

Lesson 2: Terrestrial and Aquac Ecosystems

- 20-B1.2k explain how terrestrial and aquatic ecosystems support a diversity of organisms through a variety of habitats and niches; *e.g.*,
- *terrestrial: canopy, sub-canopy, forest floor, soil*
 - *aquatic: littoral, limnetic, profundal and benthic zones*
- 20-B1.3k identify biotic and abiotic characteristics and explain their influence in an aquatic and a terrestrial ecosystem in the local region; *e.g., stream, lake, prairie, boreal forest, vacant lot, sports field*

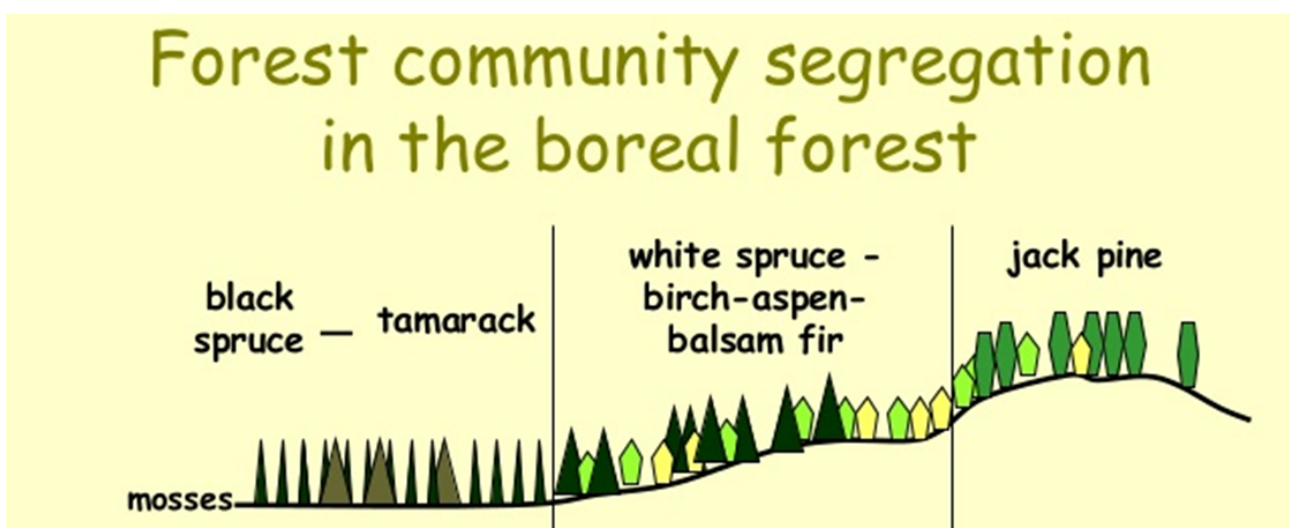
- Ecosystems can be land based (terrestrial) or water based (aquac)
- In this secon we will look at some examples of how these ecosystems are made up of different habitats which have different abioc and bioc components

Factors Affecng Terrestrial Ecosystems

Despite their many differences, terrestrial regions such as coniferous forests, deserts, and grasslands are alike in one way: each region funcons as a system.

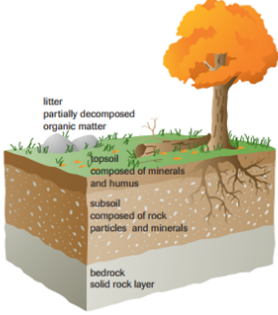
Within each ecosystem, the bioc and abioc factors are **interdependent**.

These factors can **limit the size of populaons** and can also **determine the number of species** that can survive in each ecosystem.



Below are descriptions of some factors that determine type and size of species that can exist in a terrestrial ecosystem

Soil

- How is soil formed?
 - Has 4 main layers
 - Lier
 - Made up of dead matter in various stages of decomposition
 - Topsoil
 - Lots of organic matter (humus) mixed with small rock particles
 - Usually very dark
 - Contains a rich supply of nutrients
 - This layer is where recycling of nutrients takes place
 - Lots of air and water present in topsoil (helps decomposition)
 - Subsoil
 - Below topsoil
 - Contains less organic matter and more rock particles
 - Bedrock
 - Marks the end of soil
 - Different ecosystems have different soils (prairie vs taiga)
 - Different species of plants are adapted to different soils
 - Eg black spruce and larch in muskeg; white spruce and pine in well drained areas; grass in prairies
- http://www.nelson.com/ABbio20-30/teacher/protect/otr/Bio2030OTR/attachments/i_AnimationSimulation/soil_profiles.html
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- The diagram illustrates the vertical layers of soil. From top to bottom, the layers are: litter (dead organic matter), partially decomposed organic matter, topsoil (a mixture of minerals and humus), subsoil (rich in rock particles and minerals), and bedrock (a solid rock layer). A tree is shown on the surface, with its roots extending into the topsoil and subsoil layers.
- Soils can be acidic, basic or neutral
 - Depends on
 - the type of rock from which the soil was formed
 - types of plants growing in it (needles add acid to soil when they break down)
 - Human activity

Available Water

- Depends on climate
- Organisms found in a region will be adapted to the amount of available water
 - Grass on prairies reduce water loss
 - Plants in rain forest repel water
- Water that enters the soil is called ground water
 - It flows downward II it reaches the water table
 - The water table may be close to the surface (marshy areas)
- Leaching is when water causes nutrients to move out of the topsoil into the subsoil
 - Soil in rainforest is not high in humus as you may think it would be (why not)

Temperature

- Also depends on climate
- Can vary lots over a year
- Animals and plants are adapted to the temperature of their ecosystems

Sunlight

- Equator region receives more sunlight than more North or South regions
 - This impacts temperature
- Plant species compete for sunlight

Slope

