

## Lesson 13 Flightless Birds

# Lesson 13

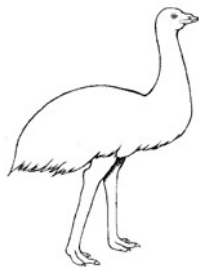
## —Day 1



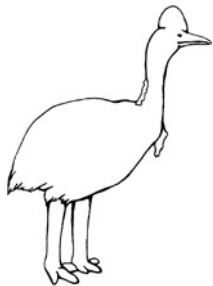
ostrich

Birds range in size from the smallest bee hummingbird, measuring 2.25 in. (57 mm) and weighing only .05 oz (1.6 g), to the largest bird, the North African ostrich, measuring 9 ft (2.7 m) tall and weighing up to 300 lb (136 kg).

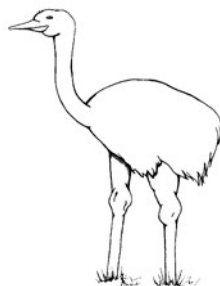
One group is made up mainly of flightless birds. Flightless birds include ostriches, emus, cassowaries, rheas, and kiwis.



emu

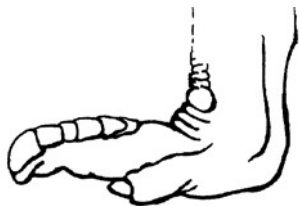


cassowary



rhea

Ostriches, the largest birds in the world, are flightless but are equipped with powerful legs and can run at speeds up to 40 mph (65 kph). They can even outrun a horse, but for only a short distance. Ostriches can be tamed fairly easily. Ostrich derbies are a popular sport in South Africa.



Ostriches are the only birds that have only two toes. Rheas, emus, and cassowaries have three toes; kiwis have four toes. The tread of an ostrich's larger toe acts like the sole of a boot, giving the ostrich's feet protection as it runs.

Female ostriches lay about ten yellowish white eggs, which weigh about 3 lb (1.4 kg) each. Several females may lay their eggs in the same place, creating a large pile of about 50 eggs. Male and female ostriches share the responsibility of **incubating** (in kyuh beyt ing), or warming, the eggs.

### Materials:

SP Lesson 13 Day 1  
Birds Shutter Fold  
8.5"x11" paper or cardstock  
hard hat or football helmet  
boot with thick, rubber tread  
eggs  
vinegar  
water  
paintbrush  
paper  
small jar lids  
food coloring

### Vocabulary Words:

Hand out vocabulary strip for this lesson. Encourage your students to use the words while talking about the material and in their written work.

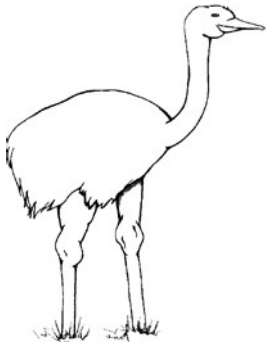
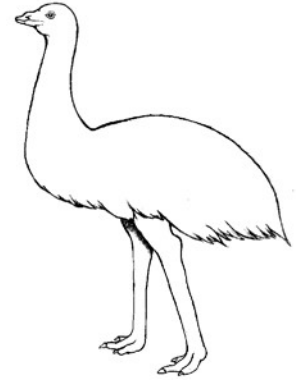
**incubating**  
**casque**  
**gizzard**





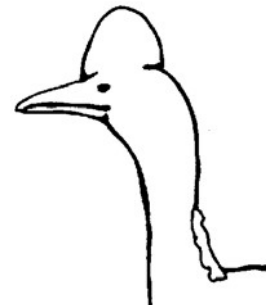
Ostrich feathers have been used in fashionable clothing for centuries. Beginning in the 14th century, ostrich feathers were used for quill pens. During the 18th and 19th centuries the feathers were used for interior design as furniture decorations, as wall hangings, and as lamp shades.

Emus of Australia are the second largest bird in the world. They lay dark green eggs, which are about 4 in (10 cm) long. The male emu takes total responsibility in incubating and caring for the young.



Rheas are the largest bird found in North and South America. Smaller than the ostrich, rheas stand about 4 ft. (1.2 m) tall and weight about 50 lb (20 kg). They are brownish and lack the beautiful plumes of the ostrich.

Cassowaries of Australia and New Guinea are easily recognized by their bony crown called a **casque** (kask). The cassowary's crown helps it push through dense underbrush without hurting itself. Cassowaries are good swimmers. They are equipped with razor-sharp inner toenails for protection. Unlike ostriches and emus that live in open plains, cassowaries live in dense forests.



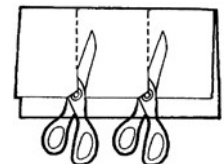
The dodo, a flightless bird of the island of Mauritius, is now extinct. The phrase, "dumb as a dodo" came about because the birds were not fast enough to outrun human predators.

