

## Lesson II: Weedon Island: Air

keywords: plumage, ratite, bills, talons, molt

### Background Bird Information:

In the air, or masqueraded in the canopy of mangrove trees, someone walking quietly might encounter a red-tail hawk, a pileated woodpecker, a red cardinal, and even a wren or warbler. If fortunate, they a bald eagle soaring overhead. Beautiful butterflies color the sky with their wings, and down near the

water's edge, a roseate spoonbill or blue heron might be found hunting. Decorating the water's edge and the surrounding trees might be many white ibis, wood storks and sandpipers. The birds might be hunting small fish, bugs and worms.

### Plumage

Birds' feathers, or **plumage** play many important roles; they are influential in attracting a mate, intimidating competitors, vital for warmth and camouflage. In many species, adult males are very brightly colored, whereas the females blend into the background. Plumage protects birds against the cold and rain. Feathers trap air near the body of the bird, and this acts like insulation around the bird's body. Swimming birds have water-repellent body feathers. Under these there lies a dense coat of short, fluffy feathers called down. Down is an excellent insulator.

Birds lose and replace their feathers at least once a year. This is called **molt**. In most migratory species, the new plumage is grown after breeding and before fall migration. The reason that birds **molt** is because feathers become faded and brittle with long exposure to sunlight. Some are lost during flight or pruning, or they just grow old with time and use.



### Senses



Birds rely heavily on their senses. Sight, hearing, smell, and

touch are the most commonly used in all birds. Their sense of sight is very good and they can perceive objects in very dim light. Some birds have better developed senses according to their needs, lifestyles and habitat. In addition to these

senses, birds have a superb sense of balance and are sensitive to small vibrations.

Most birds have relatively large eyes and can perceive colors. Some birds' eyes are on the sides of their heads. This allows them to see a larger portion of the surroundings without turning their heads. Others, like owls', have eyes located on the front of their head. Their eyes cannot move from side to side in their sockets; therefore, owls must turn their faces toward an object to see it.

Birds use their voices to sing, communicate and attract a mate.

Often, sound rather than sight recognize birds' mates or young. Only a few kinds of birds have a well-developed sense of smell. These birds include the American vultures, condors and woodpeckers. Vultures locate dead animals on which they feed by using both sight and sound. The honeyguides, small woodpecker-like birds of Asia and Africa, locate beehives by smell. The Kiwis of New Zealand, the smallest of the **ratite** birds, are nearly blind. They are the only birds having nostrils at the very tip of their **bill**. Not much is known about the sense of taste in birds, but they have only a few taste buds on their tongues.

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## Life History

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The life history and lifestyle of birds are intimately correlated with the seasons. The seasons and climate affect birds in many ways. In the temperate climate where four seasons are regularly found, birds mate and nest according to the season. In the tropical and

subtropical climates, some birds will nest on sandy beaches that are revealed when the water recedes; others use the new vegetation that springs up after the rainy season to build their nests. Others use the seasons to follow migratory patterns.

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## Adaptations

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Birds have similar body plans, but are very different in body size and proportion. The largest living

birds are found in the **ratite** family. The largest of all is the ostrich, nearly 2.5m (almost 8 feet tall!) and weighing as much as 167kg (345lb). The smallest birds are the hummingbirds of the Western

Hemisphere. The tiniest of these is the bee hummingbird of Cuba, only 6.3 cm (2.5 in long)!!

Many birds rely on the water for nesting, raising their young and finding food. Several kinds of birds pursue their food by swimming underwater. Almost all swimming birds, divers and surface swimmers, have webs of skin connecting their toes. This creates a paddle for them to navigate through the water.

Another group of birds is adapted such that their noses look like tubes. These tube like bills are useful for capturing food. These birds are strictly marine. These birds are the ibis' and the sandpipers

The group known as the raptors, or birds of prey, has both a day-hunting group and those that feed at night. Hawks, eagles, falcons and vultures are the first type while owls are night creatures. They are all meat eaters. All have powerful, sharp bills, and all but the vultures have grasping toes

tipped with curved, sharp claws or **talons**.

