Ch 14 - Population Density And Distribution

KEY CONCEPT

Each population has a density, a dispersion, and a reproductive strategy.

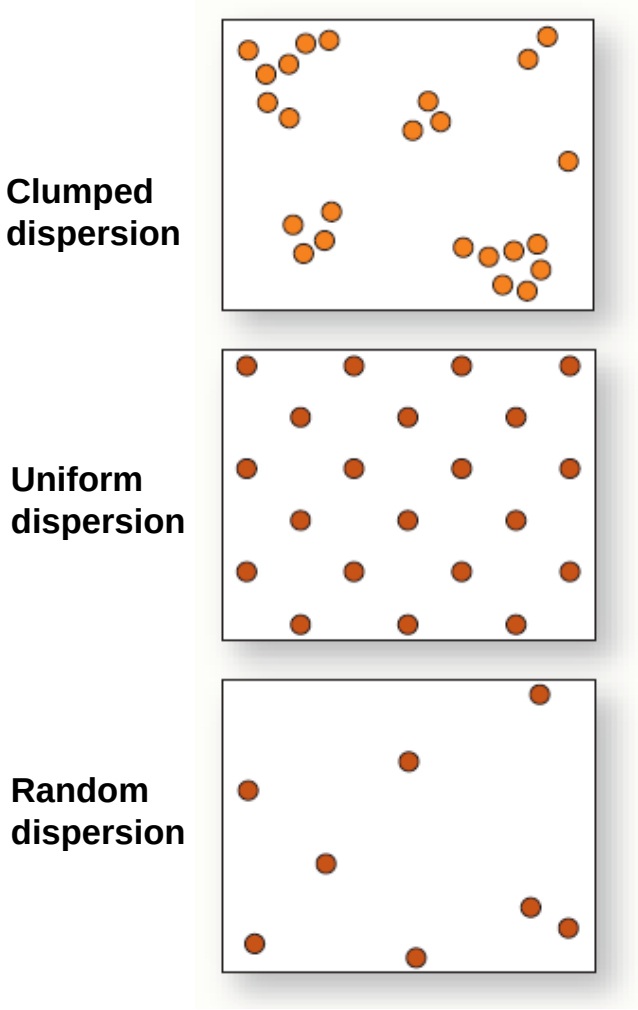
Ch 14 - Population Density And Distribution

- **Population density is the number of individuals that live in a defined area.**
  - Population density is a measurement of the number of individuals living in a defined space.
  - Scientists can calculate population density.

$$\frac{\#\text{ of individuals}}{\text{area (units}^2\text{)}} = \text{population density}$$

