

STUDY
GUIDE

CHAPTER **32**
Reptiles and Birds

Section 32-1 Reptiles (pages 707-719)

SECTION REVIEW

Reptiles are vertebrates that have efficient lungs, a scaly waterproof skin, and amniotic eggs—adaptations that enable them to live their entire life out of water. In the first part of this section you learned about the distinguishing characteristics of reptiles. You also read a brief overview of reptile evolution.

In the second part of this section you examined the ways in which reptiles carry out their essential life functions. You learned that the lungs, brain, circulatory system, and musculoskeletal system are better developed in reptiles than in amphibians. Recall that many reptiles eliminate nitrogenous wastes as uric

acid in their urine, an adaptation that helps conserve water. Reptile reproduction is also adapted to life on land: Fertilization is internal, and the egg is protected by a shell. Eggs complete their development outside the mother's body in oviparous species. In ovoviviparous species, eggs develop and hatch inside the mother's body.

In the final part of this section you studied the four living orders of reptiles: tuataras, lizards and snakes, crocodylians, and turtles. You also learned about the ways in which reptiles fit into the world.

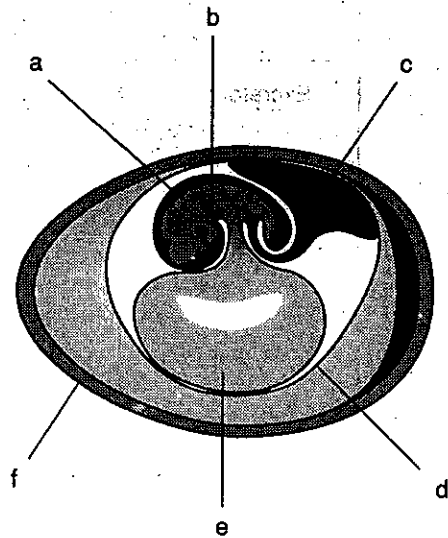
Identifying Structures: Building Vocabulary Skills

Examine the accompanying illustration of an amniotic egg. In the spaces provided, identify each part of the egg and write a definition for each part.

- a. _____

- b. _____

- c. _____



Name _____ Class _____ Date _____

- d. _____

- e. _____

- f. _____

Form and Function in Reptiles: Finding the Main Ideas

The accompanying table lists some of the body systems in reptiles. In the space provided, briefly describe each of these systems.

System	Description
Respiratory	
Circulatory	
Excretory	
Skeletal	
Muscular	
Reproductive	

Recognizing Fact and Fiction: Using the Main Ideas

Read the following statements about reptiles. Determine whether each statement is fact or fiction. Indicate your answer by writing the word "fact" or "fiction" on the line provided.

- _____ 1. When you touch a reptile, it feels slimy.
- _____ 2. All reptiles are carnivorous.
- _____ 3. Some species of snakes have only one lung.
- _____ 4. Turtles have better color vision than do humans.
- _____ 5. Snakes have an excellent sense of hearing.
- _____ 6. Many snakes detect the presence of a human by the body heat that the human produces.
- _____ 7. The tongue of a snake aids it in smelling.
- _____ 8. All species of snakes are poisonous.
- _____ 9. The largest lizard is the Komodo dragon.
- _____ 10. The backbone of the turtle is fused to its shell.
- _____ 11. Sea turtles provide much parental care for their young.
- _____ 12. Snakes and lizards belong to the same order of reptiles.
- _____ 13. The tuatara has a "third eye" used to detect changes in day length.
- _____ 14. Most snakes are aggressive toward humans.
- _____ 15. More Americans die from bee stings each year than from snake bites.

Concept Mapping

The construction of and theory behind concept mapping are discussed on pages vii-ix in the front of this Study Guide. Read those pages carefully. Then consider the concepts presented in Section 32-1 and how you would organize them into a concept map. Now look at the concept map for Chapter 32 on page 315. Notice that the concept map has been started for you. Add the key facts and concepts you feel are important for Section 32-1. When you have finished the chapter, you will have a completed concept map.

**Section
32-2**

The Evolution of Temperature Control

(pages 720-723)

SECTION REVIEW

In this section you learned that the control of body temperature is very important for animals, particularly in habitats where temperature varies with the time of day and with the season.

Modern reptiles are called ectotherms; they obtain heat for metabolic activities from

their environment. Birds and mammals are called endotherms; they generate heat inside their bodies. The first terrestrial vertebrates were probably ectotherms.

Endothermy and ectothermy are survival strategies that have advantages and disadvantages, depending on the type of environment.

Comparing Survival Strategies: Interpreting the Main Ideas

Complete the following chart by listing two advantages and two disadvantages of ectothermy and endothermy.

