

Typological species

- individuals are members of the species if they sufficiently conform to certain fixed properties
- clusters of variations or phenotypes within specimens
 - o ex. Longer and shorter tails would differentiate the species
- used as a "classical" method of determining species
 - o ex. Linnaeus early in evolutionary theory
- we now know that different phenotypes do not always constitute different species
 - o ex. 4-winged *Drosophila* born to a 2-winged mother is not a different species
- Species named in this manner are called morphospecies

Biological / Isolation species

- set of actually or potentially interbreeding populations
- generally the most useful formulation for scientists working with living examples of the higher taxa like mammals, fish, and birds
- meaningless for organisms that do not reproduce sexually
- does not distinguish between
 - o theoretical possibility of interbreeding
 - o and the actual likelihood of gene flow between populations and that is thus impractical in instances of allopatric (geographically isolated) populations.
- Results of breeding experiments done in artificial conditions may or may not reflect what would happen if the same organisms encountered each other in the wild
 - o Difficult to gauge whether or not the results of such experiments are meaningful in reference to natural populations.

Morphological species

- A population or group of populations that differs morphologically from other populations.
- Ex. We can distinguish between a chicken and a duck because they have different shaped bills and the duck has webbed feet.
- Species defined in this way since well before the beginning of recorded history.
- Much criticized:
 - o Recent genetic data reveals that genetically distinct populations may look very similar
 - o Large morphological differences sometimes exist between very closely related populations
- Most species known have been described solely from morphology

Mate-recognition species

- group of organisms that are known to recognize one another as potential mates
- applies only to organisms that reproduce sexually
- UNLIKE isolation species, focuses specifically on pre-mating reproductive isolation

Phylogenetic / Evolutionary / Darwinian Species

- a group of organisms that share an ancestor
- lineage that maintains its integrity with respect to other lineages through both time and space
- at some point in the progress of such a group, members may diverge from one another
 - o when such a divergence becomes sufficiently clear, the two populations are regarded as separate species.

Microspecies

- species that reproduce without meiosis or mitosis
- each generation is genetically identical to the previous generation

Ecological species

- individuals in a population occupy the same ecological niche with respect to food and habitat.