Glencoe Science

Biology

Interactive Classroom

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Mc Graw Hill Glencoe

Chapter 31 Animal Behavior

EXIT

Click on a lesson name to select.

31.1 Basic Behaviors

Behavior

- Behavior can occur in response to an internal or external stimulus.

What influences behavior?

- Behavior results from the interaction of genetically based behaviors and behaviors based on experience.

31.1 Basic Behaviors

The Evolution of Behavior

- What triggers a response to a stimulus?
  - The answer usually is found by studying the internal biology of an animal.
- What advantage does the behavior provide?
  - The answers are tied to the evolution of behavior through natural selection.

31.1 Basic Behaviors

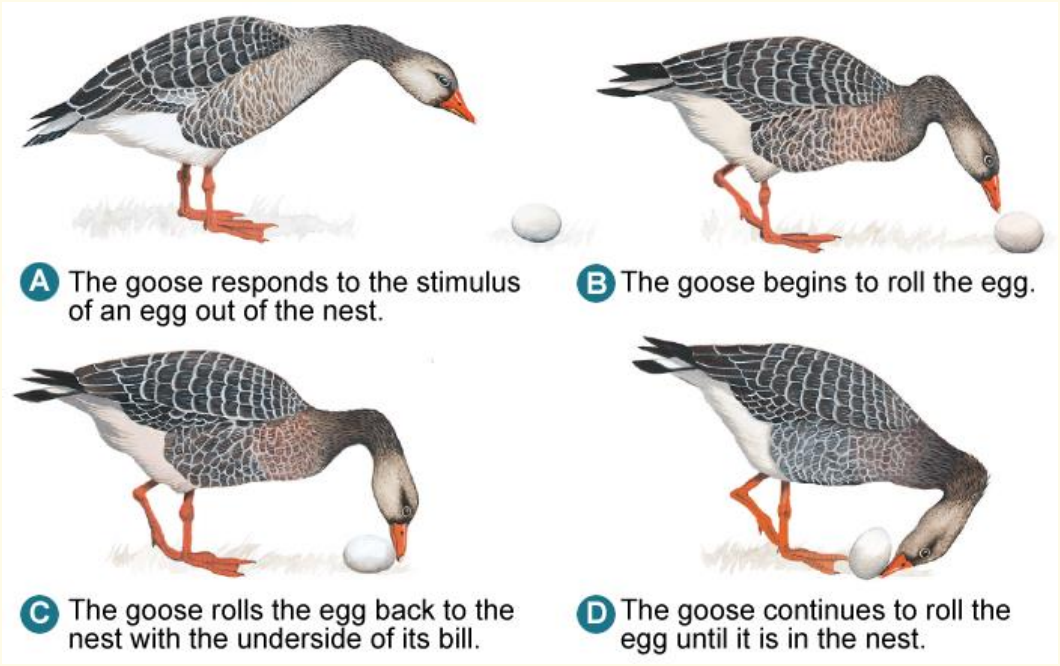
Innate Behavior

- Behaviors are referred to as innate when the same behavior commonly is observed among a large number of individuals within a population, even if the environments are different.

31.1 Basic Behaviors

Fixed Action Patterns

- A stimulus triggers an innate response that the animal does not control and is not directly influenced by environmental conditions or past experiences.



31.1 Basic Behaviors

Learned Behavior

- Learned behaviors result from an interaction between innate behaviors and past experiences within a particular environment.