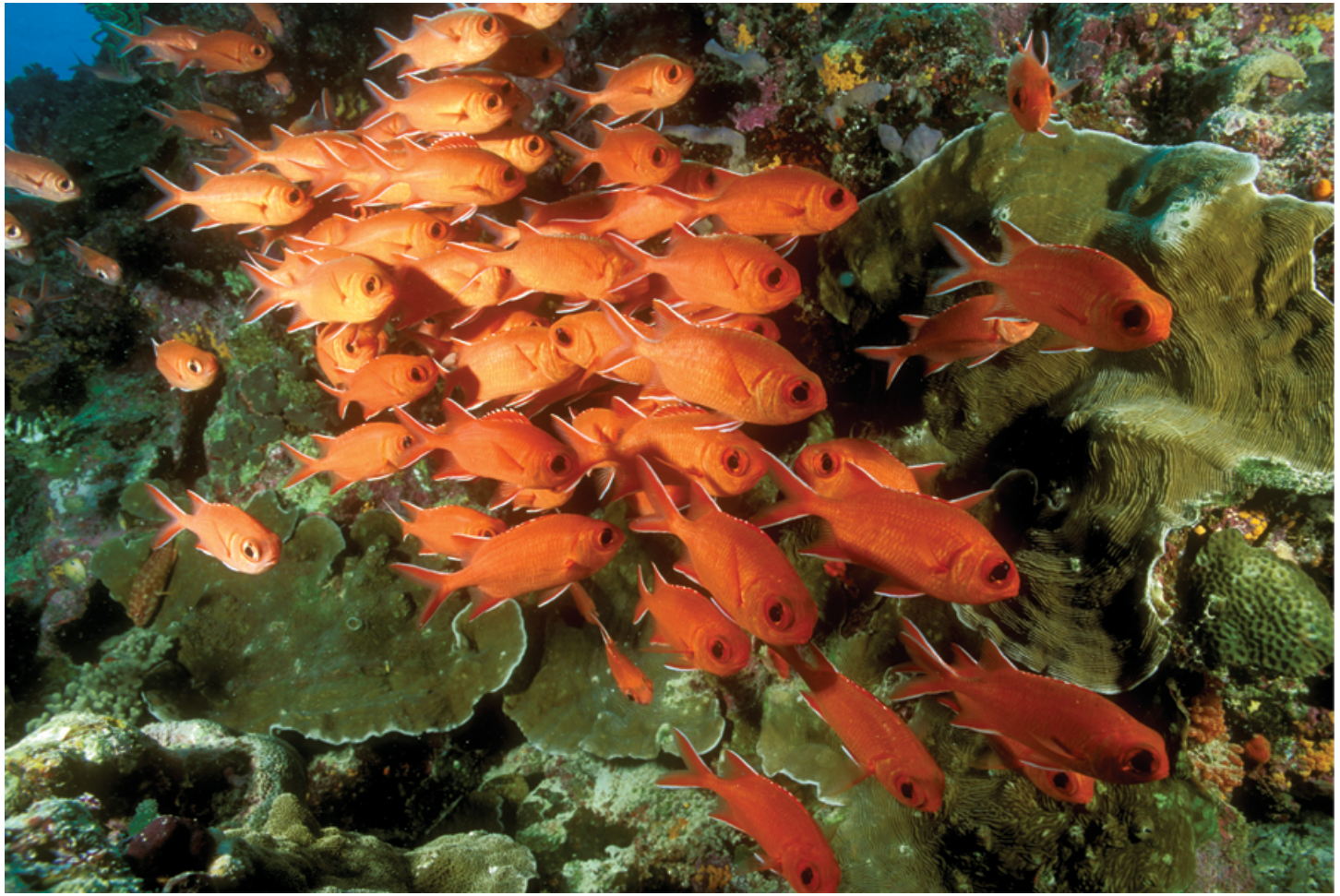
Ch 14 - Population Density And Distribution

- **Geographic dispersion of a population shows how individuals in a population are spaced.**
  - Population dispersion refers to how a population is spread in an area.



Ch 14 - Population Density And Distribution

- There are three types of dispersion.
  - clumped



Ch 14 - Population Density And Distribution

- There are three types of dispersion.
  - uniform

Ch 14 - Population Density And Distribution

- There are three types of dispersion.
  - random

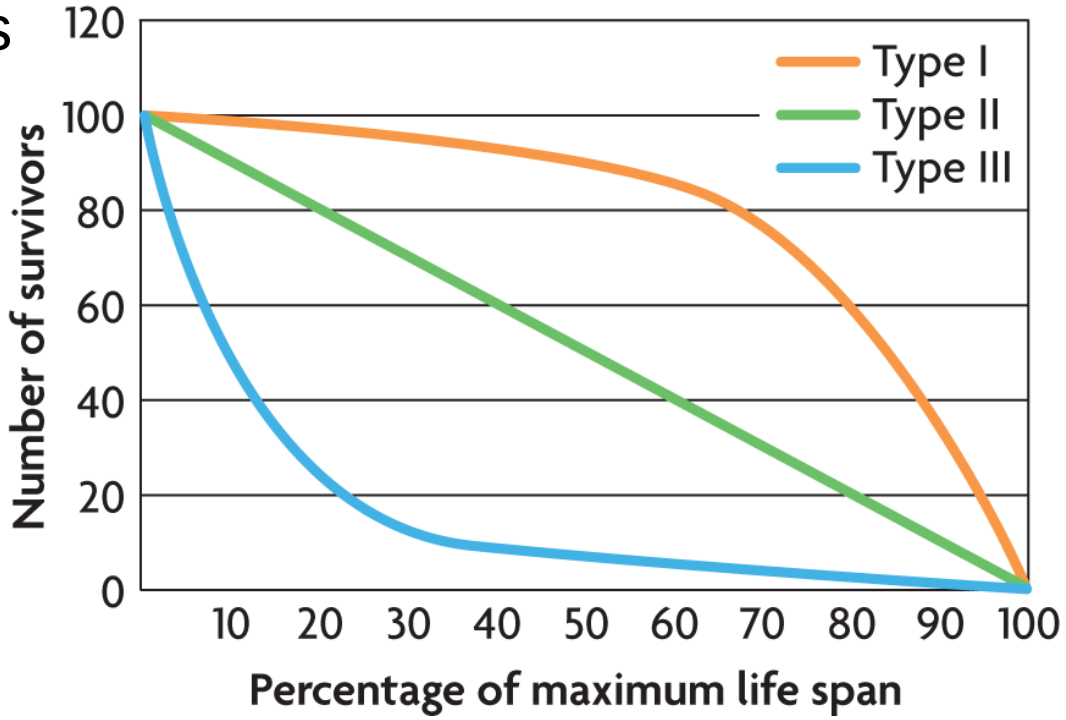
Ch 14 - Population Density And Distribution

