

## 10.13 Lecture Summary

### Species

#### What is a species?

1. **Typological species** each kind of organism is fixed and immutable, and can be represented by an ideal individual, the type specimen
2. **Biological def of species:** reproductively isolated group of actually interbreeding natural pops that produce fertile offspring.

Domain  
Kingdom  
Phylum  
Class  
Order  
Family  
Genus  
Species

**Sympatric species:** ranges overlap (easy to determine if 2 organisms are diff species or not)

**Allopatric Species:** ranges do not overlap (hard to determine)

#### Problems with identifying species:

1. **Polymorphic species:** Species with many different types of individuals
2. **Sibling Species:** virtually identical species (but they don't breed)
3. **Ring species:** Continuous gradual shift in phenotype over a large range (end pops cant breed)
4. **Asexual species:** can't use biological definition
5. **Fossil species:** can't use bio def, b/c you can't see breeding.

What keeps species from interbreeding?

#### Reproductive isolating mechanisms:

1. **Pre-zygotic mechanisms**
  - **Ecological Barriers:** 2 groups that share territory, but occupy different regions
  - **Behavioral Barriers:** Temporal isolation
  - **Mechanical barrier:** distinct reproductive parts
  - **Gametic barriers:** mating occurs but egg and sperm are incompatible
2. **Post sygotic barriers:**
  - **Hybrid inviability:** fertilixation occurs but zygote, embryo, or larva dies
  - **Hybrid sterility:** healthy hybrid unable to reproduce due to abnormal gametes (mules)

\*Populations do not strive to become different species\*

#### How are species formed? Microevolution

A. **Allopatric speciation**: geographic speciation

Happens in 2 steps:

1. **Geographic separation of species that was once continuous**
  - Dispersal (successful species that spreads out over large area)
  - Barriers
  - Continental Drift
2. **Reproductive isolation during genetic drift or isolation**

Original population → physical barrier → reproductive isolation → Differentiation (speciation)

**Ecological Speciation**: Speciation within a population occurring the same habitat

1. **Instantaneous speciation**: 1 generation, new species (mutation(not probable), polyploidy(common in plants) tends to produce offspring that cannot mate with each other)