

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 zygot, embro, 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)