Your Bird List

There are more birds in the world than there are people. Birds live everywhere that people do and almost everywhere that people go—from the center of cities to the wilderness, high in the mountains and far out at sea (but not on the moon). There are almost always birds around; that is why everyone knows quite a lot about them. As you go through this book, you may be surprised to find out how much you and your classmates already know about birds. As you share your knowledge with each other, you will all learn something new.

Make a list of the birds you already know by filling in the following table. Do only the first three columns now.

Column 1 List wild birds you have seen in your area. Then add birds you have seen while visiting other places. Finish your list with wild birds you have seen in picture books or magazines, on TV, in zoos, or anywhere else.

Column 2 Does this bird live in your area? Write yes or no for each bird.

Column 3 Determine the size of each of your birds and write the letter in this column.

<table>
<thead>
<tr>
<th>S = Robin size or smaller</th>
<th>M = Duck size (medium)</th>
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<tbody>
<tr>
<td>L = Goose size (large)</td>
<td>VL = Eagle size (very large)</td>
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</table>

Clue: If you are not sure of the size, look in your field guide. If the bird is not in the guide, consult your teacher or classmates.
### List of Birds You Know

<table>
<thead>
<tr>
<th>Name of bird</th>
<th>Your area? yes/no</th>
<th>Size</th>
<th>Bill</th>
<th>Feet</th>
<th>Habitat where you have seen it</th>
<th>OK to hunt? yes/no</th>
<th>People Uses</th>
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Class Bird List

Your class may wish to make a class bird list by combining individual lists. One person writes on the chalkboard. Each student in turn names one of the birds on his or her list. All those who have this bird on their lists should raise their hands. The total number of hands is written next to the bird's name. Keep going around the room until all the bird names from everyone's list are on the board. When the list is complete, fill in the questions below.

1. How many birds are on your own list? ________________
2. How many birds are on the class list? ________________
3. Which birds were on the most lists?
   ________________  ________________
   ________________  ________________
   ________________  ________________
   ________________  ________________
   ________________  ________________

4. Which bird is your favorite? ________________________
   why? ____________________________________________
   ________________________________________________

5. Draw a picture of your favorite bird.
Use Your Field Guide

Part of the pleasure of "birding" is learning the names of birds in your area. Field guides to birds are books written to help you identify wild birds. They have drawings or photographs, hints to help you tell similar birds apart, and other information. They generally have checklists that you can use to keep track of all the birds you see. Use your Student Field Guide. It lists 100 of Alaska's most common birds. Some are in your area.

1. What is the name of the first bird in your field guide?

2. The last bird in your field guide?

2. Identify these birds. If you do not already know their names, look them up in your field guide. Write their names under their pictures. Do the same for all the bird pictures you come across on these worksheets.

3. Check your field guide to see if you are correct.

4. The birds in your Alaskan field guide are split into six major groups. Write two examples of each group. Your field guide can help.

   SWIMMING BIRDS - birds with duck-shaped bodies and webbed feet, usually seen swimming.
   Examples: ___________________  ___________________

   BIRDS OF PREY - birds with grasping, sharp-taloned feet and sharp hooked beaks for catching and tearing animal foods.
   Examples: ___________________  ___________________
GROUSE AND PTARMIGAN - plump, chicken-like birds with short, stout bills and short legs; they don't swim, are usually seen on the ground or low in trees, and fly only a short distance when startled.

Examples: ____________________ ____________________

WADERS - birds with long legs, often seen foraging in open habitats along shorelines or on the tundra. Some shorebirds can be recognized by their flocking behavior.

Examples: ____________________ ____________________

GULL-LINE BIRDS - birds usually seen near water, often in flight--but some nest on the tundra far from water. Most of these birds have pointed wings. Tail shape is important for identification.

Examples: ____________________ ____________________

PERCHING BIRDS - a large group including sparrows, warblers, jays, woodpeckers, and other birds that commonly perch in trees or on shrubs or rocks.

Examples: ____________________ ____________________

5. Find these birds in the field guide. Write the name of the group each bird is in on the line below the bird's picture.

a. ____________________

b. ____________________

c. ____________________

d. ____________________
6. A glossary will help you find answers you don't know, and tell you what some of the words used in this book mean. Turn to the glossary and find the definition for ACCIDENTALS.

   a. How many kinds of birds are regularly found in Alaska? _____
   b. How many accidentals? _____
   c. How many birds in total? _____
What is a Bird?

Birds are different from other groups of animals. How?

1. Is it because birds can fly? Yes _____ No _____
   Can other animals fly? Yes _____ No _____
   What animals?

2. Is it because birds can build nests? Yes _____ No _____
   Can any other animals build a nest? Yes _____ No _____
   What animals?

3. Is it because birds lay eggs? Yes _____ No _____
   Can any other animals lay eggs? Yes _____ No _____
   What animals?

4. Is it because birds have feathers? Yes _____ No _____
   Do other animals have feathers? Yes _____ No _____
   What animals?