Other birds that feed primarily on flying insects have developed long wings and wide-opening mouths. These birds include the swifts and the swallows. Others, the nightjars or goatsuckers, not only have huge mouths, but also a row of long hairlike feathers called **rectal bristles** surrounding the mouth. These bristles act as a sort of flytrap.

See Diagram I and II for basic bird anatomy.

Diagram I. Basic Bird Anatomy as seen from the exterior.

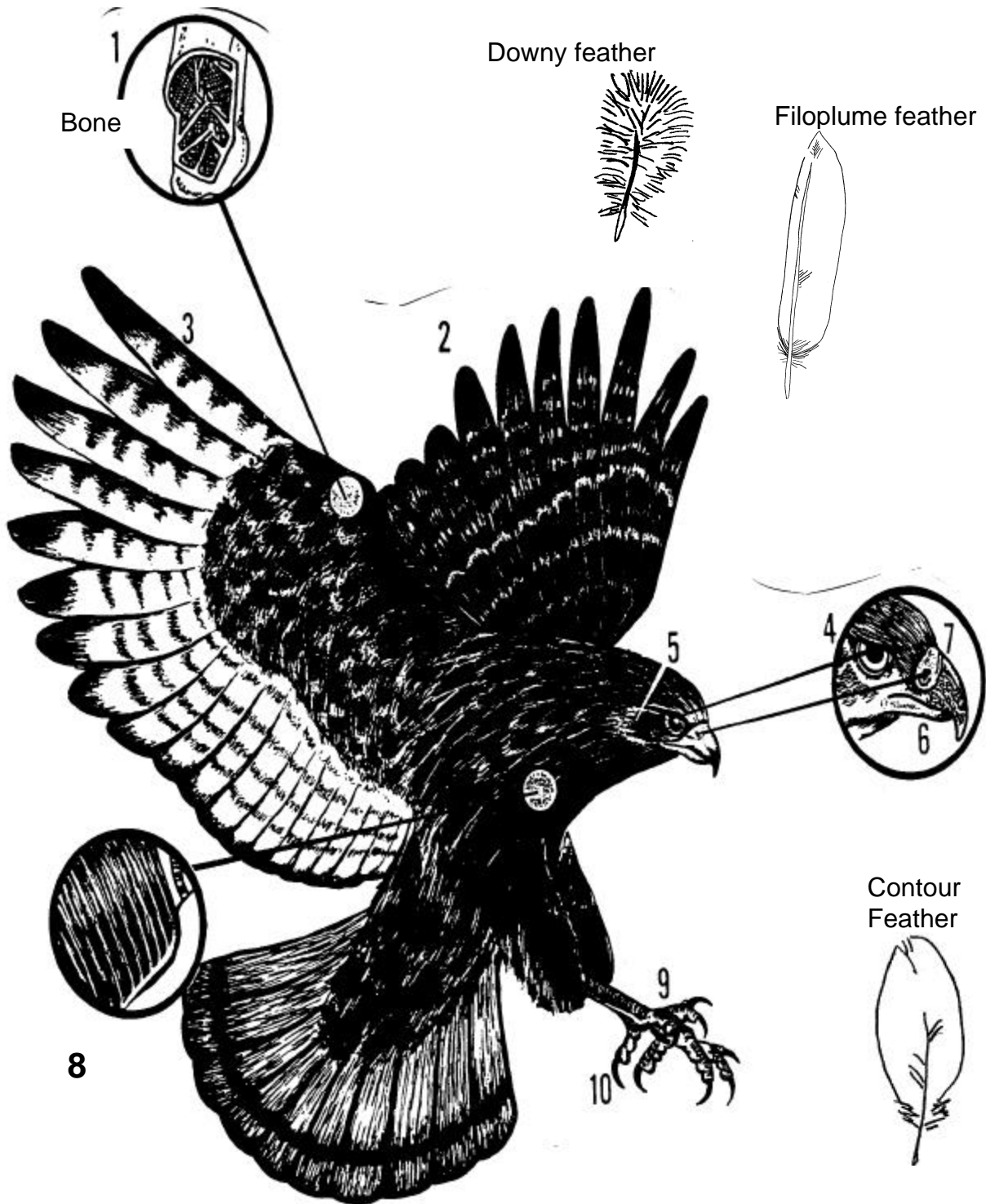


Diagram I. General Anatomy of a Bird.

