

Factors Affecting Population Size

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Population Growth

Many different factors impact the population size, and it will be highly difficult to predict which factors are the most important.

There are two broad groups of factors:

- [Abiotic factors](#)
- **Biotic factors**

Abiotic Factors

The abiotic environment like temperature, water, pH, light, soil and pollution impact the population size. Successful and dominant species can adapt well to the environment.

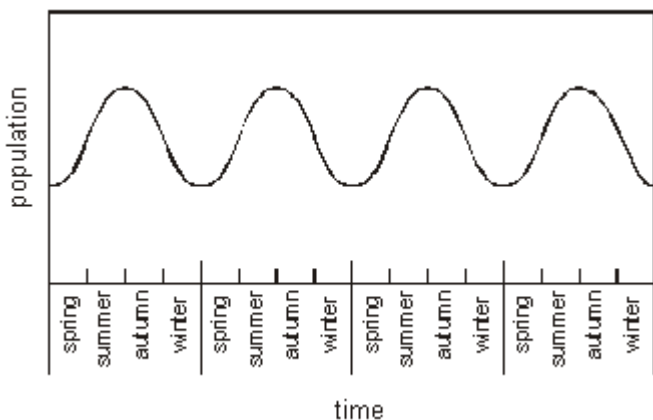
In extreme climates like polar region, deserts, etc., only few species can live. Why? Only a few species adapt themselves to the extreme climates. For example, polar bears in polar region and camel in deserts have both developed specific ways of either staying warm or staying cool and conserving or storing water.

But in moderate climate lots of species can thrive, and it will be a great competition between different species for food.

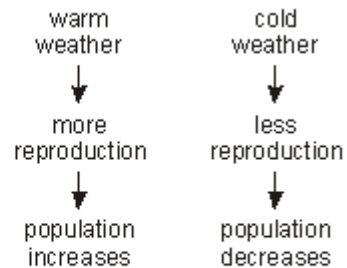
Tsunamis, Earthquakes and other natural disasters can reduce the population sizes.

Seasons

A periodic oscillation in the population size influences the population size.



Explanation:

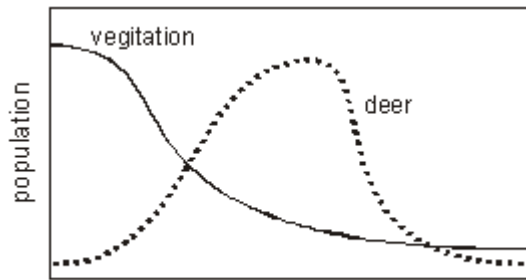


Season affects the population Size

In the above graph it is clearly shown that during warm weather the species can mate. With more reproduction chances, these cycles end with an increase in population. At the same time population would be decreased because of the less reproduction in cold weather. Organisms that perish during these periods will only be replaced once reproduction resumes.

Food Supply

Availability of food increases the population size because the population depends on food supply. So automatically less food supply creates a decrease in the population size. Increases in the population of deer during times of high vegetation availability and decrease in population during times of decreased vegetation has been shown in the below graph.

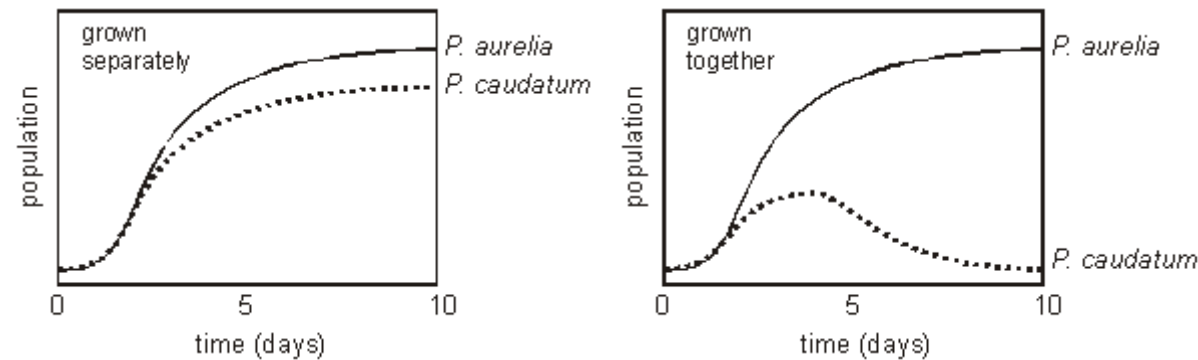


time after introduction of deer
Food supply Vs Population size of deer

Inter-specific Competition

[Inter-specific competition](#) is competition for resources such as food, space, water, light, etc., between members of [different species](#).

If two equally strong organisms grow separately they may show a moderate increase in their population. But if they both grown together in the same ecosystem, a dominate one will access the resources and the other population automatically start decreasing. This can be demonstrated by growing two different species of the protozoan Paramecium in flasks in a lab.



Interspecific competition between the two species of paramecium

Intraspecific Competition

[Intraspecific competition](#) is competition for resources between members of the same species. Each member of the same species has the same niche and so competes for exactly the same resources.

Predation

If the population of the prey increases, the predator can access more food and the predator's populations will be increased. But if they continuously feed on the prey, the prey population will decrease.



Predator with its prey

Parasitism and Disease

If the population of parasite increases, they kill their hosts, which lead to the reduction of host population. So parasites won't get hosts and their population would start decreasing leading to the increase of host population. It is like a cycle.

If a particular community affected with any disease, it will lead to the decrease in their population.

Overall, the diseases, natural disasters like tsunamis, and unbalanced predator-prey relationships are the environmental factors affecting the population size of the ecosystem. Death, birth, emigration and immigration are the non-environmental factors also affect the population size.

Want to know more about the fluctuation of population sizes? [Click here](#) to schedule live online session with e Tutor!

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Reference Links:

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- <http://www.thebigger.com/biology/organism-and-environment/explain-the-factors-affecting-the-population/>
- http://en.wikipedia.org/wiki/Population_growth

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