BIRDS ARE THE ONLY ANIMALS THAT HAVE FEATHERS!
5. How many kinds of feathers are there? 

6. What kind of feather does a bird use for 
   a. underwear: 
   b. flying: 
   c. topcoat: 
   d. steering: 

7. Which of these feathers would you put in a sleeping bag? 

8. Which kind of feather would make a pen? 

9. How can you tell a wing feather? 

10. How can you tell a tail feather?
Flight feathers and tail feathers have a shaft and a web. The web is held together by tiny barbs. Try pulling the web apart; then hook it back together by running it through your fingers (like opening and closing a zipper). Look at the barbs through a magnifying glass. Birds keep their feathers in good order (zipped up) by preening with their bill. Most birds have an oil gland just above the tail. By oiling their bills and then preening, they keep their feathers waterproof. When you are outside, look for a bird preening its feathers.

11. Have you ever wondered how many feathers a bird has?

   A hummingbird has about 1,000 feathers.

   A chicken has about eight times as many feathers as a hummingbird.

   A swan has about 25 times as many feathers as a hummingbird.

Fill in the chart below.

<table>
<thead>
<tr>
<th>BIRD</th>
<th>ESTIMATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hummingbird</td>
<td>1,000</td>
</tr>
<tr>
<td>Chicken</td>
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<tr>
<td>Swan</td>
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12. INTERESTING FACT: Most birds have a body temperature of 108° to 112°F.
   a. What is your body temperature? __________
   b. Is this warmer or cooler than a bird's? __________
   c. How is a bird able to stay so warm? __________
Make a Feather Pen

In the past, people used feathers to make writing pens. These were called quill pens, and they were filled by dipping the sharpened tip into a bottle of ink. To make a quill pen, find a feather with a strong shaft (try looking at the beach or near a pond). You'll also need a sharp knife and a bottle of ink or thin paint. Cut the tip of the shaft at an angle. Then cut a slit in the tip so that the ink will spread when you write with it. Dip the pen into the ink and try writing.

It may be hard to make a quill pen that works well because the angle has to be just right to get the ink to flow evenly. But it is easy to make a fake quill pen using a ballpoint pen filler point. To do this, cut the tip of your feather straight across with a scissors or knife. Push the filler point up in the feather with the point sticking out about half an inch. Dab a bit of glue on the filler where it touches the feather.
How Birds Fly

Like airplanes, birds are streamlined and are built of light materials so that they can lift easily in the air. Feathers point backward. Bills are lighter and more streamlined than the heavy jaws of mammals and reptiles. Most bird bones are hollow and filled with air from the bird's lungs. Even the wishbone is hollow. Next time you eat chicken or duck, look at the hollow bones.

Birds move through the air by pulling themselves forward like a person rowing a boat. They push air down and back with the broad side of the wing, then slightly turn and fold the wing to move it forward. Some birds with great, broad wings can soar and glide for long periods without flapping. Other birds have short wings and have to flap fast to stay up. Bird wings and airplane wings have a similar shape. This shape causes an airfoil that provides lift.

**TRY THIS EXPERIMENT**

Hold a piece of paper like this and blow under it. The force of the wind will push it up.

Now blow across the top of the paper and watch it lift.

The slow moving air under the paper forces the paper up through the fast moving air on top of the paper, creating lift.
1. Name a bird that soars.

2. Name a bird that has to keep flapping hard most of the time.

3. Why do you think there is a difference in the way they fly?
Before a bird lands, it sets its tail and wings against the wind, using them like brakes to slow itself down. Water birds often use their feet like skis to slide along the water as they land. Watch a duck land on the water as it applies "brakes" and slides on its "landing gear."

Have you ever thought that birds and aircraft pilots might have some of the same kinds of problems?

1. List some things that are problems for pilots of small planes.

   ___________________________________________________________
   ___________________________________________________________
   ___________________________________________________________
   ___________________________________________________________
   ___________________________________________________________

2. List some things that are problems for birds in flight.

   ___________________________________________________________
   ___________________________________________________________
   ___________________________________________________________
   ___________________________________________________________
   ___________________________________________________________
3. Circle the things that are problems both for birds in flight and pilots of small planes.
Making a Living

People use their upper limbs--arms and hands--for many purposes, including the basic work of gathering food and building shelter. (What else do we use our hands for?)

People use their lower limbs--legs and feet--mostly to travel, to walk.

Birds' upper limbs are not arms and hands, but wings. Birds use their upper limbs not to hold and build things, but to travel--to fly or, in the case of penguins and some other birds, to swim.

Since birds can't use their upper limbs for grasping and building, they use their feet and bills instead. Birds use their feet to walk, to hold food, to cling onto bark, and to carry nest material. They use their bills for tearing food, for nest building, and for cleaning their feathers. Different types of birds have different needs and have developed specialized feet and bills to serve these needs.