- **Survivorship curves help to describe the reproductive strategy of a species.**
  - A survivorship curve is a diagram showing the number of surviving members over time from a measured set of births.

SURVIVORSHIP DATA			
Age (years)	Deaths	Survivors	% Surviving
0–5	I	35 – 1 = 34	97
6–10	I	34 – 1 = 33	94
11–15	0	33 – 0 = 33	94
16–20	IIII	33 – 4 = 29	83
21–25	I	29 – 1 = 28	80

Ch 14 - Population Density And Distribution

- Survivorship curves can be type I, II or III.
  - Type I—low level of infant mortality and an older population
  - common to large mammals and humans
  - Type II—survivorship rate is equal at all stages of life
  - common to birds and reptiles
  - Type III—very high birth rate, very high infant mortality
  - common to invertebrates and plants



Ch 14 - Population Density And Distribution

KEY CONCEPT

Populations grow in predictable patterns.

Ch 14 - Population Density And Distribution

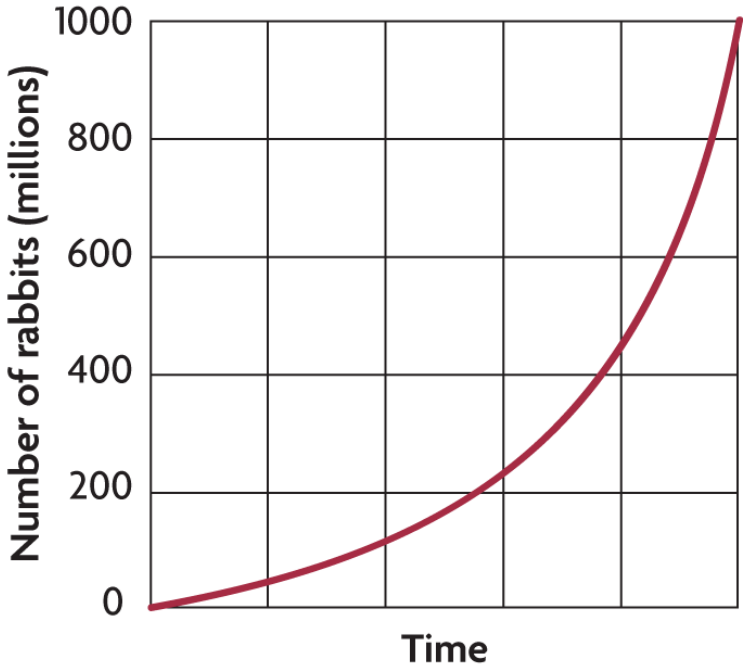
- **Changes in a population's size are determined by immigration, births, emigration, and deaths.**

  - The size of a population is always changing.
  - Four factors affect the size of a population.
    - immigration
    - births
    - emigration
    - deaths