Ostriches, emus, and rheas are attracted to shiny objects. They have been known to eat glass, bottle caps, and watches. These items act as stones in their **gizzard** (giz erd), a part of the digestive tract where food is ground up to help digest food.

## Birds Shutter Fold

Hand out SP Lesson 13 Day 1, **Birds** Shutter Fold, and 8.5"x11" paper or cardstock.

Make a 3 Tab Book by folding the 8.5"x11" paper into a Hot Dog. Fold the Hot Dog in thirds. Open and cut up the two top creases to make 3 tabs.



With the fold at the top, fold the right section of the *Types of Birds* book over the middle section and the left side over the middle. Cut out and glue image 13A on the cover and title it *Types of Birds*. Open the book. Cut out and glue image 13B on the first tab. Label it *Flightless Birds*.

Open the *Flightless Birds* tab:

 Draw a picture of an ostrich, emu, cassowary, or rhea.

 Write words or phrases about flightless birds. Ex:

*Ostrich - largest bird, powerful legs, two toes*

*emu - second largest bird, male incubates and cares for young*

*rhea - largest bird in North and South America*

*cassowary - Australia and New Guinea, bony crown, good swimmer*

 Describe the characteristics of flightless birds. Ex:

*Ostriches are the largest birds in the world. They are flightless but are equipped with powerful legs and can run at speeds of up to 40 mph. They are the only birds with only two toes.*

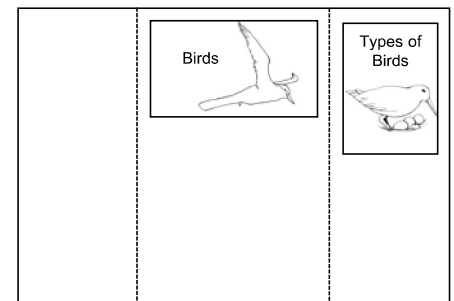
*Emus are the second largest bird. The male emu takes sole responsibility in incubating and caring for the young.*

*Rheas are smaller than ostriches but are the largest birds found in North and South America.*

*Cassowaries are found in Australia and New Guinea. They have a bony crown called a casque. They are good swimmers and have razor sharp toenails for protection.*

Open the *Bird Shutter Fold* and glue the *Types of Birds* book on the top of the right section.

You will add to the *Types of Birds* Book in Lesson 14 Day 1.



## Hard Head Activity

*Material: hard hat or football helmet*

Pretend you are wading through a dense jungle. What are the possibilities of hurting yourself? Now, put on a hard hat or football helmet. How do you think a cassowary's head helps it charge through dense underbrush?

## Treaded Feet Activity

*Material: boot with thick rubber tread*

Compare running outside barefoot on rough concrete with running with rubber treaded boots or sneakers. How does the hard tread on an ostrich's foot protect it?

## Egg Paint Activity

*Materials: eggs, vinegar, water, paintbrush, paper, small jar lids, food coloring*

Separate the egg white and the egg yolk. Place the yolk in a bowl and discard the egg white. Add 1 tablespoon water and a drop of vinegar and mix well. Divide the egg mixture among the jar lids. Add food coloring and mix in each jar lid. You may want to mix colors to make more colors. Now, you're ready to paint a picture of a bird of your choice.

# Lesson 13

## —Day 2

Penguins are another type of flightless bird. They are found only in the Southern Hemisphere. They are excellent swimmers and can leap up to 6 ft (2 m) out of the water onto land. Penguins stand up straight because of the way their legs are attached to their bodies. A colony of penguins is called a **rookery** (**rook** uh ree).

Penguins do not fly but use their wings as flippers and are fast and graceful swimmers. Penguins are equipped with small, stiff wings covered with small tightly packed feathers. The feathers overlap and special oils make them waterproof.



Emperor Penguins can dive up to 800 ft (250 m) and stay underwater for about nine minutes at a time and, periodically, up to eighteen minutes. Emperor Penguins are one of 18 penguin species and grow to a height of more than 48 in (120 cm).

Although other penguin species lay one or two eggs at a time, Emperor Penguins always lay a single egg.

Immediately after the female lays the egg, she passes the egg to her mate and travels to the sea for food. The male holds the egg on his feet, incubating it for about nine weeks with his warm roll of skin and feathers.

### *Materials:*

SP Lesson 13 Day 2  
Birds Shutter Fold  
three sheets of 8.5"x11" paper or cardstock  
plastic dishwashing tub or sink  
two glass jars with lids  
cotton balls  
small cardboard box to hold one jar  
water  
2 thermometers  
Lab Book  
Lab Cards

### *Vocabulary Words:*

Hand out vocabulary strip for this lesson. Encourage your students to use the words while talking about the material and in their written work.