1. **SKELETON** - Hollow bones with braces inside for support. Makes the skeleton lightweight and strong.
2. **WINGS** – Wings are big and broad for soaring, or short and stubby for flying through trees, or slender and pointed for speed.
3. **FEATHERS** – Birds have several kinds of feathers. Contour feathers cover their bodies, wings and tails. Downy feathers next to the skin provide. Filoplumes form crests and tail displays.
4. **EYES** – Sharp eyesight lets birds of prey see about 10 times better than humans
5. **EARS** – Birds have small ear openings on each side of the head, just below and in back of the eyes.
6. **BEAK** – A raptor’s beak is sharp, curved, and powerful for grasping and eating prey. The size and shape of the beak depend on the size of the bird’s prey.
7. **NOSTRILS** – Two nostrils for breathing are located on top of the upper beak. Most birds, including vultures, have a poorly developed sense of smell.
8. **MUSCLES** – Powerful flight muscles are attached to the large breastbone. These muscles help the birds take off (even with prey), maneuver, hover, and land.
9. **FEET** – Most raptors have three toes pointed forward and one toe directed backward. Owls and ospreys have a reversible outer toe, which means they can turn it to the front or to the rear.
10. **TALONS** – All raptors, except vulture, have long, curved sharp talons (claws) for seizing live prey. The larger the prey, the longer the talons.