Label the parts of this bird. Choose from these terms: back, belly, bill, breast, chin, crown of head, eye stripe, foot, leg, rump, side, tail, throat, wing bar.

a. ____________  b. ____________
c. ____________  d. ____________
e. ____________  f. ____________
g. ____________  h. ____________
i. ____________  j. ____________
k. ____________  l. ____________
m. ____________  n. ____________
Types of Beaks

Different birds have different kinds of bills or beaks to help them obtain food. Match the bills with their correct descriptions. The birds listed in parentheses are examples, not a complete list.

1. SHORT STRONG BILL for eating and cracking seeds (sparrows, grosbeaks, waxwings)

2. LONG SPEAR-LIKE BILL for catching fish and other small creatures (herons, cranes, loons, kingfishers)

3. SHARP HOOKED BILL for tearing animal food (eagles, hawks, owls)

4. SLENDER BILL and wide mouth for catching insects (swallows, warblers)

5. LONG POINTED BILL for digging little animals out of the mud (sandpipers, snipe)

6. STRONG SLENDER BILL for probing for worms or picking up seeds (robins, larks, blackbirds)

7. HEAVY POINTED BILL for all-purpose eating: mussels, eggs, and other scavenged food (jays, crows, magpies, some seabirds)

8. WIDE FLAT BILL for eating pond weeds and sifting mud (ducks, swans)

9. WEDGE-SHAPED BILL for eating grass and roots (geese)

10. STOUT HOOKED BILL for catching and tearing fish and scavenged food (gulls and many other seabirds)

Now find Column 4 on worksheet 1A, and write in the bill type for each bird. Check with your field guide.
Types of Feet

Even though birds travel mainly by flying, they can also walk. But birds use their feet for many other purposes besides walking.

Match the feet with the correct descriptions of what they are used for and how they look.

1. **SWIMMING**--webbed (ducks, geese)

2. WADING in water and soft mud--long straight toes and, usually, long legs (herons, sandpipers)

3. **GRASPING** prey--long talons and curved feet (eagles, owls)

4. **PERCHING** on branches--long curved toes for grasping (thrushes, crows, warblers, sparrows)

5. **SCRATCHING** for food--three strong toes in front and a spur-like toe behind (chickens, grouse, ptarmigan)

Some birds have feet highly specialized for their needs.

6. **GRIPPING TREE** BARK--two toes go forward and two back (woodpeckers)

7. **CLUTCHING ROCKS** while walking under water--long thin toes (dippers)

8. **WALKING ON SNOW**--toes covered with feathers (ptarmigan)

Now turn back to Worksheet 1A and fill in the foot type in Column 5 for each of the birds on your list.
Make a Bird Feeder

Watching birds can be lots of fun—and it is a hobby that may interest you all your life.

People who study birds are called ornithologists (or-ni-the/lo-gists). That's what you are as you fill out these worksheets and study the birds in your community.

One of the best ways to get a close look at small perching birds is to set up a bird feeder. Almost anything will work for a feeder, but a large feeder is likely to attract more birds. You can make or buy an elaborate feeder with a removable tray, glass sides, and a roof, or simply cut out holes in two sides of a milk carton.

Different birds eat different kinds of foods. Chickadees and grosbeaks don't care for mixed birdseed; they prefer 100 percent sunflower seeds. But redpolls will eat mixed seeds.

Woodpeckers, chickadees, ravens, and jays love raw animal fats. Save some fat from your deer, moose, or caribou, or get suet from the grocery store. Hang your fat up in a string bag out of reach of other animals.

If you begin feeding birds in the fall or winter, be sure you continue into the spring, as birds become dependent on their feeders.

Write to the Alaska Department of Fish and Game for their Alaska Wildlife Watcher Reports:

Vol. 1, No. 1 Winter Bird Feeding in Alaska
Vol. 1, No. 2 Landscaping for Wildlife in Alaska
Vol. 1, No. 3 Birdhouses for Alaska.

You may also want to put owl eyes on any large windows near your feeder. Birds often smash into windows and are injured or killed. Owl eyes in the window sometimes warn them. Color the large circles yellow, then cut out your owl eyes and put them near the center top of your window with scotch tape.
You need to have sharp eyes to be an ornithologist. You need to walk quietly and be alert to movement and sounds. It is useful to carry binoculars to magnify the birds so that you can see the details that help you identify them. Spotting scopes, which magnify the birds even more, are heavier to carry but are very useful for looking at birds on open water or in fields. Here are some FIELD MARKS to look for, and a bird picture to practice on. Look at the picture and answer these questions:

SHAPE—Is it chunky or thin? __________________________

SIZE—How big is it? __________________________

HABITAT—Where is it? __________________________

COLOR—What color is it—and where are the different colors on its body? __________________________

BEHAVIOR—What is the bird doing? __________________________

SONGS—What does its song or call sound like? __________________________

LEGs AND FEET—How long are they and what do they look like? __________________________

BILL SHAPE—What does it look like—pointed or rounded, slender or thick, short or long? __________________________

WING SHAPE—Are the wings long or short, narrow or broad? __________________________

TAIL SHAPE—Is the tail short, long, broad, narrow, round, pointed, or forked? __________________________

What group is this bird in? __________________________

What is its name? __________________________

Write at least one interesting fact about this bird. ________

______________________________

Look in your field guide for clues. For colors, look in one of the field guides in your classroom or library. You may want to color the birds in your own field guide, using one of these books as a model.