**rookery**

The male does not move or eat during this time and loses about a third of its body weight. When the female penguin returns from feeding, the male penguin leaves to find food. After he returns, both male and female care for the chick.

Breeding occurs during the coldest time of the year when temperatures dip to  $-80$  degrees F ( $-62$  degrees C).





## Birds Shutter Fold

Hand out Student Page Lesson 13 Day 2, **Birds** Shutter Fold, and 8.5"x11" paper or cardstock.

Make a Hot Dog with the fold on the left. Cut out and glue image 13A on the cover. Title it *The Emperor Penguin*.



Open. On the inside right section:

-  Draw a picture of an Emperor Penguin in the Antarctic.
-  Write words or phrases about Emperor Penguins: *only in southern hemisphere, excellent swimmer, stands straight, dives up to 800 ft, underwater for 9-18 minutes, 48 in tall, one of 18 penguin species*

 Describe the characteristics of Emperor Penguins. Ex:

*Emperor Penguins are one of 18 penguin species. They grow to a height of more than 48 in (120 cm). Emperor Penguins can dive up to 800 ft (250 m) and stay underwater for about nine minutes at a time and periodically, up to eighteen minutes.*

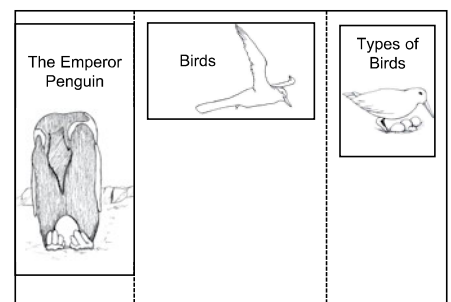
On the inside, left section:

-  Draw a picture of a male Emperor Penguin caring for an egg.
-  Write words or phrases about an Emperor Penguin's breeding habits. Ex: *female lays single egg and leaves, breeds in coldest time, male incubates egg and does not eat or leave*

 Explain the breeding habits of Emperor Penguins. Ex:

*Although other penguin species lay one or two eggs at a time, Emperor Penguins always lay a single egg. Breeding occurs during the coldest time of the year when temperatures dip to  $-80$  degrees F ( $-62$  degrees C). The male incubates the egg by holding it on his feet.*

Open the *Birds* Shutter Fold and glue *The Emperor Penguin* book on the left section.



## Penguins Wings Activity

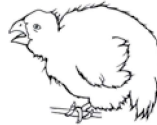
*Materials: 2 sheets of paper or cardstock, plastic dishwashing tub or sink*

A penguin's small wing is better than a large wing for swimming.

Fold one sheet of paper in half like a Hot Dog. It represents a large wing. Paddle the water like a penguin's wing. Now, fold the other sheet of paper several times so it forms a smaller, stiff wing. Paddle the water again.

Did the large sheet of paper perform as a good paddle? Did the smaller, stiffer paper perform as a good paddle? Why does a penguin's wing make a good paddle?

## *Feathers for Warmth Lab 13-1*



*Materials: two glass jars with lids, cotton balls, small cardboard box to hold one jar, water, 2 thermometers, Lab Book, Lab Cards*

In addition to helping birds fly, feathers help keep birds warm.

Cut out and glue Lab 13-1 image on the next pocket of your Lab Book. Write the name of the lab and the date on a Lab Card.

Pour exactly one cup of warm water into each jar. Place one jar in the cardboard box. Insert a thermometer in both jars for one minute and record the temperatures on the lab card. Stuff the spaces between one of the jars in the cardboard box with cotton balls. Seal each jar with a lid.

Do you think the temperatures will remain the same? Record your prediction on the Lab Card. Record your observations from each jar.

After ten minutes, remove the lids and insert a thermometer in both jars. Did the cotton balls keep the water warmer than the jar without the cotton balls? Record your conclusions on the Lab Card and store it in your Lab Book.



# Lesson 13

## —Day 3

Collect materials for the activities you choose:

plastic garbage can lid or shallow plastic pan  
plastic gallon jug  
water

Choose one or more activities to complete today:

1. Make a simple birdbath out of a plastic garbage can lid or shallow plastic pan. Place it under a tree on a stump or pedestal. Punch a small hole on the bottom of a plastic gallon jug. Fill it with water and hang on a tree over the birdbath.
2. What does the phrase “Birds of a feather flock together” mean? Write an essay explaining how you think this phrase originated and what it means.
3. Watch the movie “March of the Penguins.”
4. Using an Internet Search Engine, research bird calls.
5. Read and discuss *Mr. Popper’s Penguins* by Richard and Florence Atwater (gr. 1-5).

## Amazing Animals

Penguins don’t wear tuxedos to make a fashion statement: it helps them be camouflaged while swimming. From above, their black backs blend into the dark ocean water and, from below, their white bellies match the bright surface lit by sunlight. This helps them avoid predators, such as leopard seals, and hunt for fish unseen.

