Lab-wide Learning Outcomes for Isle Royale

Knowledge-Based Outcomes

Upon completion of *Isle Royale*, students should be able to:

1. Describe the basic characteristics of logistic growth, indicating when populations are expected to grow logistically.
2. Explain why predator and prey populations often exhibit population cycles.

Skills-Based Outcomes

Upon completion of *Isle Royale*, students should be able to:

1. Draw qualitative graphs that illustrate the concepts of logistic growth, carrying capacity, and predator-prey cycling.

Isle Royale, Part 1: The Moose Arrive

Knowledge-Based Outcomes

Upon completion of *Part 1: The Moose Arrive*, students should be able to:

1. Describe why the growth of populations is limited by resources; giving examples of limiting factors.
2. Differentiate between the exponential and logistic population growth models.

Skills-Based Outcomes

Upon completion of *Part 1: The Moose Arrive*, students should be able to:

1. Graph qualitatively how populations grow, absent factors limiting their growth.
2. Evaluate whether a population is experiencing exponential or logistic growth based on a graph of the population's growth rate.
3. Identify the carrying capacity for a population based on a graph of population size versus time.
4. Predict how a population already at its carrying capacity will respond if its carrying capacity is either artificially increased or decreased.

Isle Royale, Part 2: The Wolves Arrive

Knowledge-Based Outcomes

Upon completion of *Part 2: The Wolves Arrive*, students should be able to:

1. Describe a classic predator-prey population cycle, indicating which population grows or shrinks first, and why.
2. Explain how predators can indirectly improve the overall health of a prey species.

Skills-Based Outcomes

Upon completion of *Part 2: The Wolves Arrive*, students should be able to:

1. Evaluate the most informative way to graphically present experimental data.

Isle Royale, Part 3: Changes in Climate

Knowledge-Based Outcomes

Upon completion of *Part 3: Changes in Climate*, students should be able to:

1. Explain the "paradox of enrichment".

Skills-Based Outcomes

Upon completion of *Part 3: Changes in Climate*, students should be able to:

1. Predict qualitatively what will happen to a population's carrying capacity as a limiting resource either increases or decreases in availability.

Isle Royale, Part 4: An Extended Exploration: The t-Test

Knowledge-Based Outcomes

Upon completion of *Part 4: An Extended Exploration: The t-Test*, students should be able to:

1. Understand the roles of both the null and alternative hypotheses in inferential statistics.

Skills-Based Outcomes

Upon completion of *Part 4: An Extended Exploration: The t-Test*, students should be able to:

1. Determine whether there is a statistically significant difference between two means using a t-test.