

2. This graph shows the relationship among temperature and precipitation and biomes. The warmer average annual temperature and lack of precipitation in southern Alberta would put it in the grassland biome. The colder average annual temperature and higher precipitation in northern Alberta support the growth of the coniferous forests characteristic of the taiga biome.
3. Student answers may include optimum temperature and precipitation for early life cycle changes in the spring and summer. The gradual cooling/freezing in the fall and winter reduce the mosquito population to a point where larval and adult mosquitoes can no longer survive. However, the adult female mosquitoes have laid eggs that will survive until the optimum temperature and precipitation conditions return in the spring.
4. Trees, like all living things, compete for resources such as sunlight, water, and nutrients in the soil.
5. The vole population is controlled by abiotic and biotic limiting factors. Biotic limiting factors include competition, predation, and parasites. The size of the population will tend to increase when there is little competition, there are fewer predators, and individual animals have low numbers of parasites. The size of the population will tend to decrease when there is more competition for resources, there are more predators, and individual animals have a higher number of parasites.

Abiotic limiting factors include availability of food, water, shelter, and space. The size of the population will tend to increase if there is an abundance of food and water. The size of the population will also tend to increase if the animal has shelter and sufficient space.

Section 3.3 Review Answers

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1. Niche refers to an organism's function and position within an ecological community. It includes the combination of all biotic and abiotic factors that affect an organism. The niche of an organism is found within its habitat requirements. No two species will have the same niche. Habitat is the place where an organism usually lives, characterized by the dominant characteristics of the area (e.g., stream habitat or tropical forest).