Strategy	Advantages	Disadvantages
Ectothermy		
Endothermy		

Concept Mapping

The construction of and theory behind concept mapping are discussed on pages vii-ix in the front of this Study Guide. Read those pages carefully. Then consider the concepts presented in Section 32-2 and how you would organize them into a concept map. Now look at the concept map for Chapter 32 on page 315. Notice that the concept map has been started for you. Add the key facts and concepts you feel are important for Section 32-2. When you have finished the chapter, you will have a completed concept map.

SECTION REVIEW

In this section you learned about birds, which evolved from ancient reptiles during the Jurassic Period. Birds can be defined as oviparous endothermic reptilelike vertebrates that have feathers, two legs, and two front limbs that are modified into wings.

Because they have high metabolic rates, birds need to eat large amounts of food. The beak and feet of a bird are often highly specialized for acquiring food. The digestive system of many birds includes a crop and a gizzard. Undigestible materials, nitrogenous wastes in the form of uric acid, and reproductive materials pass through an organ called the cloaca.

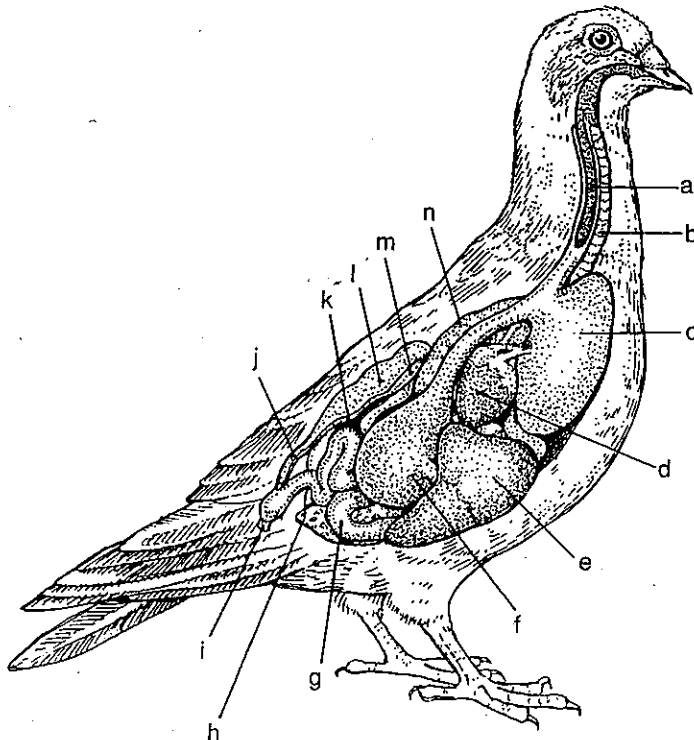
Birds have a number of air sacs attached to the lungs. These air sacs help make the

respiratory system more efficient than those of other vertebrates. Oxygen and other materials in the bird's blood are transported via a double-loop circulatory system powered by a four-chambered heart.

The brain and sense organs of birds are highly developed. This helps make birds capable of complex movement and complicated behaviors. Some of the most interesting bird behaviors are associated with courtship and mating. Recall that fertilization in birds is internal and that the eggs are incubated outside the mother's body. Some birds are able to take care of themselves as soon as they hatch. Others are blind, featherless, and helpless when they hatch. Such young birds require much care from their parents.

Identifying Structures: Building Vocabulary Skills

Examine the accompanying illustration of a bird. In the spaces provided on the following page, identify each part of the bird, briefly describe its function, and name the essential life function with which it is involved.