Ch 14 - Population Density And Distribution

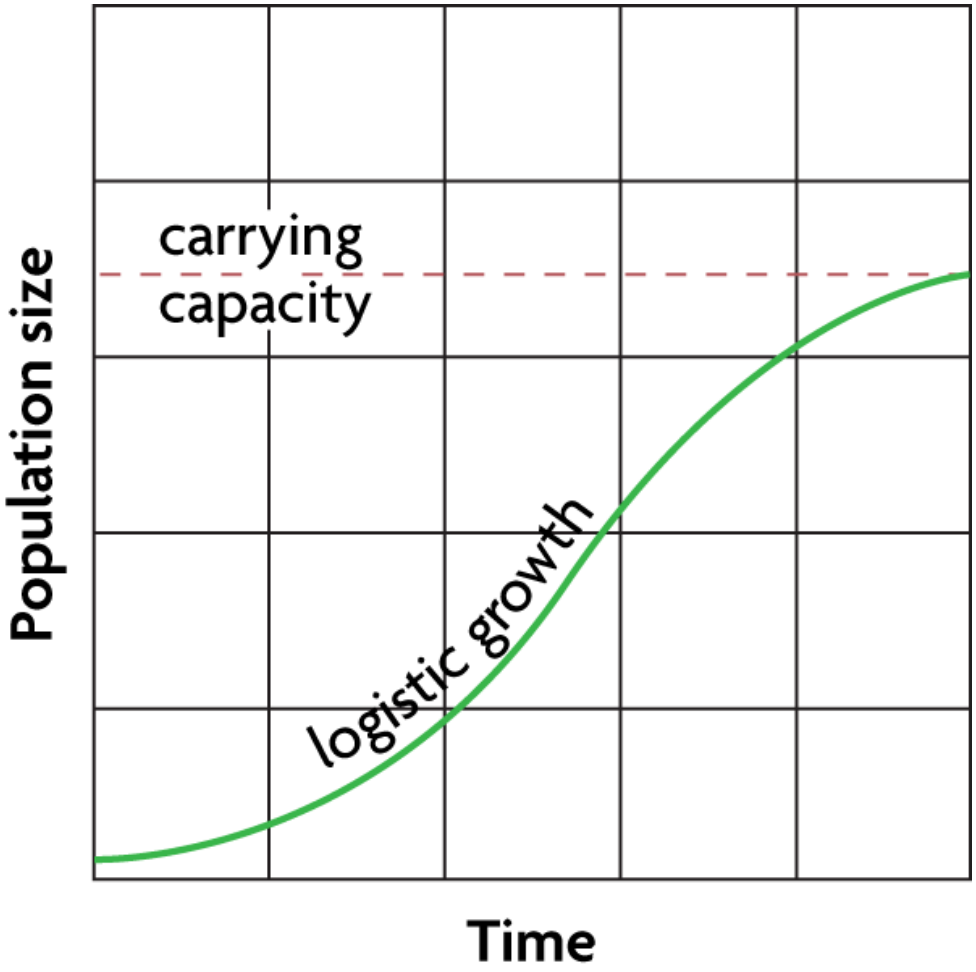
Population growth is based on available resources.

- Exponential growth is a rapid population increase due to an abundance of resources.



