

GENETICS

LESSON 4: GENETICS AND DIVERSITY

Learning Outcomes:

- I can describe how genetic diversity accounts for differences between individuals, species and ecosystems.

Biodiversity

- every living organism – plant, animal, fungus, protist, or bacteria – has its own unique genetic code.
- Q: Why is biodiversity important? A: It increases the chance of survival of a species when conditions become less favorable. It also increases the resources that are available to other species (including us!)
- this genetic uniqueness creates a biodiversity that can be compared at 3 different levels

1. Genetic Diversity

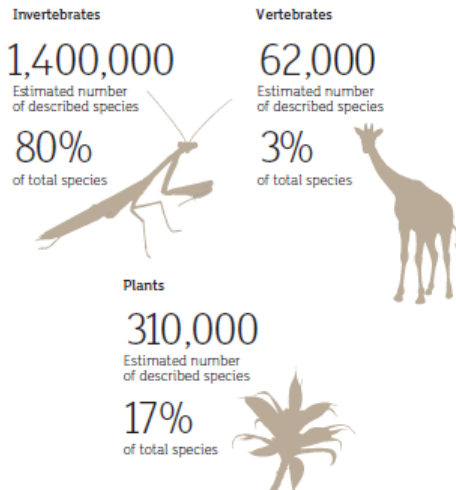
- differences that occur between members of the same population or species
- any 2 humans have a genetic similarity of approximately 99.7%
 - all of the differences between any 2 people only accounts for 0.3% of their DNA



2. Species Diversity (variety of species)

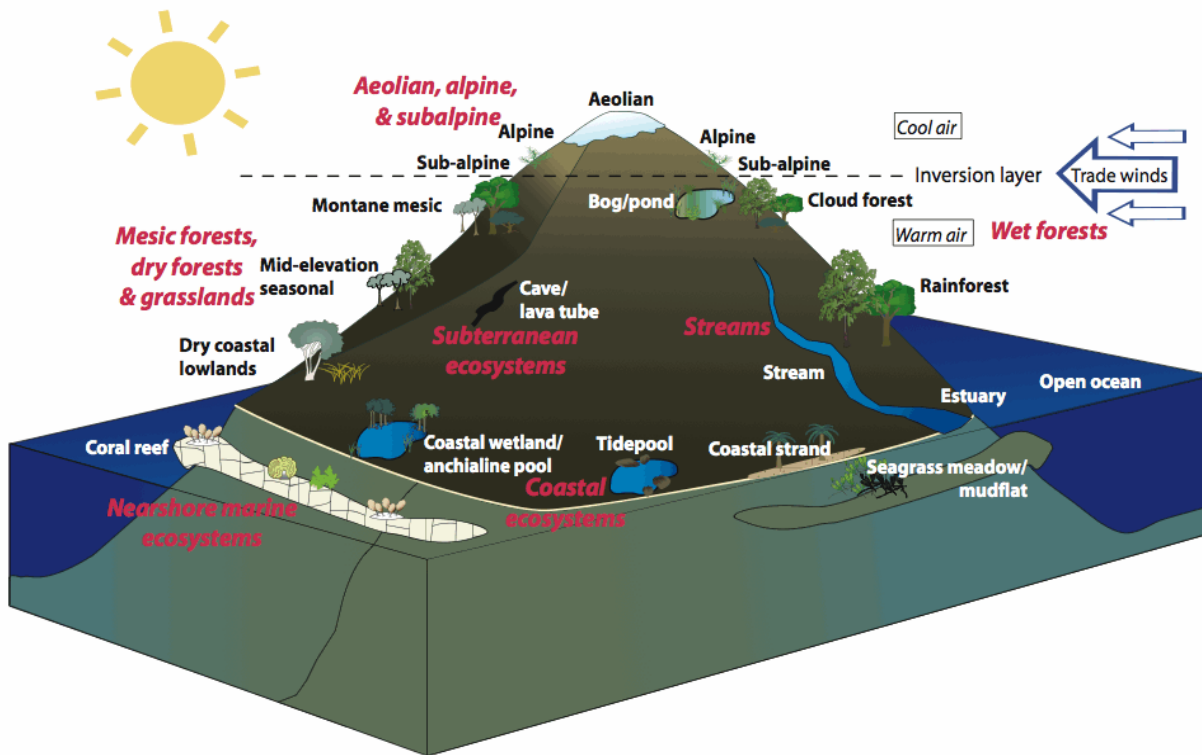
- each species has their own number of chromosomes and DNA make-up
 - fruit fly has 4 pairs of chromosomes
 - dogs have 39 pairs of chromosomes
- scientists have catalogued over 1.74 million different living species
- estimates on the total number of species ranges from 8.7 million to 1 trillion

Figure 04 | Estimated number of described species and the percentage of total species they represent [based on Scheffers *et al.* (2012)].



3. Ecosystem Diversity

- the variety of different ecosystems on the planet
- ecosystems are composed of both living and non-living components
- means that there is variation between 2 different boreal forests within BC



Videos

<https://www.youtube.com/watch?v=XOxsjdB4-ZQ>

Bill Nye Biodiversity <https://www.youtube.com/watch?v=-Sybgof-X2k>
(use with worksheet)