Name _____ Class _____ Date _____

- a. _____

- b. _____

- c. _____

- d. _____

- e. _____

- f. _____

- g. _____

- h. _____

- i. _____

- j. _____

- k. _____

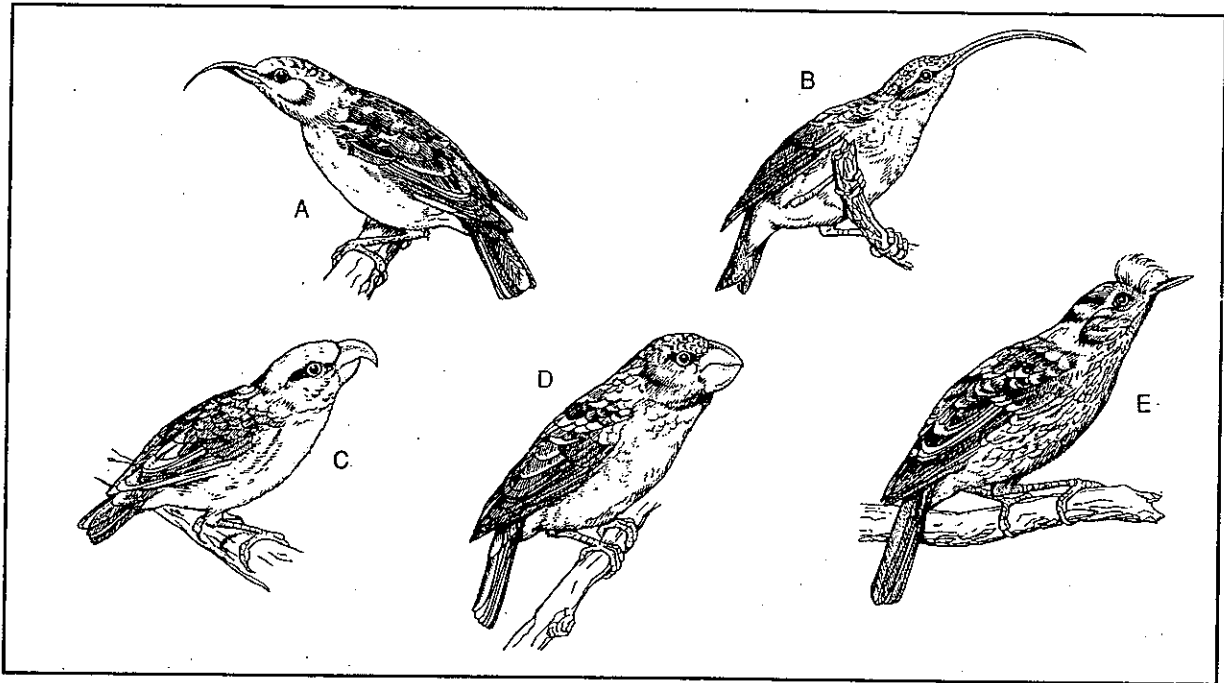
- l. _____

- m. _____

- n. _____

Bird Adaptations: Applying the Main Ideas

The accompanying illustration shows five species of Hawaiian honeycreepers. These birds evolved from a single ancestral species that is thought to have arrived in Hawaii several million years ago. Examine the illustration, then answer the following questions.



1. Why are the shapes of these birds' beaks different from one another?

2. What kind of food would you expect bird D to eat? Explain.

3. What kind of food would you expect bird B to eat? Explain.

4. What kind of food would you expect bird C to eat? Explain.

5. Bird E is thought to be an important pollinator of certain flowers.

a. How does bird E pollinate flowers?

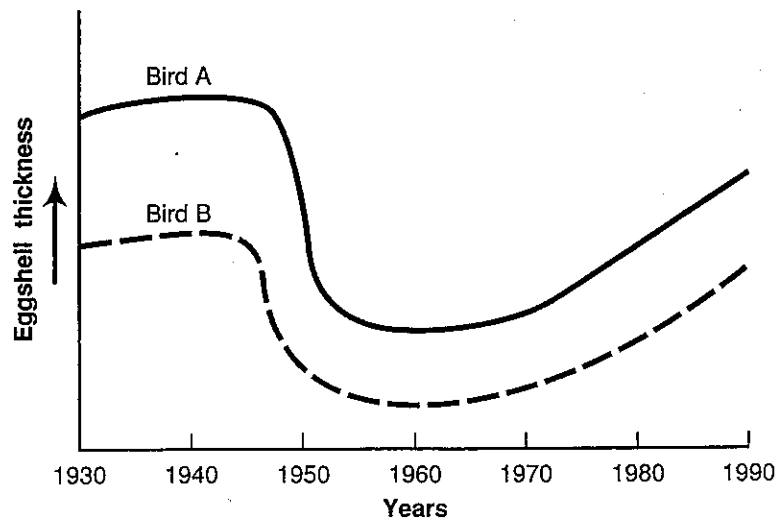
b. What does bird E eat? _____

6. Bird A has been observed hopping around on dead trees with its beak wide open. It hammers on the tree with the thick lower part of its beak, then pokes at the tree with the thin curved upper part of its beak. Explain this behavior.

7. Of the 40 known species of Hawaiian honeycreepers, 14 (including bird D) are extinct and 15 (including birds A, B, C, and E) are endangered. How might these birds' feeding habits have contributed to their decline? _____

Analyzing Data

The graph below shows the change in eggshell thickness of two types of insect-eating birds over a period of years. This period includes the years 1945–1947, when DDT, a pesticide employed for insect control, was introduced into general use.



1. During which period of time did eggshell thickness sharply decrease?

2. What effect does DDT appear to have on eggshell thickness?

3. DDT was sprayed over the land to control insects. It is believed to interfere with a bird's ability to metabolize calcium. What is the most likely explanation for how this pesticide came to affect the eggshells of birds A and B? _____

4. Why might a decrease in eggshell thickness result in smaller population sizes of birds A and B? _____

5. What is the most likely explanation for the increase in eggshell thickness seen in birds A and B in the 1970s and 1980s? _____

■ Concept Mapping

The construction of and theory behind concept mapping are discussed on pages vii-ix in the front of this Study Guide. Read those pages carefully. Then consider the concepts presented in Section 32-3 and how you would organize them into a concept map. Now look at the concept map for Chapter 32 on page 315. Notice that the concept map has been started for you. Add the key facts and concepts you feel are important for Section 32-3. When you have finished the chapter, you will have a completed concept map.