Sunday, January 26, 2020

BIOL2903

Lecture 1

- animals = fauna
- plants = flora
- the total number of species of flora and fauna = biodiversity
  - biodiversity = biological diversity
  - total number and variety of living things (flora and fauna) found in an area
- ontario's total biodiversity = +100,000 species!
  - animals
    - reptile and amphibians = herptiles = herps
      - 50 species
    - fish
      - 154 species
    - mammals
      - 81 species
    - birds
      - 499
      - every year is a committee that evaluates new species
  - invertebrates/insects = tens of thousands
    - odonates
      - 172
    - butterflies
      - 148
    - moths
      - 1000

    - beetles
        - thousands of species
    - millipedes and centipedes
        - undetermined
    - spiders
        - undetermined
- plants
    - vascular plants = 3000+
    - mosses and lichens = bryophytes = 800+
    - fungus
    - total vascular plants,, bryophytes, and fungi = +10,000
- What makes ontario so rich?
    - land size
        - ontario is more than one million km squared
    - great range of abiotic factors
        - abiotic means **non living**
        - range of environmental conditions such as **temperature**
        - range in **precipitation** (rain or snow)
        - **wind**, powerful force that can spread seeds, form habitats, etc.
        - **soil** type
        - **fire**
        - rocks
            - rocks are made of minerals that affect the nutrient supply and sold chemistry
            - 3 major groups of rocks
                - sedimentary
                - igneous

- metamorphic

- the rock under and given area is called bedrock
  - some bedrock is flat and layered
  - on top of the bedrock lies **overburden**
  - much of the overburden we have comes from **glacial deposits**
  - as the glaciers melted back, they carried material and they pushed soil away, once they melted, overburden/glacial deposits are left on top
  - other times we cans see pure sand left behind
  - the lay of the land and the glacial “gifts” affect drainage
  - drainage affects what grown atop deposits
  - sand is a very dry soil
  - glacial till can trap moisture, allows things to grow
  - clay does not drain very well
  - water is one of the most powerful forces in ontario
  - both water and plants can acts as forces to break and crack rocks
  - water moves and sorts material by size and weight
  - order of particle size (biggest to smallest) = boulders, gravel, sand, silt, clay
  - the type of bedrock and the type of glacial deposits affect the land physically
    - some parts are flat (sedimentary rock)
    - and other parts are quite hilly (highlands)
  - rock type (eg. igneous vs. sedimentary) and lay of the land = physiographic regions
- rock that is formed from sediments is called sedimentary rocks
  - tend to be flat and layered
  - = “young” rocks, 400-500 million years old
  - limestone is a sedimentary rock and very common, this rock is rich in calcium (calcium carbonate) and is relatively soft and basic in pH (not acidic)

- and when you pour HCl on it, it effervesces (bubbles up)
- some limestone is made from animals whose fossil remains are full of calcium
- Poison Ivy loves basic soil and calcium!
  - calciphiles = plants that love calcium like poison ivy
- sedimentary rocks usually underlie **flat terrain known as lowlands**

- other rocks were formed from molten rock (magma) deep underground
  - they are not layered
  - igneous rocks usually lack calcium, have lots of silica and are hard and acidic (opposite of limestone)
  - eg. granite is a common igneous rock, no reaction between acid like others, does not effervesce
  - igneous = “old” rocks, 1-3 billion years old
  - some plants thrive in acidic soil
  - some igneous rocks were formed on top of the earth’s surface, can be more basic than acidic like the others formed underground
    - eg. basalt is a volcanic rock (but it is not acidic)
- metamorphic rock is a third type of rock formed from pre-existing rock transformed by heat and pressure
  - these rocks retain the chemical characteristics of their parent rock
  - often see lines on these rocks because different sediments align
  - granite becomes gneiss which is acidic and lacks calcium
    - when you pour HCl on it nothing happens
  - eg. banded gneiss with lines and colours
  - limestone can also be metamorphosed, becomes marble
    - marble contain calcium (calcium carbonate)
    - acid would effervesce

        - igneous and metamorphic rocks usually underlie **hilly terrain known as highlands**

- Rocks can create relief; hills and varied terrain
    - relief results in microclimates
    - important to a lot of living thing that grow on rocky sites
- Biotic factors, living things
- different parts of ontario
    - the Canadian shield
        - comprised of all types of rocks
        - rugged country
    - Lowlands
        - ottawa - st laurence lowland
        - great lakes lowland
        - hudson bay lowland
- Big rocks and how they got there
    - glaciers, erratic journey
- each physiographic region contains a diversity of habitats
    - certain trees can be dominant, most common, abundance
    - in some parts of Ontario, deciduous trees, such as oak and maples, are dominant
    - in other parts of ontario, coniferous trees are dominant
    - the dominant campy-forming trees define forest regions
    - ecological or forest regions of ontario
        - tundra furthest north region of ontario
            - has caribou, polar bears
            - no canopy, aka no trees

- just under tundra is hudson bay lowland, different than physiographic regions for rocks
  - lacking in canopy, scattered trees
- under that is Boreal forest
  - varies tremendously from east to west and north to south
  - largely coniferous trees
  - Balsam fir, and black spruce throughout region
  - great gray owls, moose
- below Boreal forest is great lakes st lawrence
  - blend of the boreal forest and carolinian region
  - beach trees, very diverse mixture of plants and animals
  - barred owls, pine martin (fox)
- lowest part is Carolinian region
  - southern ontario
  - lots of trees and ontario that cant be found in other parts
  - oak trees, tulip trees
  - opossums