When you see real birds in the wild, look for field marks. Ask yourself the same questions you just asked yourself about the bird picture.
Name and Color These Birds!

Hint: Use your field guide. By deciding what group they're in first, you'll know better where to look in your guide.
Alaska can be divided into six regions. Each has a different climate, different vegetation and different birds.

1. Label these regions using these terms: Central, Southcoastal, Northern, Southwestern, Southeastern, Western.

2. Draw a dot on the map where you live. Write the name of your community by the dot. Color your region red.

3. Your field guide at the back of the book has a map for each bird species, showing where it can be found in spring. The regions where birds are likely to be found are blackened on the map. However, just because a region is black on the map does not mean that a bird can be found anywhere in that region. It can only be found in the kind of habitat it prefers. For example, puffins are common in Southcoastal, Southwestern and Western Alaska, but that doesn't mean you're likely to see one waddling through downtown Anchorage! Puffins are found only in their preferred habitat of salt water and certain sea islands.

Some birds are much more common than others. The field guide maps are black for any bird that you are likely to see in a region, whether it is common or not very common.

Birdwatchers spend much of their time looking for rare birds. The maps are striped in regions where a bird is rare. The maps are white in regions where a bird is never seen. List six birds that you are likely to see in your region; three that are rare; and three birds that have never been seen in your region.

Likely to see:

________________________  ___________________  __________________

________________________  ___________________  __________________

Rarely seen:

________________________  ___________________  __________________

Never seen:

________________________  ___________________  __________________

4. Now list six birds that are common to all regions of Alaska:

________________________  ___________________  __________________

________________________  ___________________  __________________
Alaska Bird Regions
Some reasons birds migrate (move from one part of the country to another) are:

- To find food
- To find places to nest
- To avoid cold weather
- To find open water (not frozen or dried up)

In Alaska there is plenty of food for birds in summer. In winter, when the water is frozen and snow covers the ground, there is less for birds to eat.

List some kinds of food birds can find in Alaska in the summer that are not available in winter.

1. 
2. 
3. 
4. 

Where do birds go in winter? The following map shows half the world. The circled numbers on the map mark the migration beginning and end points of some Alaskan birds. The 1's mark the flight of the robin. Robins have been seen in all regions of Alaska in the summer. Connect the 1's with a red line to show the robins' route. Where do robins winter?

5. _________________ or _________________

The 2's mark the beginning and end points for the barn swallow, which is found in southcentral and southeastern Alaska in the summer. Connect the 2's with a blue line. Where does the barn swallow winter?

6. _________________

The oldsquaw duck can be seen in all regions of Alaska in the spring. Connect the 3's with a black line. Where does the oldsquaw winter?

7. _________________ or _________________

(Some oldsquaws also winter in Prince William Sound and Southeast Alaska.)
Each bird description in your field guide includes a category called "Wintering Area." Look in your field guide to find out where some of the birds you know migrate to for the winter. Write each bird’s name and where it goes for the winter on the table below. Then draw lines on the map to show the migration routes. Number the lines on the map to match the numbers on the table.

<table>
<thead>
<tr>
<th>Name of Bird</th>
<th>Wintering Area (Where Bird Goes in Winter)</th>
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<tbody>
<tr>
<td>1.</td>
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Answer the following questions using your field guide.

7. Name two birds that can be found in all regions of Alaska in the winter:
   _______________  _______________

8. Name four birds that winter in Japan:
   _______________  _______________
   _______________  _______________

9. Name one bird that winters in New Zealand:
   _______________

10. Name one bird that winters in Africa:
    _______________

11. Which bird migrates furthest south?
    _______________
12. Find or draw a picture of a bird or birds that stay in your area all winter. Put the picture here. Label your bird.

13. List some other birds that stay in your area all winter. What have you seen them eating?

<table>
<thead>
<tr>
<th>Name of Bird</th>
<th>Eat in Winter</th>
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Alaska Bird Migration Map

1 robin
2 barn swallow
3 oldsquaw
What Makes a Habitat?

The habitat of any animal or plant is the place where it lives. A bird's habitat must have food, cover and water:

**FOOD** - Foods from plants: seeds, leaves, buds, roots.
Foods from animals: insects, mice, fish, shellfish, worms, spiders, other birds' eggs.

**COVER** - Includes bushes, trees, grass, driftwood or rock piles for protection from the weather or from natural enemies.
All birds require a safe nest site for raising their young.
Birds' roosts—the places where they rest or sleep—also require adequate cover. Islands, reefs and bays provide shelter from the wind for birds that roost on the water.

**WATER** - Water must be available in sufficient quantities and in a relatively safe location. Some animals need water just for drinking and bathing. For others, water is a source of food and a place to swim and raise their young.

