



SSPECIES AND POPULATION

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ABSTRACT

Species and population are two ecological classifications of organisms on earth. Species consist of a similar type of individuals who are capable of interbreeding with each other. A population is composed of a group of individuals who live in a certain habitat at a certain time. This is the main difference between species and population.

KEW WORDS

Species and population, what is a Species, what is a Population, Populations, Species.

Species and population are two basic levels of classification of organisms in ecology. The other higher levels of classification include community and ecosystem. Both species and a population are composed of a similar type of individuals. The main difference between species and population is that species is a group of similar individuals who interbreed with each other whereas population consists of individuals of a particular species, in a specific region at a certain time. Any population may comprise genetic variations within the population and between other populations of the same species. Since individuals in a population interbreed with each other, no emergence of new species can be observed. Speciation occurs when the variations are intolerable enough to make two incompatible groups of individuals who cannot interbreed with each other.





What is a Species

Species is a taxonomic level of organisms, ranking below a genus. It consists of similar individuals who can interbreed with each other. A species comprises the biggest possible gene pool. The application of the definition of species is difficult for organisms who mainly reproduce asexually as well as for most plants and animals who form hybrids. In addition, the boundaries of the ring species are difficult to distinguish. Therefore, other parameters such as DNA, ecological niche, and morphology are used to identify a species.



Figure 1: *Gasteria* species

Species are scientifically named by a binomial name; the first part of it is the genus to which the organism belongs to and the second part is the specific name. For example, humans are scientifically named as *Homo sapiens*; *Homo* is the genus to which humans belong to, and *sapiens* is the specific name of humans. The origination of species by natural selection is described by Charles Darwin in 1859. Genes can be transferred between species by horizontal gene transfer. Several *Gasteria* species are shown in figure 1.

What is a Population

A population is a group of organisms that belong to a particular species, living and interbreeding at the same place at a certain time. The number of individuals in a population changes over time due to birth, death, and the dispersal of individuals among other populations.



Under favorable environmental conditions and plentiful resources, the number of individuals in a population increases rapidly. The ability of the population to increase its number at the maximum rate is called the *biotic potential* of the population. The resistance upon the population is generated by the habitat, climate, food, and water ability of the environment. The *carrying capacity* of the environment is the number of individuals that the resources can support. If the density of the population is high, the influence of biological factors such as a change in temperature and diseases can also be high in the population. The biological factors which depend upon the density of the population are called *density-dependent factors*. The *intra-specific competition* occurs when a population has to compete with another population for the same resource. Based on the feeding behavior, a particular population may continue three types of *symbiotic interactions* with other populations or with the environment. They are parasitism, mutualism, and commensalism.



Figure 2: King penguin population at the Salisbury Plain in South Georgia Islands

Populations are categorized based on the growth characteristics of the species in a particular habitat as *K*-selected species and *r*-selected species. If the number of individuals in a species is increased up to the carrying capacity of the environment, a population of that particular species is called as a *K-selected species*. Late maturation, fewer, larger young individuals, longer lifespan, more parental care, and the intense competition for resources are the characteristics of a *K*-selected species. If the species grow rapidly at an exponential rate and fill the environment quickly, a population of that particular species is called as a *r-selected species*. Early maturation, numerous, small young individuals, shorter lifespan, less parental care, and little competition for resources are the characteristics of a *r*-selected species. The king penguin population at the Salisbury Plain in South Georgia Islands is shown in *figure 2*.



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