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Patterns Of Natural Selection Worksheet Answer Key PDF

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Part 1: Building a Foundation

What is the primary mechanism by which traits that enhance survival become more common in a population?

undefined. A) Genetic Drift

undefined. B) Natural Selection ✓

undefined. C) Mutation

undefined. D) Gene Flow

The primary mechanism is Natural Selection.

Which of the following are necessary conditions for natural selection to occur? (Select all that apply)

undefined. A) Variation in traits ✓

undefined. B) Random mating

undefined. C) Differential survival and reproduction ✓

undefined. D) Inheritance of traits ✓

Necessary conditions include variation in traits, differential survival and reproduction, and inheritance of traits.

Explain the concept of stabilizing selection and provide an example of how it might occur in a natural population.

Stabilizing selection favors average traits and reduces variation. An example is birth weight in humans.

List the three main types of natural selection and provide a brief description of each.

1. Stabilizing Selection

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Favors average traits and reduces extremes.

2. Directional Selection

Favors one extreme trait over others.

3. Disruptional Selection

Favors both extreme traits over average traits.

The three main types are stabilizing selection, directional selection, and disruptive selection.

Which type of natural selection is most likely to lead to speciation?

undefined. A) Stabilizing Selection

undefined. B) Directional Selection

undefined. C) Disruptional Selection ✓

undefined. D) Artificial Selection

Disruptional selection is most likely to lead to speciation.

Part 2: Comprehension and Application

How does directional selection affect the average phenotype of a population?

undefined. A) It increases variation around the average.

undefined. B) It shifts the average phenotype in one direction. ✓

undefined. C) It maintains the average phenotype.

undefined. D) It decreases variation by favoriting extremes.

Directional selection shifts the average phenotype in one direction.

Which of the following scenarios illustrate the concept of directional selection? (Select all that apply)

undefined. A) A population of rabbits where only the fastest survive predators. ✓

undefined. B) A population of birds where medium-sized beaks are favored.

undefined. C) A population of moths that become darker due to industrial pollution. ✓

undefined. D) A population of fish where both small and large sizes are favored over medium sizes.

Examples include faster rabbits and darker moths due to pollution.

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Imagine a scenario where a population of fish is introduced to a new environment with different food sources. How might natural selection act on this population over time?

Natural selection may favor fish with traits that allow them to exploit the new food sources.

If a new predator is introduced to an environment, which type of natural selection is most likely to occur in the prey population?

undefined. A) Stabilizing Selection

undefined. B) Directional Selection ✓

undefined. C) Disruptional Selection

undefined. D) Balancing Selection

Directional selection is most likely to occur as prey adapt to avoid predation.

Part 3: Analysis, Evaluation, and Creation

Which type of natural selection is illustrated by a population of birds where only the largest and smallest beaks are favored, but not the medium-sized ones?

undefined. A) Stabilizing Selection

undefined. B) Directional Selection

undefined. C) Disruptional Selection ✓

undefined. D) Balancing Selection

This scenario illustrates Disruptional Selection.

Consider a population of plants where some individuals have developed a resistance to drought. Which factors could influence whether this trait becomes more common in the population? (Select all that apply)

undefined. A) The frequency of droughts in the environment. ✓

undefined. B) The genetic variation within the population. ✓

undefined. C) The presence of other plant species.

undefined. D) The rate of reproduction in resistant plants. ✓

Factors include frequency of droughts, genetic variation, and reproduction rates.

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Analyze how gene flow between two populations can affect the process of natural selection in each population.

Gene flow can introduce new alleles, affecting adaptation and genetic diversity.

Which of the following statements best evaluates the role of natural selection in the evolution of antibiotic resistance in bacteria?

undefined. A) Natural selection has no impact on antibiotic resistance.

undefined. B) Natural selection favors bacteria that are susceptible to antibiotics.

undefined. C) Natural selection leads to the survival of bacteria with resistance traits. ✓

undefined. D) Natural selection eliminates all bacteria, resistant or not.

Natural selection leads to the survival of bacteria with resistance traits.

Propose a hypothetical scenario where a new environmental pressure leads to the development of a new trait in a population. Describe the steps of natural selection that would lead to this outcome.

New environmental pressures can lead to trait variation, selection, and adaptation over generations.

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