There are many kinds of habitats. There are forest habitats, mountain habitats and beach habitats. In this book we are focussing on wetland habitats because these are especially rich in bird, animal and plant life and because most of Alaska consists of wetlands. Huge numbers of migrating birds nest in Alaska's wetlands, and every region of Alaska has plenty of wetlands. What is a wetland? A wetland is land that is wet most of the year and has plants and animals that prefer wet soil. Write the name of a wetland near where you live: ____________________________.

Make a logo of this wetland in the space below, showing food, water and shelter, and one or more of the birds that live there. Color your logo, fasten it to cardboard, and wear it as a badge during Sea Week.
Coastal wetlands are found where land and salt water meet. They are extremely rich in nutrients. Alaska's coastal wetlands are important places for birds to feed, rest and nest. These salt water or brackish wetlands include river deltas, salt marshes, tidelands, estuaries, and barrier-island lagoon systems.

Label these five types of wetlands in the drawing below. (Hint: Use your glossary to find out about these wetlands.)
Estuary: A Very Special Place

Directions: Fill in the blanks with these words: fish, nurseries, productive, coastal wetland, plankton, fertilize, sea, fresh water, salt marshes, tidelands. (Hint: check to see whether the sentence needs a noun, verb, or modifier.)

Estuaries are very special places. Estuaries are one kind of _____________.
An estuary is where a river or stream meets the sea. Estuaries include bays, river, and inlets and the surrounding ____________ and ____________.
Estuaries are extremely rich and ____________ places. Salt water and ____________ mix in warm, shallow areas. Nutrients from the river and the ____________ are blended together. This is just right for growing a thick ____________ soup. Plants and animals grow in enormous quantities. Many waterfowl, mammals, and ____________ use estuaries as ____________ for their young. And the tide carries nutrients and detritus (dead plant and animal matter) out to sea to ____________ offshore waters. So deepwater fish benefit from estuaries, too.

1. What is the name of the estuary nearest to your community?

______________________________________________

2. How many miles is it from your village or town to the estuary?

______________________________________________

3. Why is the estuary important to you?

______________________________________________

______________________________________________

______________________________________________
Estuary: A Very Special Place
Wet tundra is found in northern and western Alaska and in some mountain valleys. Wet tundra is a flat wetland that is very important for birds. Millions of birds nest and raise their young on wet tundra. Caribou, arctic fox, wolves, arctic hares, and lemmings also live on the wet tundra.

Draw arrows showing what eats what in the drawing below. This is called a food chain. Animals that eat plants are called herbivores. Color the herbivores green. Animals that eat other animals are called carnivores. Color the carnivores blue. Animals that eat both plants and animals are called omnivores. Color the omnivores orange. (Hint: You may need to talk to a local expert or look in a book to find out what these animals eat.)
Alaska's rivers, lakes, and freshwater marshes hold lots of food for fish, wildlife—and people. Salmon use rivers, lakes and marshes to spawn or rear their young. Other fish, like grayling, pike and whitefish, live their entire lives in fresh water. Millions of waterfowl and shorebirds live in these wetlands. The fish and birds eat aquatic invertebrates (insects, snails, freshwater clams) as well as other fish. The invertebrates feed on plankton, algae, detritus (dead plant and animal remains), and other invertebrates. Animals that eat other animals are called predators. The animals that are eaten are called prey. In this drawing, color all the predators red.

Why are predators important?
One sign of a muskeg or bog is lots of sphagnum moss. As the sphagnum moss dies and decays, it turns into peat. This peat is sometimes 40 or more feet thick! Walking on a muskeg in summer is like walking on a great big sponge. You sink in and the ground goes "squish." Common muskeg plants are sphagnum moss, blueberries, cranberries, willow, sundew, sedge, labrador tea and small trees like black spruce. Small ponds, puddles, and lakes are common in muskeg. The water is often acidic. As in most habitats, birds and animals tend to blend in with their surroundings. We say they are camouflaged. Color this drawing so that the birds are camouflaged.
Other Bird Habitats

In addition to wetlands, there are other kinds of bird habitats in Alaska. Match the pictures of these habitats with their descriptions—and with the birds that live in them (color matched sets, or cut out and paste, or connect with lines).

<table>
<thead>
<tr>
<th>Alder and willow are found along rivers and creeks. Birch-alder-willow thickets are found in mountain areas.</th>
<th><img src="image1" alt="Bird" /></th>
<th><img src="image2" alt="Alder Willow Forest" /></th>
</tr>
</thead>
<tbody>
<tr>
<td>Some seabirds and diving ducks spend all their life at sea. They just come ashore to nest.</td>
<td><img src="image3" alt="Seabird" /></td>
<td><img src="image4" alt="Seabirds on Cliffs" /></td>
</tr>
<tr>
<td>White spruce, birch, aspen and cottonwood trees—mixed with alder and willow bushes—are found in Interior Alaska. They provide nest sites and food for a great variety of birds.</td>
<td><img src="image5" alt="White Spruce" /></td>
<td><img src="image6" alt="Man-made Areas" /></td>
</tr>
<tr>
<td>Rocky islands and cliffs along the shoreline provide safe nesting sites for seabirds and shelter for sea mammals.</td>
<td><img src="image7" alt="Seabirds on Rocky Islands" /></td>
<td><img src="image8" alt="Ocean" /></td>
</tr>
<tr>
<td>Sitka spruce are the great trees of this coastal forest. Sometimes they grow more than 200 feet high. Hemlocks, alders, cottonwoods and mosses also grow among the Sitka spruce.</td>
<td><img src="image9" alt="Sitka Spruce" /></td>
<td><img src="image10" alt="Spruce-Hardwood Forest" /></td>
</tr>
<tr>
<td>People built roads, homes, schools and stores to make this habitat.</td>
<td><img src="image11" alt="People's Structures" /></td>
<td><img src="image12" alt="Shrub Thicket" /></td>
</tr>
</tbody>
</table>
1. Choose a habitat.