31.1 Basic Behaviors

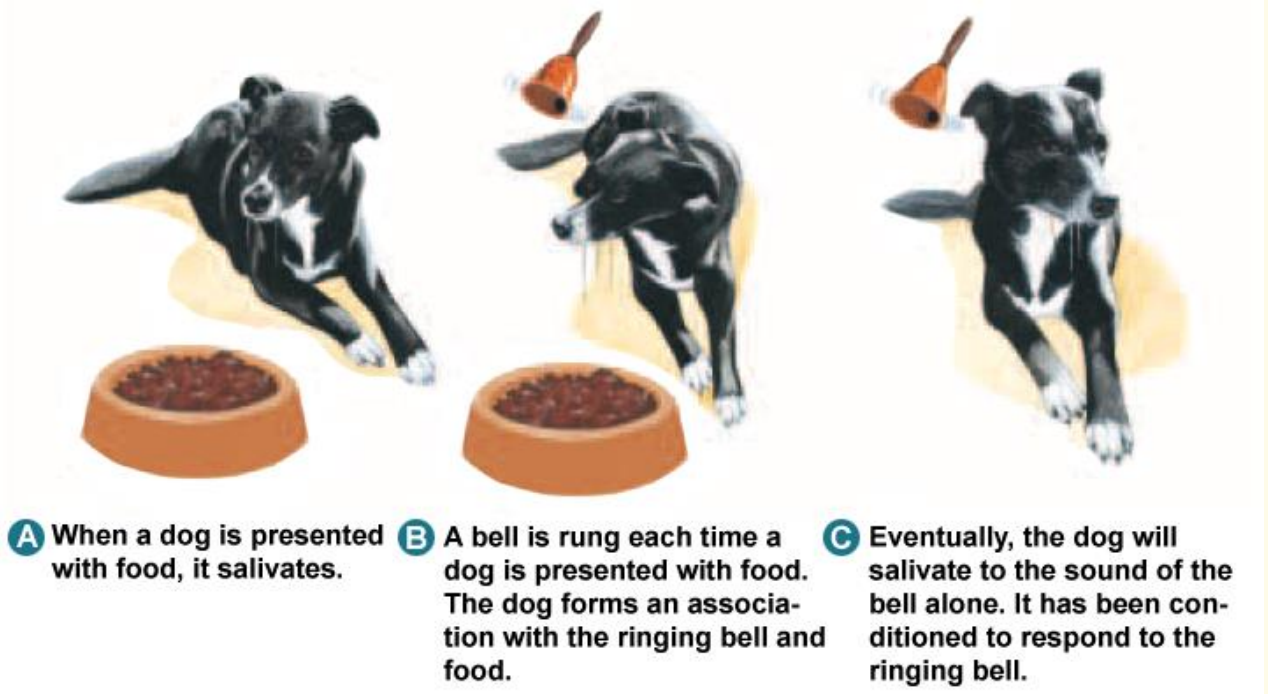
Habituation

- Sometimes, animals learn over time that a potentially important stimulus deserves little or no attention.
- Habituation is the decrease in an animal's response after repeatedly being exposed to a stimulus that has no positive or negative effects.

31.1 Basic Behaviors

Classical Conditioning

- Classical conditioning occurs when an association is made between two different kinds of stimuli.



A When a dog is presented with food, it salivates.

B A bell is rung each time a dog is presented with food. The dog forms an association with the ringing bell and food.

C Eventually, the dog will salivate to the sound of the bell alone. It has been conditioned to respond to the ringing bell.

31.1 Basic Behaviors

Operant Conditioning

- In operant conditioning, an animal learns to associate its response to a stimulus with a reward or a punishment.
- For example, when a bird eats a butterfly that tastes bad, it associates the color of the butterfly with the taste and avoids all butterflies of that color.

31.1 Basic Behaviors

Imprinting

- Some animals form a social attachment to the first object they see after birth.
- Other animals imprint on the chemical composition of the water in which they are hatched.

31.1 Basic Behaviors

Cognitive Behavior

- Thinking, reasoning, and processing information to understand complex concepts and solve problems are cognitive behaviors.
- Humans exhibit cognitive behaviors when they solve problems, make decisions, and plan for the future.

31.2 Ecological Behaviors

Types of Behaviors

- Animals that engage in complex behaviors survive and reproduce because they have inherited genes that allow them to be successful in a particular environment.

31.2 Ecological Behaviors

Competitive Behaviors

- Competition for food, space, mates, and other resources occurs between individuals within a population.
- Competitive behaviors allow individuals to establish dominance or control of an area or resource.

31.2 Ecological Behaviors

Agonistic Behavior

- A threatening or combative interaction between two individuals of the same species is called agonistic behavior.
- Agonistic behavior usually does not result in injury or death to either individual.

31.2 Ecological Behaviors

Dominance Hierarchies

- Some animals living in groups develop dominance hierarchies in which a top-ranked animal gets access to resources without conflict from other animals in the group.

- This ranking system helps reduce hostile behaviors among animals.

31.2 Ecological Behaviors

Territorial Behaviors

- Territorial behaviors include verbal signals, such as the singing of birds, as well as chemical signals, such as a male cheetah's urine.
- Territories usually are defended by males in order to increase their chance of obtaining adequate food, mates, and places to rear their offspring.