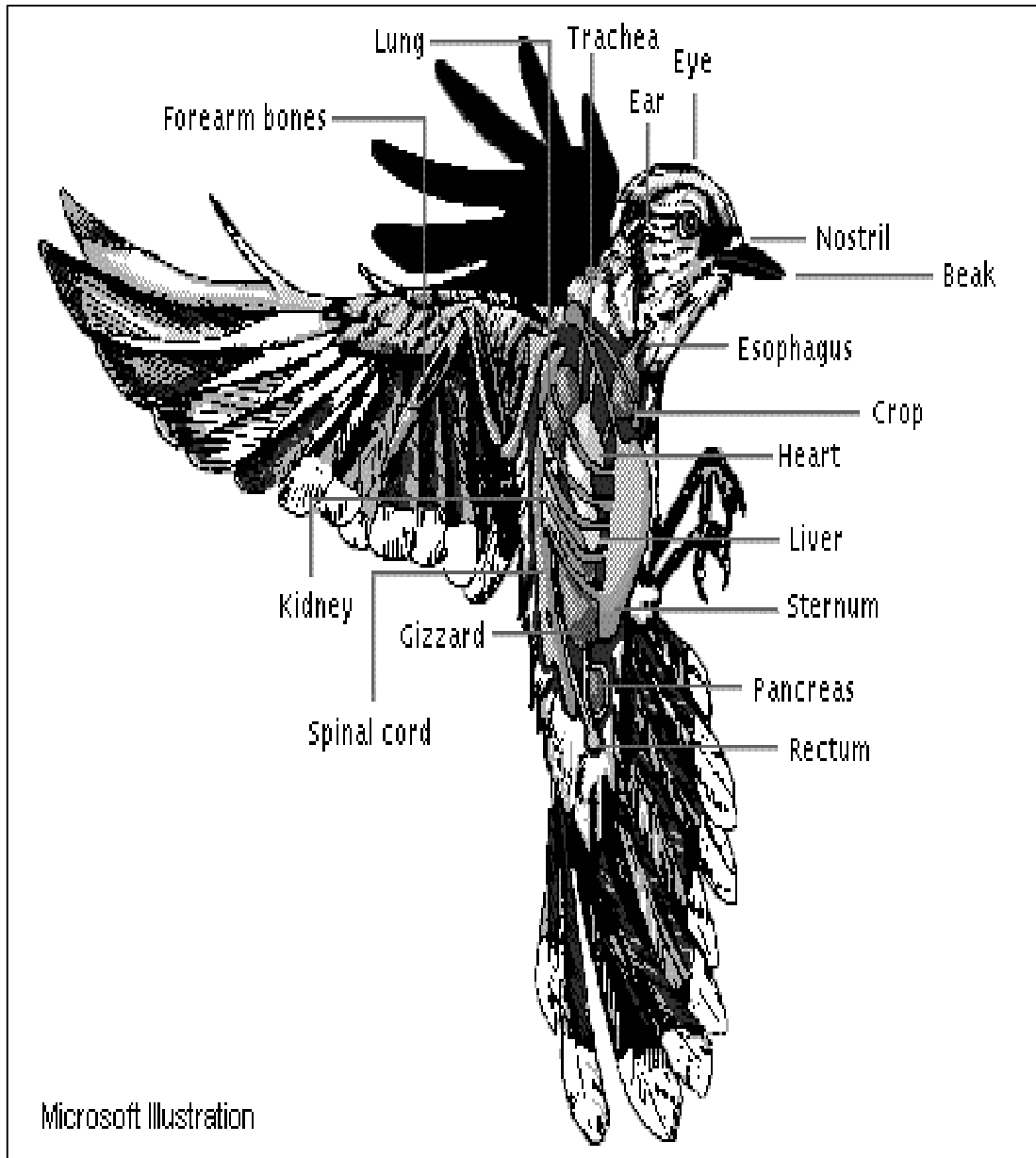


Diagram II. General Anatomy of the Inside of a Bird.

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## Other Important Birds on Weedon Island

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In addition to the birds of prey found at and around Weedon Island, there are many other birds that make the island their home. Some it is the Brown Pelican that makes Weedon Island, and other parts of the Florida Coast, its home.

Brown pelicans are very handsome birds and with their huge wingspan of 6 feet, they can be seen soaring high above the water or gliding over the waves. Brown pelicans have a large, stocky body, brown in color, and a massive bill and throat pouch

of these birds are spoonbills, warblers, blackbirds, cardinals, ibis', egrets, herons, pelicans, and many, many more. There are many different kinds of each bird that nest on the island. One of the most common to all coastlines is the brown pelican. This can be misleading as it is endangered in many other states. The pelican is an interesting and sociable bird. In Florida,

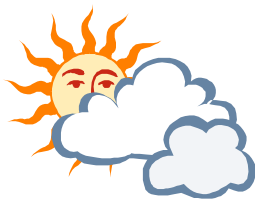
Pelicans nest in **colonies** on coastal mangrove islands. Nests are built in low trees or mangroves to protect the nest and hatchlings. Pelican babies are born without feathers and are fed partially digested fish from the parent's gullet. Usually two or three chicks are hatched. The chicks will be ready to leave the nest in 12 weeks.

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## WATCH FOR PELICANS IN THE AIR!

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Pelicans often fly together in long lines of several or more birds. They will flap their wings and then glide. The wing flaps are not at the same moment, but in sequence, starting with the leader. Each bird will flap when he reaches the same spot where the lead bird began to flap. Often the birds will fly very close to the water's surface, skimming along just above it!



Pelicans take off from the water with help from their large feet. They kick both feet together to boost their large body into the air. Landings in the water are accomplished with both feet out in front of the bird, skidding against the water acting as brakes.

## THREATS TO PELICANS IN FLORIDA

Due to overbuilding, many pelican nesting areas have been lost. As populations grow, pelicans are in increasing danger of losing more nesting and breeding areas.