________________________________________________________________________

2. Choose one bird that lives in the habitat you chose.

________________________________________________________________________

3. Write a paragraph that tells what your habitat provides for your bird.

*Clue: Remember, a habitat provides more than food. Check the first page of this unit.

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

4. Turn back to page 3. Fill in Column 6 (Habitat). Where did you see the birds on your list?
Altricial or Precocial?

Alaska's wetlands are very important for nesting birds. Millions of waterfowl and shorebirds nest in Alaska's great expanses of muskeg, tundra, marsh, and coastal wetlands. Without this important habitat, these bird populations would soon be very small.

Where a bird builds its nest depends on how large the bird is and whether it can use its feet or bill to make holes or carry sticks, grass, and other materials. What sort of nest is needed also depends on what the young are like when they hatch.

**Altricial Birds**
(al-trish-al)

Turn to your glossary and copy the definition of altricial birds in the following space.

These birds must have a place where they will not fall out. Their parents need to feed and protect them for several weeks until they can fly. Most perching birds and tree nesters (hummingbirds, robins, eagles) have altricial young.

**Precocial Birds**
(Pre-ko-shall)

Other baby birds are precocial. Turn to the glossary and copy the definition of precocial.

Chickens, ducks and shorebirds have precocial young. Precocial birds usually must be kept warm (brooded) by their parents at night or when it rains. The parent, usually the mother, broods the young by covering them with her wings and body.
Look in your field guide in the back of this book for help in labeling the birds below. Write the name of each bird. Then write "altricial" if the bird's young are helpless when hatched or "precocial" if the young can walk and feed themselves soon after hatching.

Name of Bird: __________ __________ __________
Altricial or __________ __________ __________
Precocial

Springtime is an important time for birds. It is their one chance to have babies so that their population can remain healthy. You can help by keeping away from areas where birds are nesting. Sometimes, if a mother bird is scared off the nest, predators like ravens, foxes, or bears will gobble up the eggs. Many birds will abandon their nests if there are too many people around. Especially in rainy or cold weather, it is important that the birds stay on the nest all the time. If you find a baby bird, leave it alone. Usually, the parent will be back soon to feed it. Write an imaginary or true story about one time when you found a baby bird and what happened to it.
Coastal Wetland Nest Sites

Some places where birds might build a nest are numbered in this picture. On the lines below, write the name of a bird that might nest in each place. Can you add more numbers to the picture in places a bird might nest?

1. __________________________
2. __________________________
3. __________________________
4. __________________________
5. __________________________

Clue: Use your field guide!
River, Lake, and Marsh Nest Sites

Some places where birds might nest are numbered below. Write the name of a bird that might nest in each place. Add more numbers to the picture in places birds might nest.

1. 
2. 
3. 
4. 
5. 

---

Diagram with numbered areas:

1. 
2. 
3. 
4. 
5.
Canada Geese: Precocial Birds

Directions: Read this story. On a separate sheet of paper, draw several small pictures or one large one illustrating the story. Definitions of the underlined words are in the glossary.

This Canada Goose pair makes their nest among the sedges and grasses on a little wet tundra island. The water around the island helps protect the nest from predators, like foxes, that don't like to swim. The goose (female) makes a little hollow scrape and sits in it, reaching out with her long neck to pull in pieces of grass and sedge, which she tucks about her to form the nest. The gander (male) pulls additional material within reach of his mate. Then the goose lays an egg and covers it with the nest material and leaves. The goose returns about every 30 hours to lay another egg, until there are five. Then she settles on the nest, pulling down from her breast to help keep the eggs warm. When the eggs reach body temperature the embryos begin to grow. The gander always stays nearby, ready to protect his mate.

In about 26 days the eggs begin to hatch. Because the first eggs are allowed to cool until the last one is laid, they all hatch at about the same time. It takes several hours for the gosling to crack its way out of the shell with its egg tooth. The parents guard carefully then, for the struggling babies make a chorus of peeping from within their shells.

The small wet goslings dry and fluff out quickly into a ball of down. They are precocial birds, which means that in less than a day they can walk, run and swim. The goslings can find and pick up food all by themselves. The brood of five goslings remains very close to their parents, who lead them to food and guard them from harm. Periodically the young need rest and crawl beneath the protective wings of the goose, who provides a ready source of heat and comfort. But they do not rest long. They must spend most of their time eating so they can grow up before winter.

