

Reptiles and Birds

Objectives

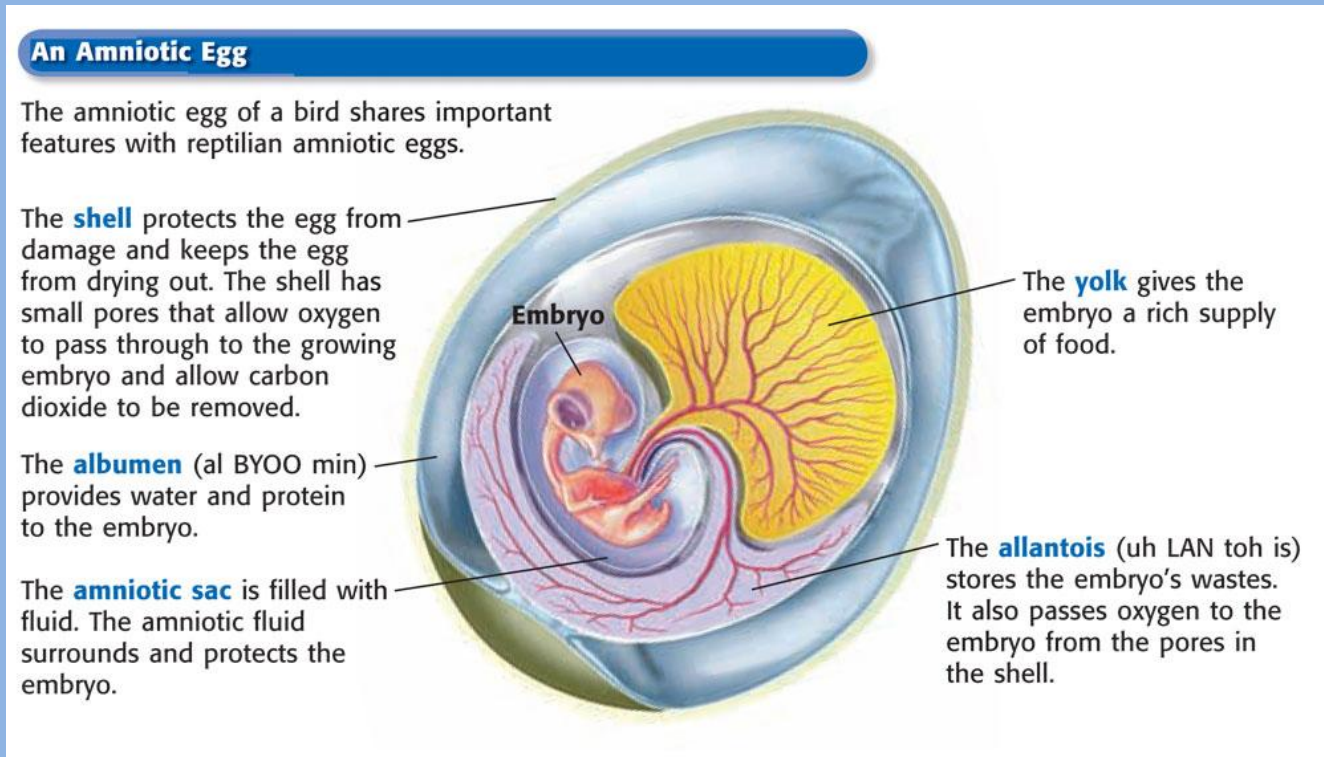
- **Explain** the traits that allow reptiles to live on land.
- **Describe** the characteristics of an amniotic egg.
- **Name** the four groups of modern reptiles, and give an example of each.
- **Describe** two kinds of feathers.
- **Describe** how a breathing, muscles, and skeleton help it fly.
- **Identify** the differences between flightless birds, water birds, perching birds, and birds of prey.

I. Characteristics of Reptiles

- A. Reptiles are well adapted for life on land.
- B. **Thick Skin:** Reptiles have thick skin that forms a watertight layer that keeps cells from losing water.
- C. **Body Temperature:** Nearly all reptiles are ectotherms. They are active when it is warm outside, and they slow down when it is cool. They do not live in very cold environments.

