Lab-wide Learning Outcomes for Understanding Population Growth Models

Knowledge-Based Outcomes

Upon completion of *Understanding Population Growth Models*, students should be able to:

1. Explain what a population growth model is and why such models are useful.
2. Give an example of how population models can be used to describe the growth of a population over time.
3. Distinguish between the instantaneous rate of change (dN/dt) and the intrinsic growth rate, r.

Understanding Population Growth Models, Part 1: Populations Are Dynamic

Knowledge-Based Outcomes

Upon completion of *Part 1: Populations Are Dynamic*, students should be able to:

1. Explain why, in an exponentially growing population, an increase in r will lead to more individuals over time than an equivalent increase in N_0 would.
2. Describe the relationship among growth rate (r), birth rate (b), and death rate (d) for a population.

Skills-Based Outcomes

Upon completion of *Part 1: Populations Are Dynamic*, students should be able to:

1. Draw a graph of population size versus time for a population undergoing exponential growth, and indicate how the growth curve will change if r or N_0 change.

Understanding Population Growth Models, Part 2: Resource Limitation

Knowledge-Based Outcomes

Upon completion of *Part 2: Resource Limitation*, students should be able to:

1. Describe how resource limitation can determine if a population is growing exponentially or logistically.
2. Explain the role of resource limitation in population growth, and how it impacts carrying capacity, K.
3. Explain how the carrying capacity for a population (K) could change, and how such a change would affect the graph of population size versus time.

Skills-Based Outcomes

Upon completion of *Part 2: Resource Limitation*, students should be able to:

1. Draw a graph of population size versus time for a population undergoing logistic growth, indicating the population's carrying capacity, K.
2. Draw a graph of population size versus time for a population undergoing logistic growth, and indicate how the growth curve will change if r or K change.