In six weeks the goslings have all their feathers and begin to look much like their parents. In nine weeks they begin to fly. About three months after hatching they are ready to migrate to their wintering place thousands of miles away. The family will stay together through the winter and return in the spring, breaking up only when it is time for the parents to nest again.

Canada geese nest throughout Alaska. Sometimes they build their nests in deep woods, on drift logs at the top of the beach, in the branches of tall trees or on cliffs high above a lake or river. Some geese nest in a colony. Goose colonies occur only in places where there is abundant food and generally few predators. In colonies, geese can raise large numbers of young.

However, people can easily disturb colonies by shooting paired birds and by taking eggs and young. Geese in a colony have no defense against human disturbance except to go away and not use the area for nesting anymore. But perhaps someday we can help reestablish colonies that have been abandoned.
The Bald Eagle: An Altricial Bird

Directions: Read this story and illustrate it on a separate sheet of paper. Definitions of the underlined words are in the glossary.

This bald eagle pair begins building its nest in March. The eagles select a large, Sitka Spruce that stands near the edge of the sea. They gather sticks, seaweed, mosses and turf and carry the material to a fork in the tree. The finished nest may be four or five feet in diameter and several feet deep.

The mother lays two eggs and begins incubation right away. The eggs are not as large as you would expect for so large a bird. In about a month the young hatch and their down dries like that of the young geese--but what a contrast! The eaglet is unable to stand or move about. The only thing it can do is open its mouth when it hears a noise. The parents bring food, mostly fish, and put it directly into the babies' mouths. The young eagle is an altricial bird.

For four months, the nest remains home for the eaglets. The parents are very busy hauling food to their young and will attack anything that tries to get in the nest. By August you can often see the eaglets standing in the nest, exercising their developing wings. Sometimes one or even both eaglets will fall out of the nest and be eaten by predators.

When the eaglets finally solo and fly out of the nest they seldom go back. They begin to find their own food on the beach. Young eagles have brown feathers all over. It is four to five years before they gain their white head and tail and are ready to pair and nest.

Bald eagles nest in large numbers along the south coasts of Alaska from Southeast through the Aleutian Islands, and in smaller numbers farther north. They often continue to add to old nests year after year. Where trees are not available they nest on cliffs, rock pillars, small islands, and on the ground.

The bald eagle, our national bird, appears on the Great Seal of the United States (look for it on the dollar bill), as well as on other money and documents of our country. That is one reason why people became very upset when wild eagles disappeared from most states in the 1950s. This population decline was caused by habitat losses and by poisoning. It was found that pesticides containing a chemical called DDT--used to kill insects that bother people or eat farm crops--were harming the eagles. DDT sprayed in the air eventually would wash into streams, where fish would absorb it. The fish-eating eagles got large doses of DDT, which caused their eggs to have abnormally thin shells that broke before they could hatch. With no young to replace older birds as they died out, the population soon became endangered, but not extinct. DDT has been banned and now eagles are slowly increasing, but it will be a long time before there are as many as there once were. Currently, eagles are listed as endangered or threatened in all the lower 48 states. Alaska is the only state with a healthy bald eagle population. In the fall, the Chilkat River Valley north of Haines has as many as 3,600--the largest concentration of bald eagles in the world.
Wetland Crossword

Alaska's wetlands provide habitat for plants that prefer wet soil. Wetland animals depend on these plants for food and cover. Complete this crossword. Hint: check the pictures.
ACROSS

1. The _____ has sharp teeth; it eats mostly smaller fish but also eats small ducks, mice, and insects.

7. The _____ can reach higher up on a willow tree to eat than the snowshoe hare can.

9. _____ have smooth skin and catch insects on their long tongues.

10. _____ live most of their lives in the ocean but depend on freshwater lakes and streams for spawning and rearing their young.

11. The _____ eats a great variety of foods, including berries, grass, sedges, horsetails, fish, and animal flesh.

13. Ringed, spotted and harbor _____ catch fish in river mouths and coastal lagoons.

14. Sea _____ dive for fish, sea urchins, mussels and other food, which they eat while floating on their backs.

DOWN

1. _____ have feathers on their feet to keep them warm in the snow.

2. _____ live partially or entirely buried in sand or mud and eat detritus (dead plants and animals).

3. The _____ is smaller than a beaver and lives in open areas where it builds houses made of mounds of vegetation.

4. Millions of waterfowl (ducks, _____ and swans) and shorebirds nest in Alaska's wetlands.

5. Although gray _____ are huge, they eat tiny marine animals, which they filter from the mud of estuaries and lagoons.

6. Shelled animals such as clams, _____ and shrimp depend on coastal wetlands for all or part of their lives.

8. Animals grow by eating plants or smaller animals, but plants grow by using water, air, and energy from the _____

12. _____ foxes, coyotes and lynx prey on a variety of wetland animals.
Wetland Plants Game

Directions: Cut out these cards and glue the descriptions on the back of their matching pictures. Now you have a set of flash cards you can make up games with.
Wetland Plants Game

LABRADOR TEA
This plant has thick, leathery, rolled leaves with fuzzy undersides. It grows in muskeg and on the tundra. The leaves can be dried and used for tea.