Feeding birds near fishing areas is not a good idea. It increases the chances of the pelican getting tangled in fishing gear as well as encouraging them to become nuisances by stealing fish from buckets and getting tangled in line.



Pelicans often get tangled in fishing line, lures and hooks. If

the line is cut by the fisherman and is left to dangle from the bird, it could get caught on a mangrove branch, trapping the bird and leading to **starvation**, or the line can become tightly wound around the pelican's legs or wings.

## How You Can Help!



If you, or someone you know, hooks a pelican, the bird should be reeled in carefully or walked to the shore if possible. **DON'T** attempt to do this on your own! Get help as pelicans are very strong! One person should hold the bird while the other works on freeing the line or hook. It is a

good idea to cover the bird's head with a towel as the darkness calms the bird and the towel will protect your hand!

If there is a hook lodged in the bird, first clip the barb off and then slide the hook out. If the bird seems weak, ill or seriously injured, take it to the nearest Seabird Sanctuary or Veterinary Surgeon's Office. Make sure to place the hook and line you remove in the trash and not in the water.



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### **Fun Facts:**

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Pelicans do NOT carry fish in their pouch.

Pelicans flap their pouch to lower their body temperature

Pelicans are unique birds. They can live to be 30+ years old, weigh from 5-8 pounds, and might eat 3 to 4 pounds of fish per day!

Pelicans are victims of oil spills, **pesticides**, fishing hooks, fishing lines, guns, arrows, cars, boats and power lines.

Nearly 20% of all land and seabirds (between 700,000 and 1.2 million birds!) that live on the Atlantic Coast depend on Florida's wetlands for their winter home

Hummingbirds are aerial acrobats. They are the only birds that regularly fly backward! Their legs and feet are too weak for walking or hopping, so they must fly from one perch to the next.

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## **Activity III-2A. Bird Words**

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*Modified from Suncoast Seabird Sanctuary, Pinellas County, Florida*

Sanctuary  
Incubate  
Rookery  
Species  
Plumage  
Molt  
Preen  
Migrate  
Nocturnal

Match words with their definitions:

- \_\_\_\_\_ a single kind of animal, plant, or bird.
- \_\_\_\_\_ to clean, smooth, and oil feathers with the beak.
- \_\_\_\_\_ a breeding place or colony of birds.
- \_\_\_\_\_ to warm and hatch eggs.
- \_\_\_\_\_ active during the night.
- \_\_\_\_\_ feathers that cover a bird.
- \_\_\_\_\_ to shed feathers.
- \_\_\_\_\_ a protected area for birds and animals where hunting is prohibited.
- \_\_\_\_\_ to move from one place to another with the change of the seasons.

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## Activity II-2B. A Wonderful Bird Story

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*Modified from Suncoast Seabird Sanctuary, Pinellas County, Florida*

Use the following words to fill in the story below. Each word will be used only one time.

Sanctuary  
Incubate  
Rookery  
Species  
Plumage  
Molt  
Preen  
Migrate  
Nocturnal

There are many \_\_\_\_\_ of birds. Some are easily seen because they are active during the day. Others, like owls, are hard to see because they are \_\_\_\_\_. One of the easiest ways to identify birds is by their colorful \_\_\_\_\_. A bird's plumage, of course, is affected by their \_\_\_\_\_ing and \_\_\_\_\_ing. Birds nest in a \_\_\_\_\_. They lay their eggs, then \_\_\_\_\_ them until they hatch. For birds that \_\_\_\_\_, rookeries are only temporary habitats. Throughout history, wild birds have been hunted for their beautiful feathers, and as a sport, but today many areas of the country have been declared \_\_\_\_\_ies to protect the many different species. In Pinellas County, Florida, there is another kind of Sanctuary – The Suncoast Seabird Sanctuary where injured birds are repaired, and if possible, released to fly free once again.

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## ACTIVITY III-2C Pelican Research Projects

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### Pelican Research Project

Conduct a research project on pelicans.

