Handout 12.11.2025

3. Semester Evolutionsbiologie

SPECIES CONCEPTS:

The Essentialist Species: A species is characterized by an unchanging essence. Species are defined as groups of similar individuals that are different from individuals belonging to other species.

The Nominalist Species: Only individual organisms exist, and the species is a man-made construct; all that classes of similar things share is a name.

Biological Species Concept: A species is a group of individuals fully fertile inter se, but barred from interbreeding with other similar groups by its physiological properties (producing incompatibility of parents, or sterility of the hybirds, or both). (Dobzhansky 1935).

Species are groups of actually or potentially interbreeding natural populations that are reproductively isolated from other such groups. (Mayr 1942).

Evolutionary Species Concept: A species is a single lineage (an ancestral-descendent sequence) of populations or orGanisms that maintains its identity from other such lineages and which has its own evolutionary tendencies and historical fate. (Wiley 1978)

Phylogenetic Species Concept: A phylogenetic species is an irreducible (basal) cluster of organisms that is diagnosably distinct from other such clusters, and within which there is a parental pattern of ancestry and descent. (Cracraft 1989).

A species is the smallest monophyletic group of common ancestry. (de Queiroz and Donoghue 1990).

Recognition Species Concept: A species is the most inclusive population of individual biparental organisms that share a common fertilization system. (Paterson 1985).

Cohesion Species Concept: A species is the most inclusive population of individuals having the potential for phenotypic cohesion through intrinsic cohesian mechanisms. (Templeton 1989).

Ecological Species Concept: A species is a lineage (or a closely related set of lineages) that occupies an adaptive zone minimally different from that of any other lineage in its range and which evolces separatedly from all lineages outside its range. (Van Valen 1976).

Internodal Species Concept: Individual organisms are conspecific by virtue of their common membership in a part of the genealogical network between two permanent splitting events or between a permanent split and an extincetion event. (Kornet 1993)

Note: These concepts are not necessarily mutually exclusive.