SEDGE
Sedges are eaten by geese, caribou, deer and brown bears. People can also eat sedges and grasses. Sedges are probably the most common wetland plant. They have triangular stems. Grasses have round stems.

COTTON GRASS
Cotton grass has tufts on its seeds. It is commonly found in northern wetlands. Even though it is called a "grass" it has a triangular stem and is really a sedge. Some birds use cotton grass for nesting material.

RUSH
Rushes have round leaves with small clusters of flowers near the tops of the plant. They are found in wet areas throughout the state. Geese feed on rushes. People can eat them, too--just like sedges and grasses.

BEACH RYEGRASS
Beach ryegrass is found on sandy beaches along the Alaskan coast. Deer and bears eat young shoots in the spring. Gulls and geese use ryegrass for nesting material. Alaskan Natives dry and use this grass to make baskets.

ARROW GRASS
Arrow grass has long, narrow, round leaves. Rounded fruits are spaced along the top of its stem. It is a favorite food of cranes and geese. Arrow grass is found throughout the state.

WILLLOW
Willow ranges in size from 4 inches on the tundra to 16 feet along Interior streams and rivers. Male and female flowers are on different plants. Willow is a favorite food of moose and snowshoe hares. It can be eaten by people, too.

ALDER
Alder provides cover and nesting places for wetland animals. The seeds are borne in tiny cones. Alder twigs and buds are important winter food for white-tailed ptarmigan. The seeds are also eaten by many songbirds.

Now that you've had a chance to learn about these wetland plants, make flash cards for additional plants that are found in your wetlands.
BLACK SPRUCE

Black spruce trees grow in muskeg in Central and Southcentral Alaska. They look like trees made of toothpicks because the branches at the top are almost the same size as the bottom branches.

TAMARACK

Tamarack is a deciduous conifer. This means it loses its leaves in the winter. Its leaves (needles) are in groups of 12-20 on short side branches. Tamarack grows in muskeg and is also called larch or hackmatack.

DWARF BIRCH

Dwarf birch is found throughout Alaska in wetland areas. It is good nesting cover for some shorebirds and songbirds. Dwarf birch is usually from 6 inches to 3 feet high. Its large relative, the paper birch, grows much taller!

CATTAIL

Cattail provides good cover for marsh birds and animals in Interior Alaska. The shoots, roots, green spikes and pollen are edible.

CROWBERRY

People often eat crowberries mixed with other berries. Grouse, ptarmigan, bears and geese also depend on these berries for food. The small black berries are often found in blueberry areas. The plant grows on wet tundra and in muskeg.

CRANBERRY

The bright red berries are tart, but delicious. Ptarmigan, grouse, bears and people all eat these berries. Cranberries grow on wet tundra and in muskegs.

BLUEBERRY

Blueberries grow in wetlands all over Alaska—except in the very far north. Blueberries are eaten by bears, grouse, ptarmigan, geese and people.

POISON WATER HEMLOCK

This deadly poisonous plant looks very much like wild celery. Its chambered rootstock and strong odor help identify it.
**HORSETAIL**

Long ago, in the time of the dinosaurs, horsetails were the size of trees. Instead of regular seeds, horsetails have spores inside a fruiting body. Tap one, and the spores will fall into your hand like a soft green powder. Geese and swans enjoy eating horsetails in late summer and fall.

**MARES'S TAIL**

Mare's tail grows in shallow streams, ponds, and estuaries. The leaves are stiff when out of the water, and limp when under the water.

**PONDWEED**

Many types of pondweeds grow in lakes and ponds throughout Alaska. Pondweeds provide cover for fish, snails and other animals. Ducks and swans depend heavily on these plants for food.

**BLADDERWORT**

Bladderwort grows in ponds and lakes throughout Alaska. It has a bright yellow flower. Its many bladders are used to trap insects. The insects supply vitamins, minerals and nutrients.

**YELLOW POND LILY**

Yellow pond lilies grow from thick branching rootstocks. Many small aquatic animals lay their eggs on the leaves and stems. Moose eat the whole plant.

**EELGRASS**

Eelgrass grows in lagoons and estuaries from Western to Southeast Alaska—and on down the coast. This bright sea "grass, actually a type of pondweed, is a very important food for black brant and emperor geese.

**SUNDEW**

This tiny plant grows on muskeg. It captures and eats insects. Try to find a sundew—and then watch what happens when you drop a mosquito in the center of one of its leaves.

**SPHAGNUM MOSS**

Sphagnums, or peat mosses, grow in thick greenish mats. Their leaves contain many empty cells, which fill up with water like a sponge. During dry weather, the water is released slowly, so the moss is always moist, and surrounding streams are less likely to dry up.