*Some ideas for possible projects:*

\*Comparing White and Brown Pelicans

\*Pelicans in Danger!

The finished product could be in the form of a poster, oral presentation or written paper.

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## ACTIVITY III-2D Adaptation, Structure and Function - Class Discussion

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### Adaptation, Structure and Function - Class Discussion

Pelican Feeding - How do pelicans use their bills, pouches and wings to catch their prey?

#### Teacher Background:

Pelicans glide over the water in order to spot their potential prey. They bank out of the sky in a steep climbing turn, stall in flight and drop like a rock plummeting towards the water. They use their wings to give final course directions. At impact, the wings are folded back out of the way and the bird is flipped over. Pelicans have special air sacs under their flesh on the front of their body to cushion them from the enormous impact with the water surface. This huge impact stuns the fish and the pelican uses his pouch like a fishnet to grab his prey. The lower beak is long and narrow and can stretch out under water to almost the shape of a basketball hoop. As the pelican surfaces, the pouch is tilted forward and the water drained out leaving the pelican with his catch which he then swallows before taking off again.

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## Activity III-2E. Birds of the Estuary Activity

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*modified from "Project Estuary" by Gail Jones*

**OBJECTIVE:** To explore the birds that live in the estuarine environment.

**CROSS-CURRICULAR CONNECTIONS:** Science, Art, Communication,

**MATERIALS:** Overhead projector, Birds of the **Estuary** Silhouettes, black paper, yellow coloring pencil, Birds of the Estuary Information sheet, Reference books, field guides, (Internet access).

**TEACHER PREPARATION:**

1. Make 3 copies of the silhouette sheet.
2. Cut out each bird silhouette and distribute to students as bird cards.
3. Make a transparency of the silhouette sheet.
4. Cut out each bird for individual students to use on the overhead projector.
5. Make a class set of the Birds of the Estuary Information sheet.

**BACKGROUND INFORMATION:** There are a variety of bird species that live in estuaries. Most estuary birds are fish-loving species, while other prefer insects and small amphibians. Millions of waterfowl use estuaries year-round as nesting or wintering grounds or just as a place to stop off while on their yearly migrations

**VOCABULARY:** Silhouette, Swamp, Marsh, Estuary, Habitat, Wooded Streams.

**PROCEDURE:**

1. Give each student a different Birds of the Estuary silhouette card and an information sheet.
2. Make an overhead projector copy of the Birds of the Estuary Silhouettes sheet.
3. Instruct them to look up information on their particular bird in reference books, field guides or on the Internet.
4. Record any data about the birds of the estuary on the information sheet provided.
5. Tape the black paper to the board and shine the projector through the overhead projector copy of the Birds of the Estuary Silhouettes image on the paper.
6. Instruct students to trace their bird silhouette on the black paper with a pencil and then cut it out.
7. The silhouette should be glued to the information sheet and displayed in the classroom for all students to see.

**EXTENSION:**

- Students could give an oral report on their particular bird species.
- Create a mural showing an estuary and where particular bird species would live.

**BIRDS OF THE ESTUARY**  
**SILHOUETTES**

**(Transparency & Bird Cards)**



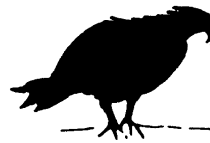
**SNOWY EGRET**



**GREAT BLUE HERON**



**COMMON EGRET**



**OSPREY**



**CATTLE EGRET**



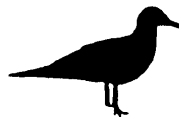
**BROWN PELICAN**



**LAUGHING GULL**



**COMMON TERN**



**HERRING GULL**



**ROYAL TERN**

Bird Silhouettes adapted from "Project Estuary" by Gail Jones

Student Name: \_\_\_\_\_ -

BIRDS OF THE ESTUARY  
INFORMATION SHEET

Name of Bird: \_\_\_\_\_

Habitat: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

Description of Bird:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Additional information:

\_\_\_\_\_  
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## Student Information III-2- Birds of Prey

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In today's show we will be focusing on 3 birds of prey that are commonly found on Weedon Island. They are also common to many areas of North America.