I. Characteristics of Reptiles

- D. **The Amazing Amniotic Egg:** An egg that holds fluid that protects the embryo is called an **amniotic egg**. Reptiles, birds, and mammals have amniotic eggs.
- E. Reptiles eggs also have a shell. The shell protects the embryo and keeps the egg from drying out.
- F. A reptile's eggs can be laid under rocks, in the ground, or even in the desert.



II. Kinds of Reptiles

Reptiles

A. Turtles and Tortoises

Generally, tortoises live on land, and turtles spend all or much of their lives in the water. However, even sea turtles come on land to lay their eggs.

1. The trait that makes turtles and tortoises so unique is their shell. The shell gives them protection, but also makes them slow and inflexible.



II. Kinds of Reptiles

B. Crocodiles and Alligators: Crocodiles and alligators spend most of their time in the water. Because their eyes and nostrils are on the top of their flat heads, they can hide with most of their body under water.



? ALLIGATOR



Residence: mainly freshwater habitats


Jaw: shaped like the letter 'U'

Teeth: upper teeth visible when mouth is closed

Skin: dermal pressure receptors located on the jaw

Photo: ©Luis Contreras Inc./River/Getty

? CROCODILE



Residence: freshwater and saltwater habitats

Jaw: shaped like the letter 'V'

Teeth: upper and lower teeth visible when mouth is closed

Skin: dermal pressure receptors located on the entire body

Photo: ©Raphael Van Butele/The Image Bank/Getty

II. Kinds of Reptiles

C. Snakes and Lizards Today, the most common reptiles are snakes and lizards.

1. Snakes have many adaptations for hunting. They can “taste” if their prey is nearby.
2. Some snakes have venomous fangs for killing prey. Other snakes squeeze their prey until they suffocate it.
3. Snakes swallow their prey whole.
4. Most lizards eat small insect and worms, but some lizards eat plants.
5. Many lizards can break their tails off to escape predators and then regrow new tails.



II. Kinds of Reptiles

D. Tuataras Tuataras live on only a few islands off the coast of New Zealand.

1. Although they look similar to lizards, the two reptiles have some obvious differences. Tuataras do not have visible ear openings.
2. Unlike other reptiles, tuataras are most active when the temperature is low.



III. Characteristics of Birds

- A. Birds share many characteristics with reptiles such as being vertebrates, having scales on parts of their bodies, and laying amniotic eggs with shells.
- B. Birds have unique characteristics such as laying eggs with hard shells, and having feathers, wings, and a beak.
- C. Birds can also maintain a constant body temperature.

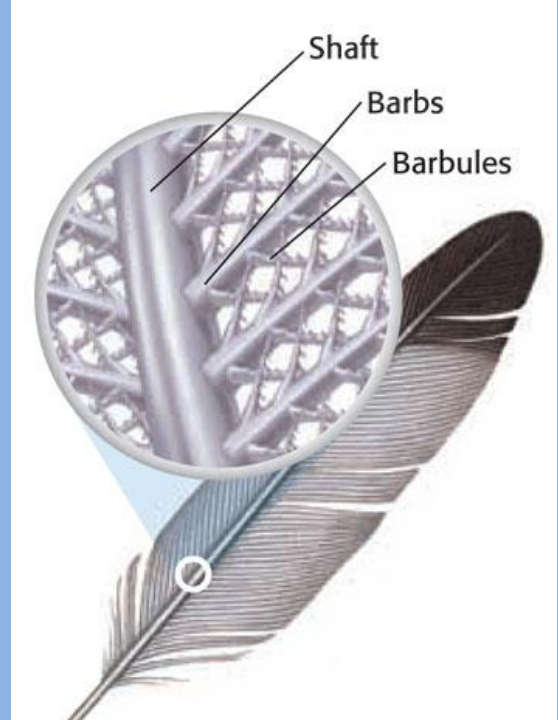


IV. Feathers

- A. Feathers help birds stay dry and warm, attract mates, and fly.
- B. **Preening and Molting** Birds take good care of their feathers. They use their beaks to spread oil on their feathers in a process called **preening**. Preening helps waterproof the feathers and keep them clean.
- C. **Molting** is the process of shedding old feathers and growing new ones.



