

# Features of Populations

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## CHAPTER

## 1

# Features of Populations

- Define population.
- List ways in which a population can be described.
- Explain population density and dispersion.
- Explain how population growth is determined.



## What is a population?

When you think of the word *population*, you might think of the number of people in your town or city. But humans are not the only species to have populations. Every species has a population. Or many populations. This group of penguins, which are all members of the same species and all living together in the same space, is a population.

## What is a Population

A **population** is a group of organisms of the same species, all living in the same area and interacting with each other. Since they live together in one area, members of the same species reproduce together. Ecologists who study populations determine how healthy or stable the populations are. They also study how the individuals of a species interact with each other and how populations interact with the environment. If a group of similar organisms in the same area cannot reproduce with members of the other group, then they are members of two distinct species and form two populations.

Ecologists look at many factors that help to describe a population. First, ecologists can measure the number of individuals that make up the population, known as **population size**. They can then determine the **population density**, which is the number of individuals of the same species in an area. Population density can be expressed as *number per area*, such as 20 mice/acre, or 50 rabbits/square mile.

Ecologists also study how individuals in a population are spread across an environment. This spacing of individuals within a population is called **dispersion**. Some species may be clumped or clustered ( **Figure 1.1**) in an area. Others

may be evenly spaced ( **Figure 1.2**). Still others may be spaced randomly within an area. The population density and dispersion have an effect on reproduction and population size. What do you think the relationship is between population density, dispersion and size?



**FIGURE 1.1**

Clumped species are closer together. This may allow for easier reproduction.



**FIGURE 1.2**

A population of cacti in the Sonoran Desert generally shows even dispersion due to competition for water.

Ecologists also study the birth and death rates of the population. Together these give the growth rate (the birth rate minus the death rate), which tells how fast (or slow) the population size is changing. The **birth rate** is the number of births within a population during a specific time period. The **death rate** is the number of deaths within a population during a specific time period. Knowing the birth and death rates of populations gives you information about a population's health. For example, when a population is made up of mostly young organisms and the birth rate is high, the population is growing. A population with equal birth and death rates will remain the same size. Populations that are decreasing in size have a higher death rate than birth rate.

## Summary

- A population is a group of organisms of the same species, all living in the same area and interacting with each other.
- Scientists can study many aspects of a population, including density, dispersion, and birth and death rates.

## Explore More

Use the resource below to answer the questions that follow.

- **Population Distributions** at <http://www.youtube.com/watch?v=BMsmDy-2jbA> (3:51)



### MEDIA

Click image to the left or use the URL below.

URL: <http://www.ck12.org/flx/render/embeddedobject/57315>

1. Is the distribution of organisms of a species constant with time?
2. What is the most common type of distribution? How does this distribution benefit the species?
3. What factors make a uniform distribution pattern a beneficial strategy for a species?
4. How do chemicals made by organisms help establish and maintain a uniform distribution pattern?
5. What factors contribute to a random distribution pattern? Why do animals not maintain this distribution pattern year round?

## Review

1. Define population.
2. What is population dispersion? Describe the possible dispersion patterns for a population.
3. Would all the deer and mice living in a forest be a population? Why or why not?
4. What is the growth rate?

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## References

1. Liz West. [Clumped species are closer together, which allows for easier reproduction](#) . CC BY 2.0
2. User:Wars/Wikimedia Commons. [These cacti are dispersed due to competition for water](#) . CC BY 2.5