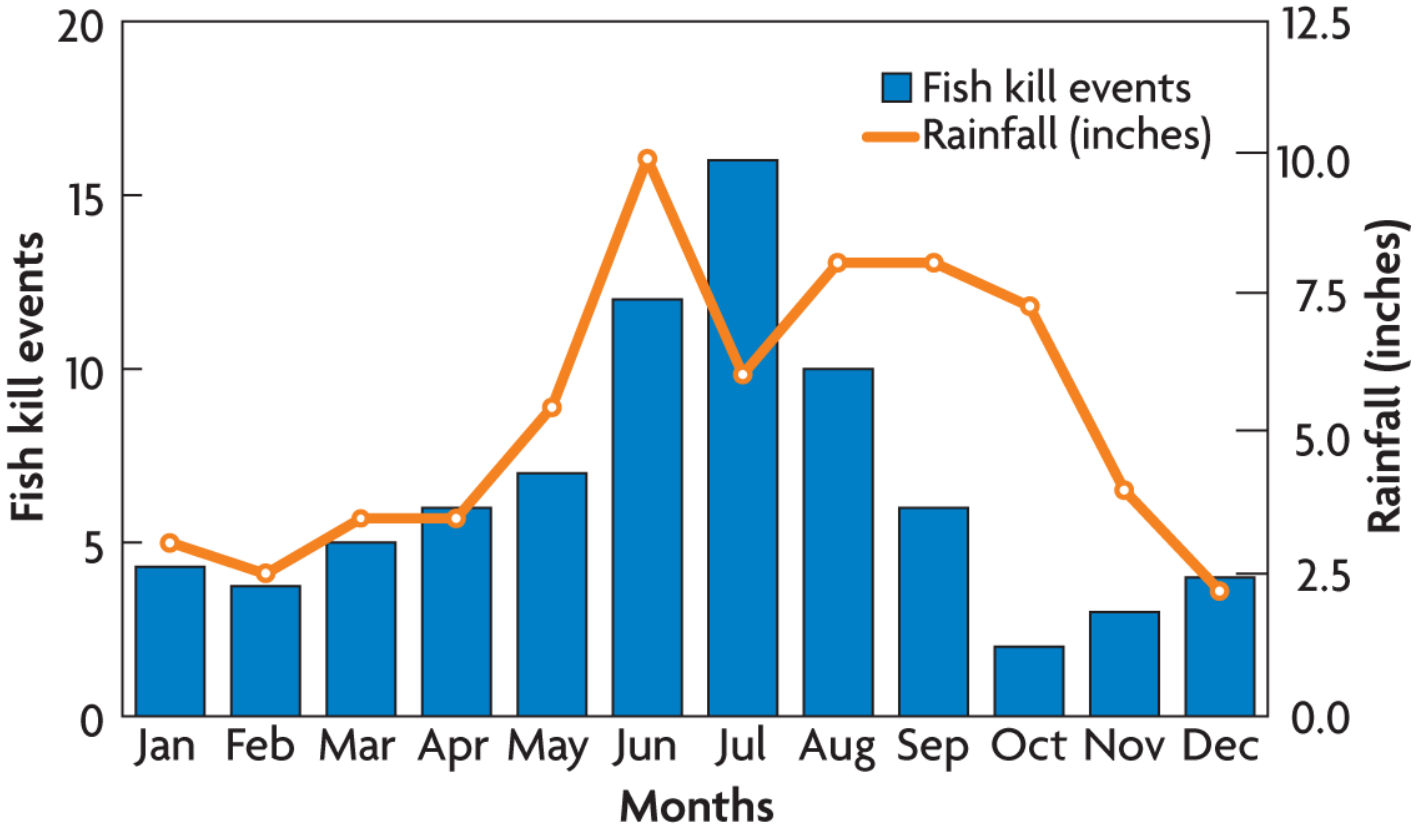
Ch 14 - Population Density And Distribution

- Logistic growth is due to a population facing limited resources.



Ch 14 - Population Density And Distribution

- Carrying capacity is the maximum number of individuals in a population that the environment can support.
- A population crash is a dramatic decline in the size of a population over a short period of time.



Ch 14 - Population Density And Distribution

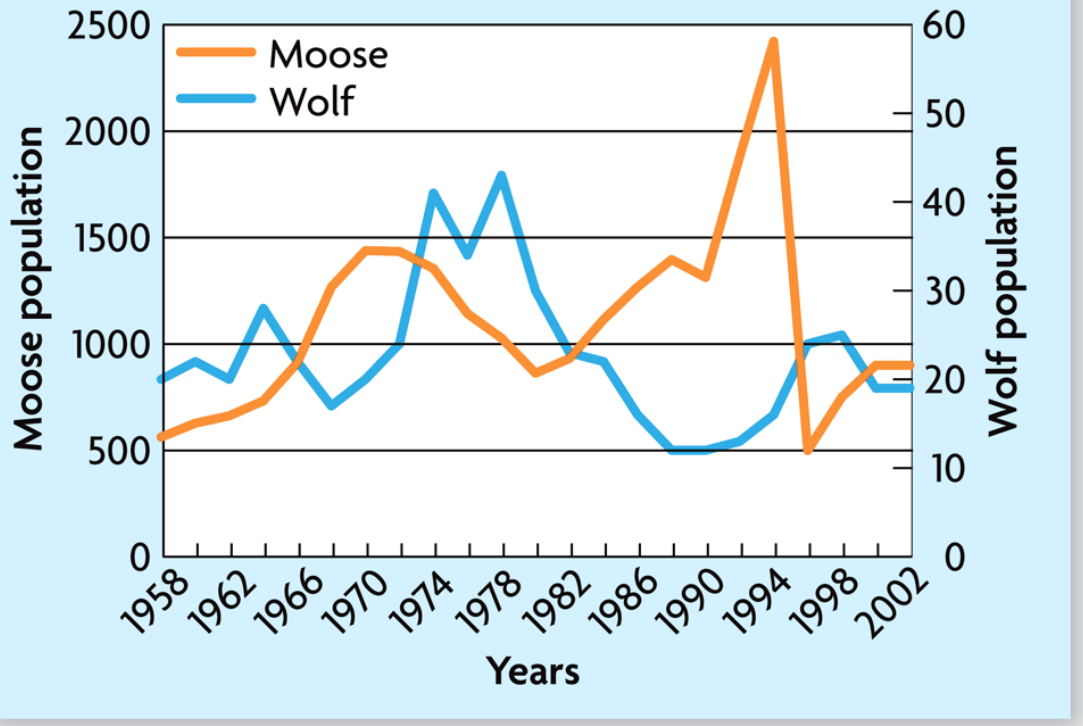
Ecological factors limit population growth.