IV. Feathers

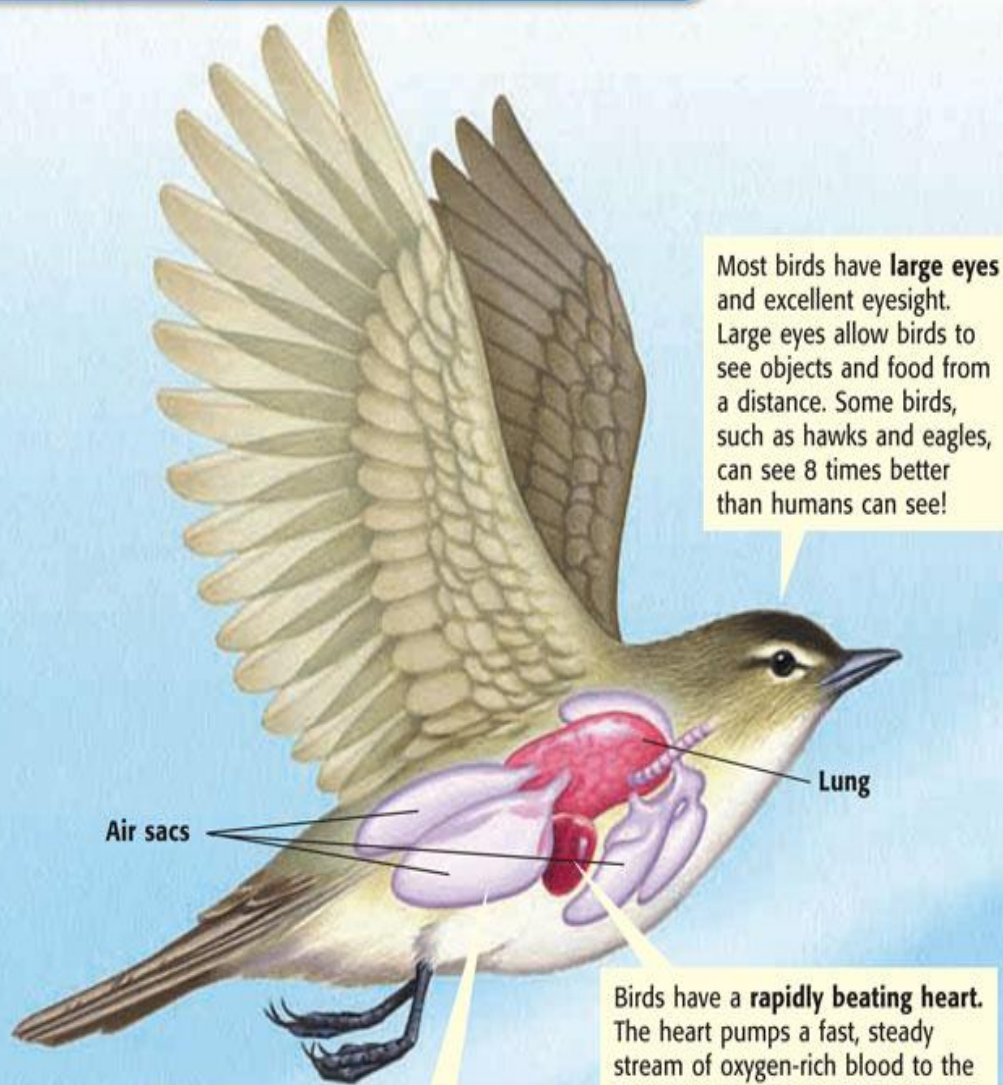


D. Two Kinds of Feathers

Fluffy feathers that lie next to a bird's body are called **down feathers**. Down feathers help birds stay warm.

E. **Contour feathers** are stiff feathers that cover a bird's body and wings. Contour feathers help some birds attract mates and fly.





Most birds have **large eyes** and excellent eyesight. Large eyes allow birds to see objects and food from a distance. Some birds, such as hawks and eagles, can see 8 times better than humans can see!

