

Effect of isolation on animal or plant populations

When a population is isolated, the individuals that form it are finite in number. Reproducing individuals pass on part of their genes to their descendants (more or less important if the offspring are numerous or not). The genes of those who do not reproduce are extinguished when they die. The transition from one generation to the next is therefore a sampling of genes. The evolution of the population is thus the result of successive sampling with loss of part of the genes each time. The phenomenon of genetic drift then manifests itself in the progressive loss of genetic diversity over generations. In interconnected populations, genes migration from other populations counteract this phenomenon (see [The ups and downs of evolution: the role of small numbers](#)). In isolated populations, the loss of diversity is inevitable. It is even quicker when the population is small.

Another consequence of the isolation of populations is that inbreeding also increases gradually over generations, as individuals inevitably cross paths with other individuals to whom they are related.

The consequence of isolation is therefore a loss of genetic variability over generations, leading to the increasingly frequent birth of homozygous individuals for genes affecting reproduction or health status. In the long term, the probability of extinction of isolated populations is very high.

Cover image. Representation of an ecosystem in an urban environment. In this ecosystem, plant or animal populations are isolated. [Source: Anthony Quintano from Hillsborough, NJ, United States (CC BY 2.0), via Wikimedia Commons]

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