31.2 Ecological Behaviors

Foraging Behaviors

- Foraging successfully means obtaining needed nutrients, while avoiding predators and poisonous foods.
- Natural selection favors individuals whose foraging behaviors use the least amount of energy to obtain the maximum amount of energy possible.

31.2 Ecological Behaviors

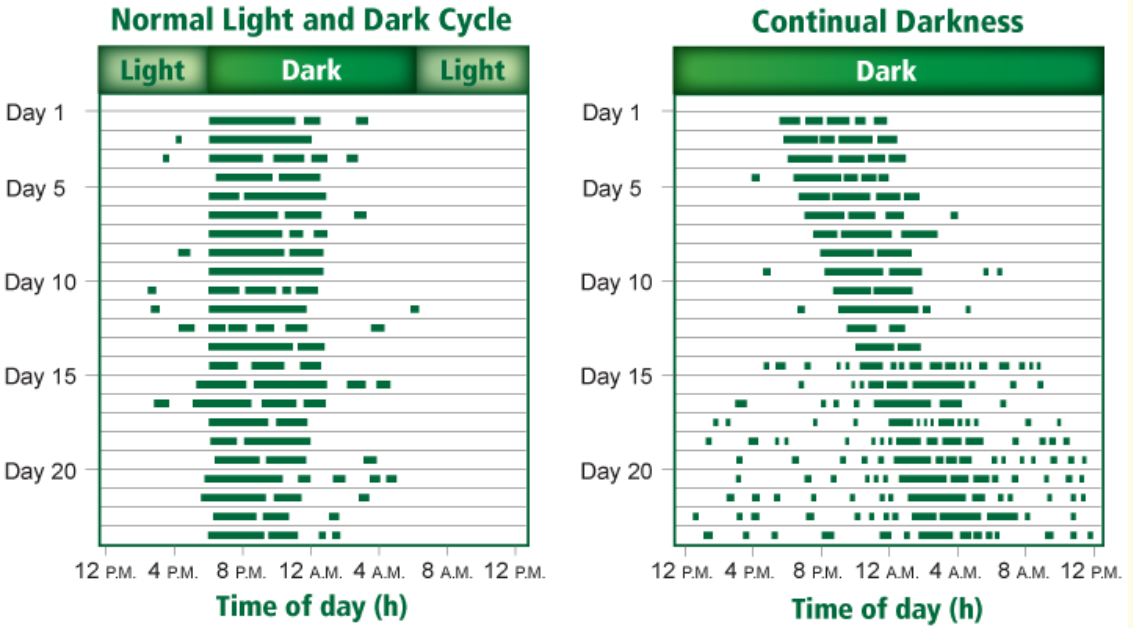
Migratory Behaviors

- Animals that engage in migratory behaviors increase their chances of survival by searching out new food sources.

31.2 Ecological Behaviors

Biological Rhythms

- A circadian rhythm is a cycle, such as sleeping and waking, that occur daily.
- Many animals have an internal clock that maintains the daily rhythm of the sleep/wake cycle.



31.2 Ecological Behaviors

Communication Behaviors

- Communication behaviors are critical to the survival and reproductive success of animals.
- Animals have several types of communication behaviors.

31.2 Ecological Behaviors

Pheromones

- Some animals communicate by spreading highly specific chemicals called pheromones.
- These chemicals are specific to species.
- Pheromones often are used to relay messages between males and females about reproduction.

31.2 Ecological Behaviors

Auditory Communication

- Howls, hoots, barks, and chirps are just a few examples of auditory communication.
- Language is a form of auditory communication in which animals use vocal organs to produce groups of sounds that have shared meanings.

31.2 Ecological Behaviors

Courting Behaviors

- An animal engages in courting behaviors in order to attract a mate.
- Females often choose to mate with males that appear larger and healthier than others.

31.2 Ecological Behaviors

Nurturing Behaviors

- When parents provide care to their offspring in the early stages of development, they are engaging in nurturing behaviors.
- This includes providing food, protection, and skills needed for survival.
- Animal species that spend time nurturing young often produce fewer offspring than animals that do not nurture.

31.2 Ecological Behaviors

Altruistic Behavior

- Sometimes, an animal will perform an action that benefits another individual at a cost to itself.
- For example, a colony of naked mole rats forage for food, protect the queen, and huddle around her to provide warmth to the offspring.

