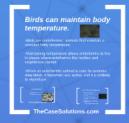
Van Oord (A): Where Land And Water Meet

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Bits of no titlet eggs to keep them worm; called malestims.

Objectives

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- -About birds as endotherms
- -How the adaptations of birds allow them to live in many environments.
- -About adaptations for fligh



- -In some species, the male and female mates take
- -Some birds hatch before their eyes open and the feathers grow.
- Others hatch at a later state of development, will open eyes, they are already covered with down

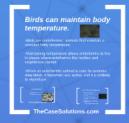




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Objectives

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- -About birds as endotherms.
- -How the adaptations of birds allow them to live in many environments.
- -About adaptations for flight.





- -There are over 10,000 species of the vertebrate animals called birds.
- -Some bird species are adapted to live in a wide range of environments. Many birds travel long distances during their lives. Some migrate as the seasons change, and others cover long distances while searching for food.
- -Birds are distinguished by these characteristics:
 - -They have feathers and a beak.
 - -They have four limbs: a pair of scaly legs and a pair of wings
 - -Their eggs have hard shells.

Birds can maintain body temperature.

- -Birds are *endotherms*: animals that maintain a constant body temperature.
- -Maintaining temperature allows endotherms to live in places where ectotherms like reptiles and amphibians cannot.
- -When an ectothermic animal is cool, its systems slow down, it becomes less active, and it is unlikely to reproduce.





Generating Heat

-The energy birds produce as body heat comes from food.

-Most endotherms need to eat a lot.



Controlling Body Temperature

- -Birds have soft feathers, called down, that keep warm air close to their bodies.
- -Other feathers, called contour feathers, cover the down on birds.
- -Contour feathers are water-resistant.
- -Birds shiver when they're cold, which generates body heat.
- -Birds have behaviors for maintaining body temperature, such as resting in a shady place or fluffing their feathers.



Most birds can fly.

Adaptations of Flight

-Many adaptations and many millions of years were needed before birds' body plans and systems became capable of flight.

 -Endoskeleton: Some of the bones in a bird's body are fused instead of jointed, making those parts of the bird's body light and strong but not as flexible. A specialized bone supports the bird's flight muscles.

 Wings and Feathers: Birds have no hands on their wings Contour feathers along the wing are called flight feathers
 Specialized Respiratory Systems: Flying takes a lot of energy, so birds have to breathe using a system of air sars and lungs

-Hollow Bones: Many of the bones in a bird's body are hollow and contain crisscrossing structures that provide strength and less weight.

-An internal organ called a gizzard grinds up food.

-Birds have highly developed senses of hearing and vision.



Benefits of Flight

-Flight allows animals to get food from places where animals living on land or in water cannot. Also, a flying bird can search large areas for food more effectively than it could if it walked, ran, or swam.

-For many species of birds, flight makes migration possible, and some birds even migrate long distances.

- By flying, birds can escape danger on the ground.

-Eggs are laid where predators can't reach.



Birds lay eggs with hard shells. TheCaseSolutions.com

-Birds reproduce sexually.



- -In most bird species, the male animals display and the female selects a mate.
- -The reproduction process of birds is similar to that of reptiles
 - -After fertilization, a shell forms around each fertilized egg while it is still inside the female's body.
 - -Reptiles usually have flexible shells, but the shells of birds' eggs are hard.
- -Usually the female bird chooses where to lay the eggs, often a nest. The nest is built either by the male, the female, or both.
- -Bird eggs have to be kept at a constant, warm temperature or they will not develop.
- -Birds sit on their eggs to keep them warm; called incubation.
- -Birds care for young until they can meet their own needs.