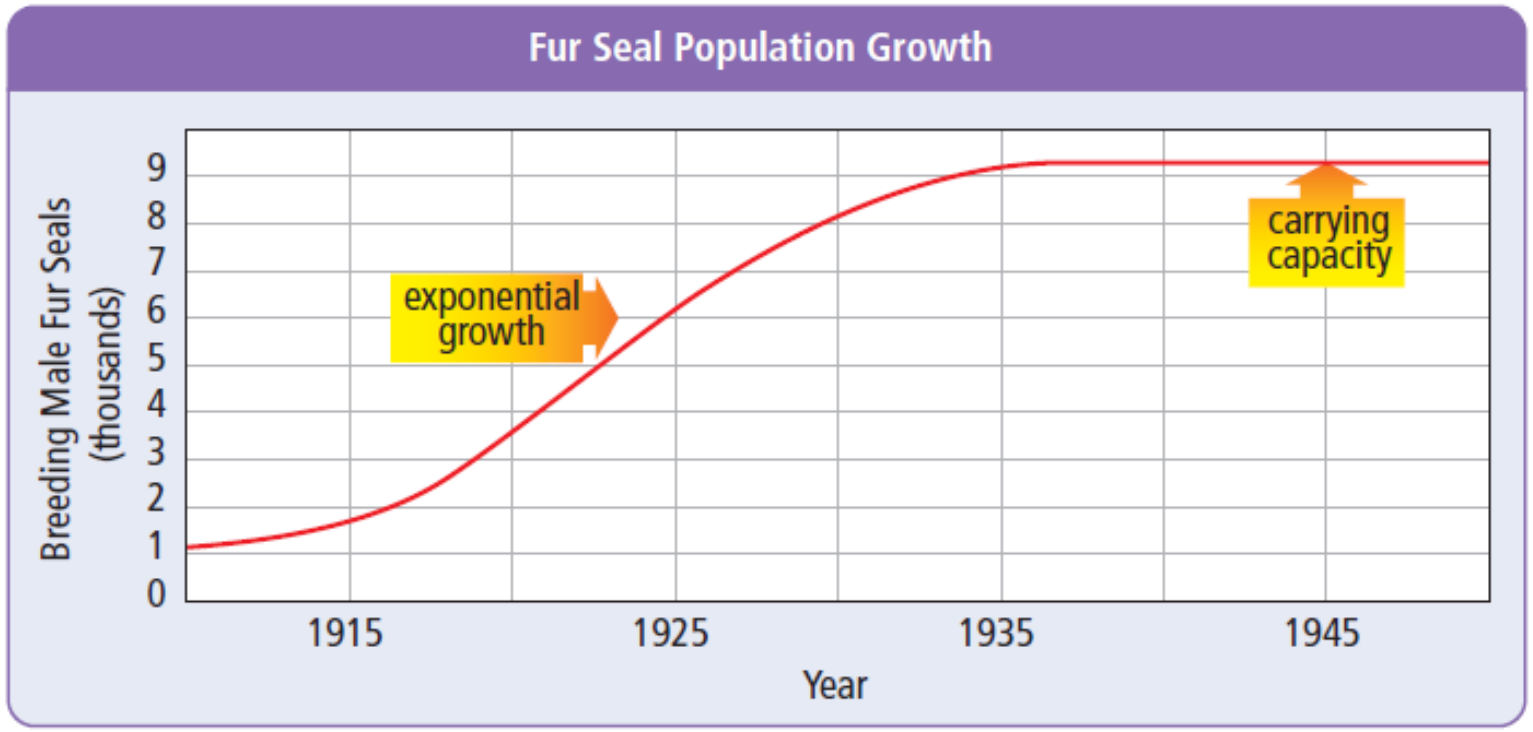
Discussion

- Describe the relationship between the prey and predator.
- Predict what would happen to the population if predators or prey were lost to disease.
- Predict what would happen to the predator and prey populations if half of the prey animals' habitat were destroyed by the construction of a shopping mall.

Population Change

Exponential growth is a rapid increase in population size.

Carrying capacity is the size of a population that can be supported by an ecosystem.



- Worsheet
- Graphing Populati
- P.291 NS Science 1

Discussion

- What happens if a population grows too fast? Too slow?
- What would cause a population to grow too fast or too slow?
- What does a population need to be in equilibrium?
- Considering populations within ecosystems have different needs, what happens when a population changes?