31.2 Ecological Behaviors

Kin Selection

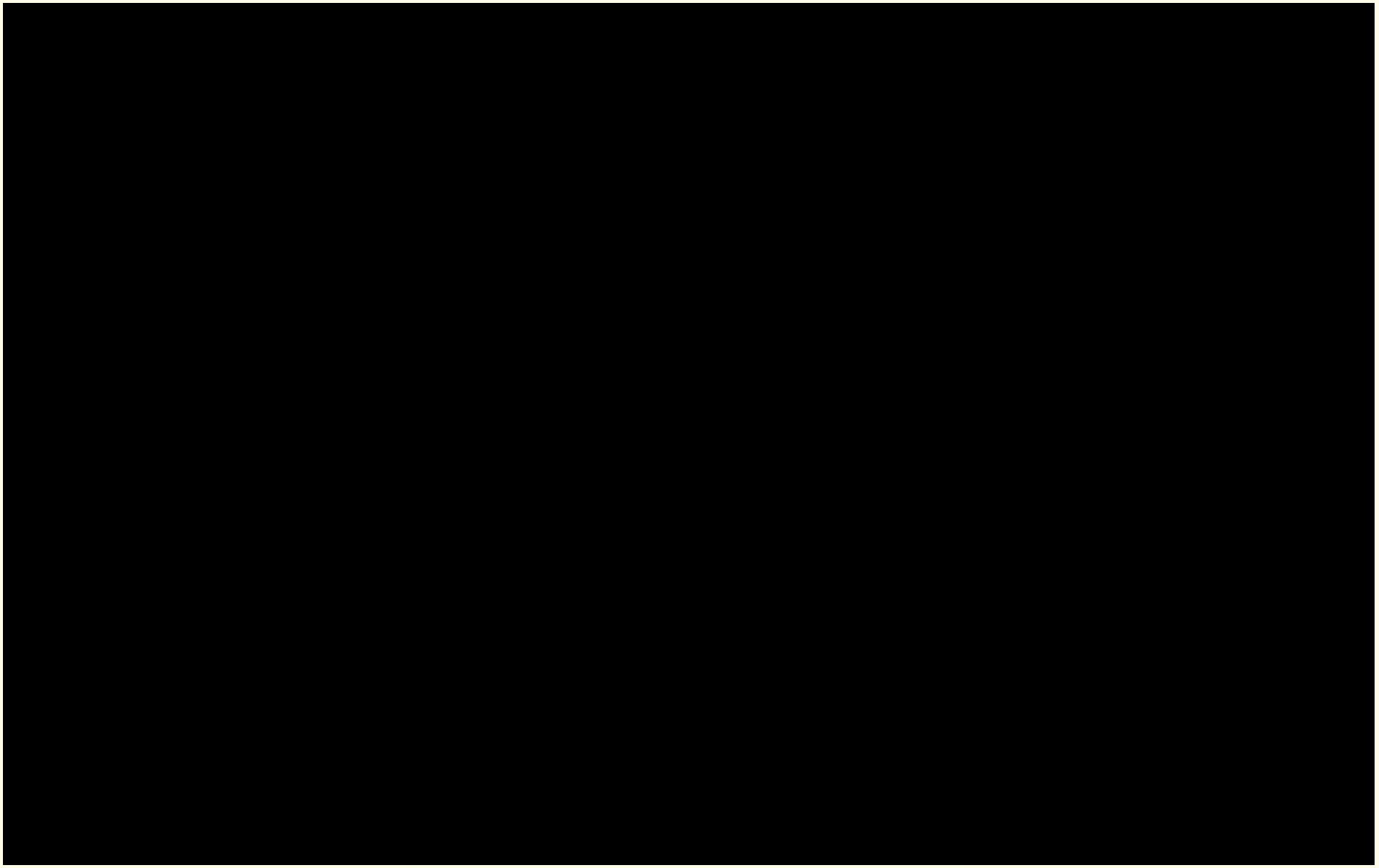
- According to the idea of kin selection, altruistic behavior evolves because it increases the number of copies of a gene that is common in a population.