Air sacs

Lung

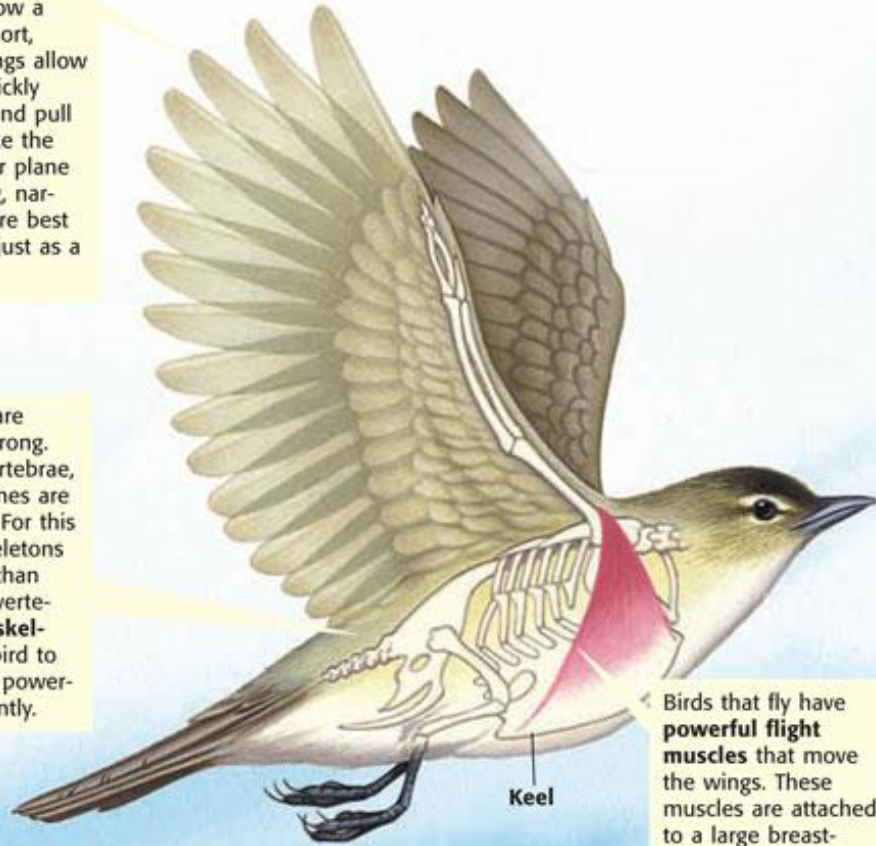
Birds have a **rapidly beating heart**. The heart pumps a fast, steady stream of oxygen-rich blood to the flight muscles. In small birds, the heart beats almost 1,000 times a minute! (Your heart beats about 70 times a minute.)

Birds have special organs called **air sacs** attached to their lungs. The air sacs store air. Because of the stored air, a bird's lungs have a continuous supply of air—whether the bird is inhaling or exhaling.

V. Flight Adaptations of Birds

V. Flight Adaptations of Birds

Wing shape is related to how a bird flies. Short, rounded wings allow a bird to quickly turn, drop, and pull up, much like the way a fighter plane moves. Long, narrow wings are best for soaring, just as a glider does.



Bird skeletons are compact and strong. Some of the vertebrae, ribs, and hipbones are fused together. For this reason, bird skeletons are more rigid than those of other vertebrates. A **rigid skeleton** allows a bird to move its wings powerfully and efficiently.

Birds that fly have **powerful flight muscles** that move the wings. These muscles are attached to a large breastbone called a **keel**. The keel anchors the flight muscles. It allows the bird to flap its wings with force and speed.

Keel



Cross supports

Birds have **hollow bones**. So, birds have much lighter skeletons than other vertebrates do. The bones have thin cross supports that give strength, much like the cross supports of many bridges.

VI. Kinds of Birds



- A. Scientist group living birds into 28 different orders. Songbirds make up the largest order.
- B. Birds are often grouped into four nonscientific categories: flightless birds, water birds, perching birds, and birds of prey.
- C. These categories do not include all birds, but they do show how different birds can be.

VII. Flightless Birds

A. Running and Swimming Not all birds fly. Most flightless birds do not have the large keel that anchors birds' flight muscles.