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### RED-TAILED HAWK (*Buteo jamaicensis*)

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The Red-tailed Hawk is Florida's largest hawk with a height of 25" and a wing span of almost 4 feet. It has a broad chest with light or white feathers intermixed with sepia streaks. Its broad red or rufus colored tail with a black band along the edge gives this hawk its name.

The Red-tailed hawk is widely distributed throughout the U.S. and Canada. It prefers the edges of pine or hardwood forests with open areas for hunting. It hunts from both a perched position, patiently waiting for prey to move about, or from the wing while gliding or soaring on thermal updrafts.

This hawk is well adapted to hunt a large variety of prey that including rodents of all types: snakes, turtles, frogs, toads, birds insects and small mammals.

Male and female Red-tailed hawks overlap in size and are similar in coloration. Therefore, it is difficult to distinguish the sexes. Red-tailed hawks usually mate for life or at least for very long periods. They usually nest in a tall pine tree where they may build a nest of sticks lined with bark or use an old nest from another species. Usually two eggs are laid in March with a 28-day incubation period. The young spend another five weeks in the nest before **fledging**. The female does most of the incubation duties while the male hunts for food to feed her.

Florida Red-tailed hawks are non-migratory. We have other northern birds migrating through or spending the winter in our area each year.

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### SCREECH OWL (*Otus asio*)

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Screech owls are the smallest "eared" owls in North America. You can tell this small owl from all others by the long "ear" tufts. Adults are only 8" - 9" tall. There are two (or three) color phases: red or grey (some include a brown as well). The red phase displays a white breast

with mottled russet and tawny streaks while the grey phase owls are a drab brown-gray with a white breast streaked with gray.

Screech owls are found throughout the eastern U.S. They are one of the most common owls and can be



found nesting in the treed backyards of heavily populated areas. The nest is usually found in an abandoned woodpecker hole, a natural hollow in a snag or a nest box. They nest in early spring in Florida (March/April), laying two to five eggs. The female, which is indistinguishable from the male in size and color, incubates the eggs for about 28 days while the male hunts. The eggs are laid a day or two apart so when the young hatch there is a range of ages in the

nest. They usually fledge in another 30 days.

This small owl is one of the most strictly nocturnal owls. It hunts only after sunset and at night, while spending the day perched in a cool shady spot on a limb, in a hollow or snuggled up to a tree trunk. It feeds largely on insects and small rodents but will also catch small birds, **anoles**, scorpions and earthworms.

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### GREAT HORNED OWL (*Bubo virginianus*)

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Great horned owls are the third largest owls found in North America. Their territory ranges from Canada to the southern tip of South America and most of Northern Europe. They are the largest "eared" owls with a length of two feet and a wing span of about five feet. Their **plumage** is finely mottled with brown, russet and ocher on the upper parts, with a white underside shaded with ocher and narrow crossbars on the abdomen.

Great horned owls are extremely powerful birds capable of hunting prey as large as opossums. The force on their **talons** has been measured in the laboratory and found to be as great as 10,000 lbs. per square inch. Like Red-tailed hawks, however, they are generalist feeders with a diet of almost anything they can catch. This includes rabbits, squirrels, rats, mice, water fowl and even skunks.

These owls usually nest in tall pines and particularly like to use the nest of other large raptors such as bald eagles, often displacing the original tenant. A pair usually bonds for life. Two eggs are laid in midwinter (December/January) which the female and male incubate for 30 - 35 days. After hatching, the female usually broods the young for the first three weeks while the male brings all the food. The young mature slowly and do not **fledge** until they are nine to 10 weeks old. The parents are extremely protective and will continue to feed and guard a juvenile even if it falls from the nest.

Great horned owls are the classic hoot owl. Their call is a series of six or seven low hoots that can be heard over long distances. Pairs will serenade each other for hours, especially when courting.