- A limiting factor is something that keeps the size of a population down.
- Density-dependent limiting factors are affected by the number of individuals in a given area.

Ch 14 - Population Density And Distribution

- Density-dependent limiting factors are affected by the number of individuals in a given area.
  - predation
  - competition
  - parasitism and disease

FIGURE 14.13 DENSITY-DEPENDENT LIMITING FACTORS



Ch 14 - Population Density And Distribution

- Density-independent limiting factors limit a population's growth regardless of the density.
  - unusual weather
  - natural disasters
  - human activities

Ch 14 - Population Density And Distribution

KEY CONCEPT

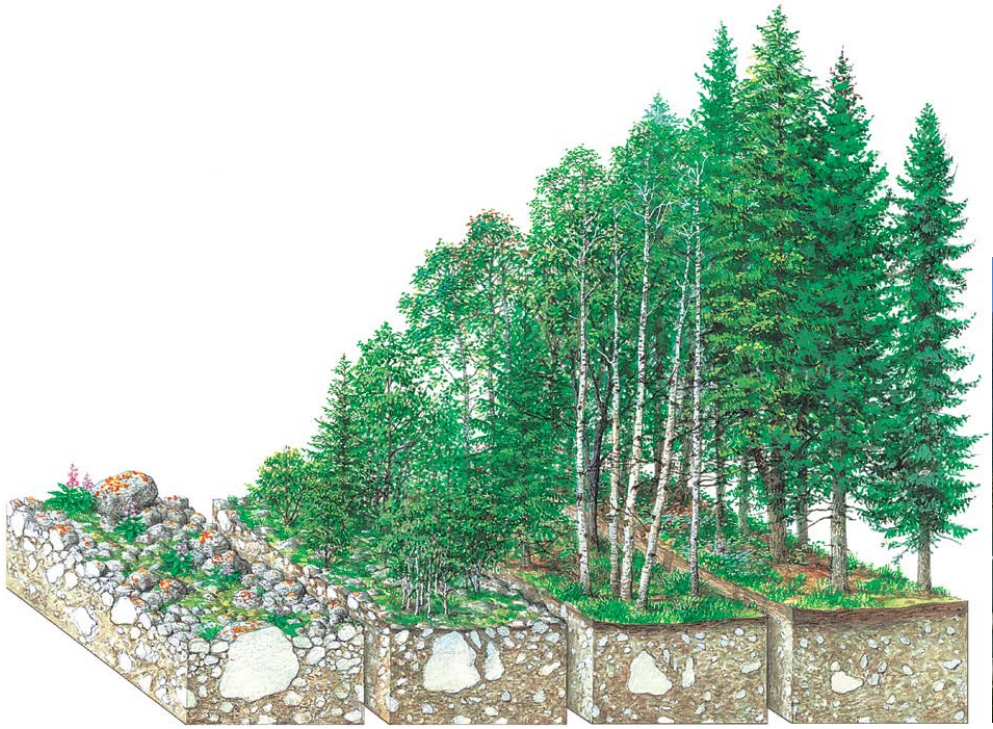
Ecological succession is a process of change in the species that make up a community.

Ch 14 - Population Density And Distribution

- **Succession occurs following a disturbance in an ecosystem.**
  - Succession regenerates or creates a community after a disturbance.
    - a sequence of biotic changes
    - damaged communities are regenerated
    - new communities arise in previously uninhabited areas

Ch 14 - Population Density And Distribution

- There are two types of succession.
  - primary succession — started by pioneer species



Ch 14 - Population Density And Distribution

- There are two types of succession.
  - secondary succession — started by remaining species