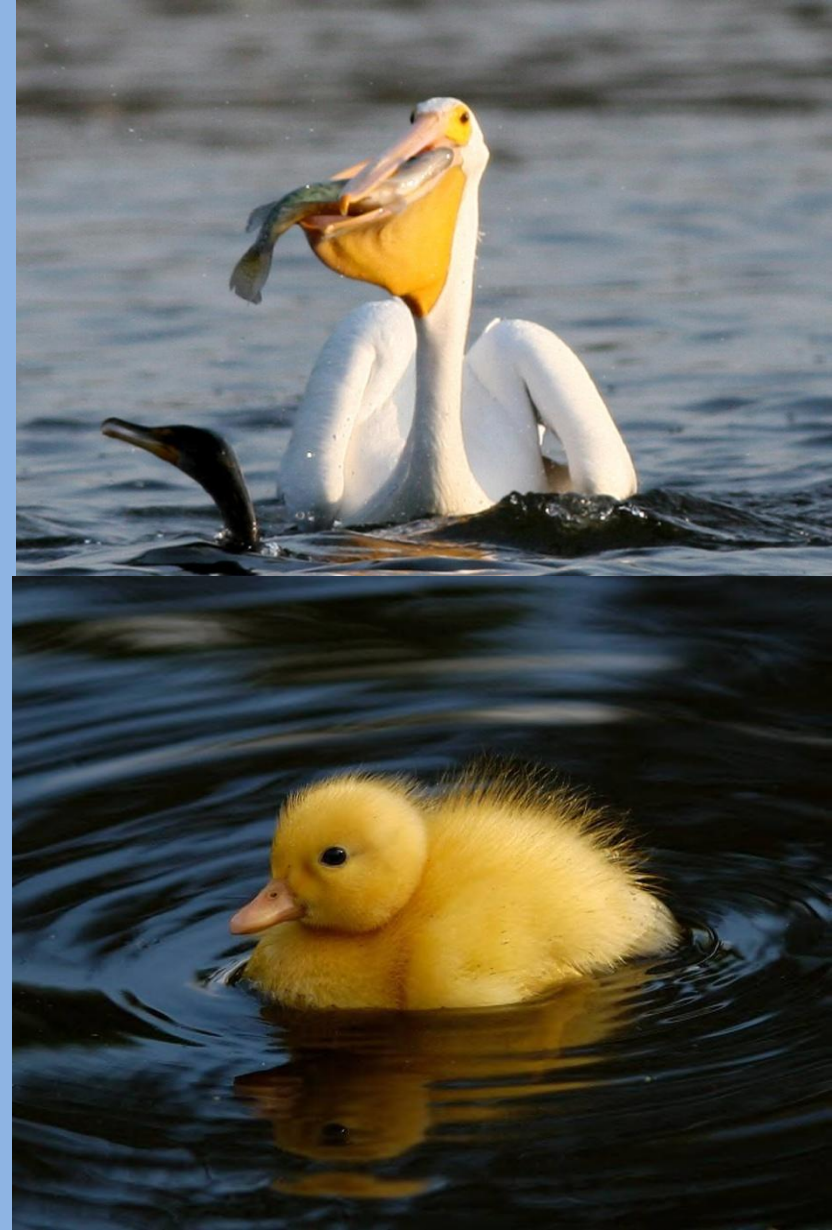


B. Instead of flying, some flightless birds run quickly to move around. Others are skilled swimmers.



VIII. Water Birds

- A. Many flying birds are also comfortable in the water. These water birds include cranes, ducks, geese, swans, pelicans, and loons.
- B. These birds usually have webbed feet for swimming or long legs for wading.
- C. Some water birds have a rounded, flat beak for eating plants or small invertebrates. Others have a long, sharp beak for catching fish.



IX. Perching Birds

- A. Perching birds have special adaptations for resting on branches. Songbirds, such as robins, warblers, and sparrows, make up a large part of this group of birds.

- B. When a perching bird lands in a tree, its feet automatically close around a branch. Sleeping birds will not fall off the branch.



X. Birds of Prey

A. Birds of prey hunt and eat other vertebrates. These birds may eat insects or other invertebrates in addition to mammals, fish, reptiles, and birds.

B. Birds of prey have sharp claws on their feet and sharp, curved beaks. They also have very good vision.