31.2 Ecological Behaviors

Advantages and Disadvantages

	Effects of Behaviors		
Behavior	**Example**	**Advantage**	**Disadvantage**
Migration		Animals that migrate increase their chance of survival by moving to a location that has better climate conditions and more food.	A large amount of energy is needed to move long distances and there is the possibility of increased predation while moving.
Pheromone communication		Pheromones provide a species-specific form of communication, which reduces a predator's ability to detect them.	Pheromones have a more limited range of communication than auditory or visual cues.
Nurturing		Nurturing increases an offspring's chance of survival. Genes of the parents continue to be present in future generations.	Parents spend increased amounts of energy on caring for offspring, possibly at the cost of the parents' health or safety.

Concepts In Motion



Chapter Resource Menu

Click on a hyperlink to view the corresponding lesson.

Chapter Diagnostic Questions

CheckPoint

Which is an example of a response to an external stimulus?

A. a reptile moving into the sunlight

B. a mouse retreating to its hole after seeing a cat

C. a salmon swimming upstream to spawn

D. a male bird singing during mating season

Chapter Diagnostic Questions

CheckPoint

Which type of learned behavior occurs only during an animal's sensitive period?

A. habituation

B. imprinting

C. classical conditioning

D. operant conditioning

Chapter Diagnostic Questions

CheckPoint

Which is *not* a method by which elephants communicate?

A. infrasonic sound

B. mimicry

C. body gestures

D. loud vocalization

31.1 Formative Questions

CheckPoint

What is the term for an environmental change that influences the activity of an organism?

A. biotic factor

B. incentive

C. inducement

D. stimulus

31.1 Formative Questions

CheckPoint

What has been the main question about animal behavior that scientists have tried to answer?

A. Is behavior based on genetics or experience?

B. How do animals learn to respond to a stimulus?

C. How do different animals respond to the same stimuli?

D. What is the relationship between stimuli and responses?

31.1 Formative Questions

CheckPoint

How do scientists determine why an animal reacts to specific stimuli?

A. They look at the internal biology of an animal.

B. They study the nature of the animal's responses.

C. They study the advantages of certain behaviors.

D. They test different stimuli and measure the responses.

31.1 Formative Questions

CheckPoint

Which best defines innate behavior?

A. established learning pattern

B. genetically based instinct

C. imprinted conditioning

D. stimulus-based response

31.1 Formative Questions

CheckPoint

True or False

Experimental evidence suggests that animals other than humans are able to think and solve problems.

31.2 Formative Questions

CheckPoint

What do agonistic behaviors and territorial behaviors have in common?

A. They are altruistic behaviors.

B. They are competitive behaviors.

C. They are based on biological rhythms.

D. They require auditory communication.

31.2 Formative Questions

CheckPoint

What initially guides the migration of birds?

A. Earth's magnetic field

B. geographical features

C. the position of the Sun

D. older, more experienced birds

31.2 Formative Questions

CheckPoint

What maintains the daily rhythm of the sleep/wake cycle in many animals?

A. hibernation behaviors

B. temperature changes

C. an internal biological clock

D. availability of food and water

31.2 Formative Questions

CheckPoint

Which form of communication has the shortest range?

A. visual cues

B. auditory messages

C. pheromone signals

D. infrasonic sound waves

31.2 Formative Questions

CheckPoint

What is another way to describe animal behavior that is altruistic?

A. communal

B. mutualistic

C. self-sacrificing

D. symbiotic

Chapter Assessment Questions

CheckPoint

Police horses that are no longer affected by street noise and traffic are exhibiting what learned behavior?

A. classical conditioning

B. operant conditioning

C. habituation

D. imprinting

Chapter Assessment Questions

CheckPoint

What advantage do animals possess that use auditory communication rather than pheromones?

Answer: Auditory messages move faster than chemical messages, so the message is more likely to be received.

Chapter Assessment Questions

CheckPoint

Which does *not* occur in animal groups with dominance hierarchies?

A. Animals are ranked highest to lowest.

B. Top animal gets access to resources.

C. Animals fight for access to resources.

D. Lack of hostilities allow more time for care of young.

Standardized Test Practice

CheckPoint

How have animal behaviors evolved through natural selection?

A. Animals have learned specific behaviors over many generations.

B. Behaviors have evolved along with physical characteristics.

Standardized Test Practice

CheckPoint

How have animal behaviors evolved through natural selection?

