

Beautiful Birds

Birds have many special features that are designed to make flight possible. They have strong bones, for example, but their bones are **honeycombed** inside making them lighter. Birds are also lighter than other animals because they are missing certain organs found in other creatures. For example, birds do not have teeth and the females have only one ovary.

Because birds are toothless they do not chew food in their mouths but instead grind it in a digestive organ near their stomach called the **gizzard**. Birds need a very active metabolism in order to have the energy to fly. They are **endothermic**, sometimes referred to as warm-blooded, meaning they use their own metabolism to maintain a constant, warm body temperature. Birds have other features that allow them to retain the heat in their. They have feathers and some species even have a layer of fat for insulation.

Feathers are made of a protein called **keratin** which is also found in human fingernails and the scales of reptiles. Feathers are extremely strong and light making them perfect for flight. Wings are the key adaptation for flying. Bird wings are **airfoils** that create lift by altering the air current that passes over them. Wings are powered by chest muscles attached to a **keel** on a bird's breastbone. Some birds, like hawks, can soar while hardly flapping their wings at all. By contrast, hummingbirds have to flap their wings continuously to stay in the air. Swifts are the fastest kind of bird, and they can fly 170 km/hour.

Some birds are flightless. Examples of these are the emu, ostrich, and kiwi. These birds do not have a keel attached to their breastbone or the large chest muscles that power flight.

The most common grouping of birds is the order **Passeriformes**. Passeriformes are called perching birds because their toes can lock around a tree branch. This group includes familiar backyard birds like swallows, jays, sparrows, and warblers.

Name _____

Date _____

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Questions

1. True or False: Bird bones are honeycombed inside.
2. What is one organ missing in birds that helps them reduce their weight for flight?
3. Birds grind their food in a digestive organ called the _____.
4. Birds are
 - a. exothermic
 - b. cold-blooded
 - c. endothermic
 - d. none of the above
5. Feathers are made of the protein called _____.
6. Both airplane wings and bird wings act as _____, altering the flow of air current and creating lift.
 - a. hydrofoils
 - b. airfoils
 - c. conductors
 - d. capacitors
7. Give an example of a bird that is able to soar while hardly flapping its wings at all.
8. What is the fastest type of bird?
9. What structure is missing from the breastbone of birds that cannot fly?
10. Give an example of a Passeriforme.

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Answer Key

1. **True** or False. Bird bones are honeycombed inside.
2. What is one organ missing in birds that helps them reduce their weight for flight? **Ovary in female birds or teeth in all birds**
3. Birds grind their food in a digestive organ called the **gizzard**.
4. Birds are
 - a. exothermic
 - b. cold-blooded
 - c. endothermic**
 - d. none of the above
5. Feathers are made of the protein called **keratin**.
6. Both airplane wings and bird wings act as _____, altering the flow of air current and creating lift.
 - a. hydrofoils
 - b. airfoils**
 - c. conductors
 - d. capacitors
7. Give an example of a bird that is able to soar while hardly flapping its wings at all. **Hawks, eagles..**
8. What is the fastest type of bird? **swift**
9. What structure is missing from the breastbone of birds that cannot fly? **keel**
10. Give an example of a Passeriforme.
Swallow, jay, sparrow, warbler, etc.