SPECIES CONCEPTS

biological species concept (BSC) – As described by Ernst Mayr, the concept that "species are groups of actually or potentially interbreeding populations that are reproductively isolated from other such groups."

- The BSC is the most widely used and accepted definition of a species, but cannot be applied to Bacteria or Archaea.

Morphospecies concept **–**The idea that members of the same species usually look like each other more than like other species

ecological species concept (ESC) – The concept that there is a one-to-one correspondence between a species and its niche.

phylogenetic species concept (PSC**) –** The idea that members of a species all share a common ancestry and a common fate

ring species – species that contain populations that are reproductively isolated from each other but can exchange genetic material through other, linking populations.

PREZYGOTIC – factors come into play after fertilization, prevent fertilization from taking place

Behaviour – individuals that only mate with other individuals on the basis of specific courtship rituals, songs, and other behaviours

Gametic isolation – Incompatibility between the gametes of two different species. The fusion of an egg and sperm is hindered in spite of their physical proximity

Mechanic incompatibility – Structural configuration of the genitalia that prevents mating with another species.

Temporal – Pre-zygotic isolation between individuals that are reproductively active at different time (differences in the timing of their mating season)

Geographical – Spatial segregation of individuals,

Ecological – Pre-zygotic isolation between individuals that specialize ecologically in different ways (populations may live in a close proximity but live in different habitats

POSTZYGOTIC – factors involve mechanisms that come into play after fertilization of the egg, result in the failure of the fertilized egg to develop into a fertile individual.

Genetic incompatibility – Genetic dissimilarity between two organisms, such as different numbers of chromosomes, that is sufficient to act as a post-zygotic isolating factor

- Organisms who are similar genetically but do not mate due to some isolation, or if they do, they produce inviable or sterile offspring

SPECIATION

the development of reproductive isolation between populations—is, therefore, typically just a by-product of the genetic divergence of separated populations.

- Eventually they are so genetically different that crosses between individuals from each population no longer produce viable, fertile offspring

ALLOPATRIC – describes populations that are geographically separated from each other

- Species become allopatric in two ways

Dispersal in which some individuals colonize a distant place, such as an island, far from the main source population

Vicariance in which a geographic barrier arises within a single population, separating it into two or more isolated populations.

PERIPATRIC SPECIATION - specific kind of allopatric speciation where a few individuals from a mainland **population** (the central population of a species) disperse to a new location remote from the original population and evolve separately. *It may be intentional or accidental.*

- model suggests that change accumulates faster in these peripheral isolated populations than in the large mainland populations
- both because genetic drift is more pronounced in smaller populations than in larger ones and because the environment may differ between the mainland and island in a way that results in natural selection driving differences between the two populations.

ADAPTIVE RADIATION – a period of unusually rapid evolutionary diversication in which natural selection accelerates the rates of both speciation and adaption in a single linage

CO-SPECIATION – a process is speciation that occurs in response to speciation in another species.

- in which two groups of organisms speciate in response to each other and at the same time, producing matching phylogenies

SYMPATRIC – describe populations that are in the same geographic location

INSTANTANEOUS SPECIATION – are caused by hybridization between two species in which the offspring are reproductively isolated from both parents