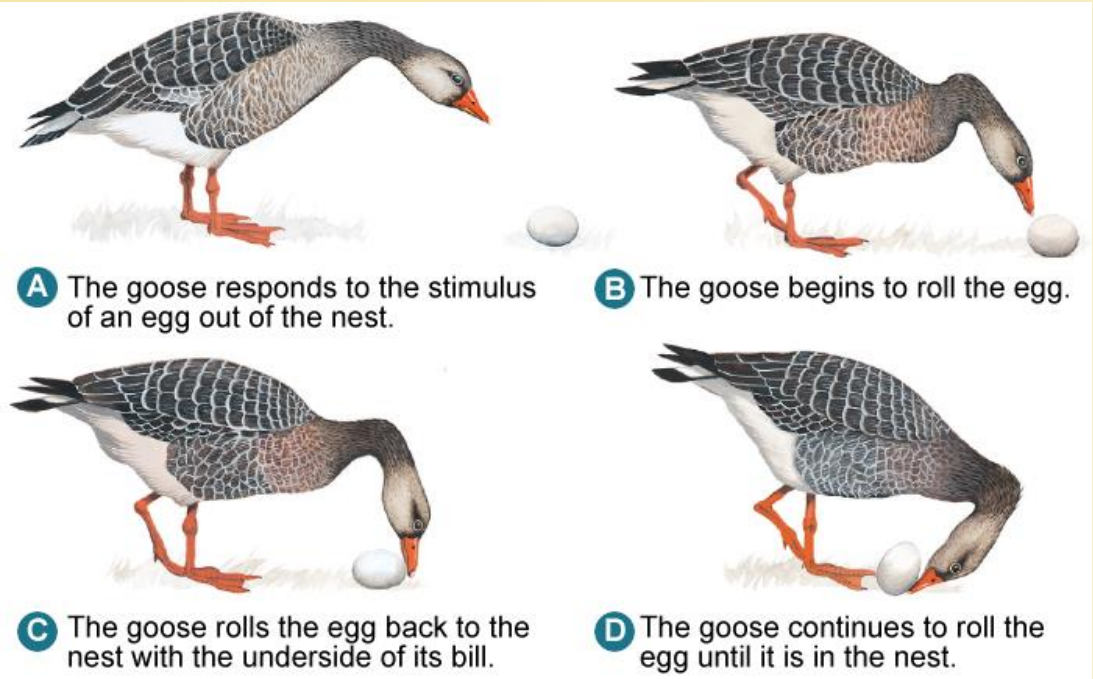
C. Behaviors have developed through conditioning and imprinting.

D. Certain behaviors have given animals a competitive advantage.

Standardized Test Practice

CheckPoint

Why is the goose's behavior a fixed action pattern?



Standardized Test Practice

CheckPoint

A. It is a response to an external condition.

B. The behavior is a learned response.

C. The goose cannot control this behavior.

D. The response is classically conditioned.

Standardized Test Practice

CheckPoint

What type of behavior enables an animal to ignore unimportant stimuli so it can focus on and respond to important stimuli?

A. acclimation

B. conditioning

C. cognition

D. habituation

Standardized Test Practice

CheckPoint

What type of behavior do you want to influence when training a puppy?

A. altruistic behavior

B. nurturing behavior

C. classical conditioning

D. operant conditioning

Standardized Test Practice

CheckPoint

Which competitive behavior reduces conflict between members of a group?

A. kin selection

B. agonistic behavior

C. dominance hierarchies

D. pheromone release

Standardized Test Practice

CheckPoint

What is an advantage of communication using pheromones?

A. It can't be misinterpreted.

B. It reduces competition.

C. It can be used to attract mates.

D. It can't be detected by other species.

Standardized Test Practice

CheckPoint

In the courtship process in most birds, which sex usually makes a display to attract the attention of the other sex?

A. the male

B. the female

Standardized Test Practice

Which animal spends the most time nurturing it's young?

A. dog

B. duck

C. gorilla

D. rabbit

Glencoe Biology Transparencies

Image Bank

Vocabulary

Section 1

- behavior
- innate behavior
- fixed action pattern
- learned behavior
- habituation
- classical conditioning
- operant conditioning
- imprinting
- cognitive behavior

Vocabulary

Section 2

- agonistic behavior
- dominance hierarchy
- territorial behavior
- foraging behavior
- migratory behavior
- circadian rhythm
- language
- courting behavior
- nurturing behavior
- altruistic behavior

Animation

Concepts In Motion

- Visualizing Types of Behavior