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Section 5: Support Activities

This section contains activities that educators can do with their students, either before, during, or after the field trip. The activities are designed to introduce concepts and information or extend and apply knowledge taught at the West Eugene Wetlands. Many of the activities are interdisciplinary.

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Watershed Model

In this activity, students will learn about watersheds, runoff, and how pollution travels within a watershed by making a simple watershed model.

Benchmark Correlations, see Section 7.

Key Concepts:

A water system, a **watershed** is the entire land area that drains surface water (called **runoff**) into water channels, such as creeks, streams, or rivers. What we do at home and school can have an effect on the health of these waters.

Objectives:

Students will be able to:

- define the term watershed
- name the watershed in which the West Eugene wetlands are located

Recommended Time:

30 minutes

Materials:

For each group

- Shallow baking pan
- 12" X 12" piece of aluminum foil
- spray bottle
- dark colored powdered drink mix (dry)
- paper towels

Watershed Information:

- A **watershed** is the entire land area that drains surface water (called **runoff**) into water channels, such as creeks, streams, or rivers.
- The watersheds of creeks and rivers are separated from each other by landforms of higher elevation called **ridgelines** or **mountain divides**. Water falling on each side of the ridgeline may drain into different watersheds and collection sites.
- Near the ridgelines, when the slope of the land is steep and water channels are narrow, water moves rapidly. As the slope of the land decreases, the water moves more slowly. The width of the channel increases as smaller channels merge together. Eventually water moves through a wide channel then empties into a body of water such as a lake, bay or ocean.
- The watershed is named after the body of water that the water flows into. For example, the Long Tom Watershed is all the surrounding area from which water drains and then flows into that river.

- Runoff flows over school grounds on its way to the collection site (e.g., a creek or river); therefore, schoolyards are part of a watershed. Even if a school seems far away from a river, it is still connected to the river by the nearby creeks and streams. So, not only are schools connected to the river, they are also connected to the West Eugene Wetlands via the water within the watershed.
- The quality of water in the river is, to a large extent, a reflection of land uses and natural factors found in its watershed. Everyone is responsible for the health of a watershed and the water systems within it. Individual actions, both negative and positive impact the watershed. If the watershed is polluted, in all probability the river will also be polluted. Water picks up pollutants as it runs through both agricultural and urban areas. Polluted water may harm or even kill both wetland plants and animals.
- In cities and surrounding areas, pesticides, lawn clippings, soapy water, spilled chemicals, dripped oil and antifreeze will likely be washed through the storm drain system and into a creek or river. Unlike the sanitary sewer system, the storm drain system is not connected to a sewage treatment plant. Water that goes into storm drains eventually ends up flowing, completely untreated, into the river.

Procedure:

1. Review the basic watershed information.
2. Tell students that now that we have an understanding about how water moves through various waterways and understand the basic definition of a watershed, the next step is to see if we can increase our understanding of a watershed. Students will work in groups of two or three to transform a piece of foil into a three-dimensional model of a mountain range containing several watersheds.
3. Divide the students into groups of two or three.
4. Demonstrate the first step in making the model:
 - Place a block in one end of the shallow pan.
 - Crinkle a piece of foil into a ball inside your fist. Then gently open the foil. **Do not flatten the foil.**
 - Cover the block with the foil, and make a basin in the foil at the other end of the pan.
5. Pass out the materials so that the groups may create their own “watershed”. Help students with the first step. Remind them not to flatten the foil after they open it.
6. Give students time to work on their models. Monitor their progress and give help as needed.
7. Ask students to explain how the models are similar and different. Do the models remind the students of real mountain ranges?

8. Review the term watershed. A watershed is the entire area of land around a waterway that a runoff into a specific waterway (i.e., river, creek, streams, or other body of water.)
9. Have students look at the models. “These are watersheds. (The high end represents mountains.) “Where does the water run?” (The creases in the foil are streams and rivers that are bordered by wetlands.) “Where does most of the water end?” (The rivers flow into a basin, a large body of water, such as a lake.)
10. Tell students to “Think about what would happen if it rained on your “mountain landscape.” Where would the water go?”
11. With a colored marker have each group make predictions about where the water will flow in their model. Have the students predict and mark where the rainwater will flow to from that point.
12. “Let’s see how the watershed works.” Have students spray water over the mountains in their models. (Hold the spray bottle up above the model so the water is not sprayed onto it but instead, falls from above). “Where did the water run?”
13. Have the students test their predictions and see how their watersheds work. The students are to pay close attention to their colored spots and where the water flows.
14. Have the students share their results.
15. Ask the students “What would happen if the land had pollutants on it?”
16. Have students make predictions about what would happen if pollutants were in the land in their watershed.
17. Have students sprinkle some drink mix (“pollutants” onto the water shed. Then make it rain again. Each group watches and discusses what happens.
18. Ask the students:
“What kinds of pollutants could there be?” (Fertilizer, chemicals, trash, gasoline or oil, etc.)
“How do these pollutants get on the land and in the water?”
19. Ask the students:
“What activities at school or home positively or negatively affect the watershed?”
(Positive: sweeping the street gutter, picking up litter and pet waste.)
(Negative: oil in parking areas, soapy water from car washing.)
20. Remind the students: **“What we do at home and school can have an effect on the health of the watershed and impact the plants and animals that live in them.”**

Animals and Plants of West Eugene Wetland Habitats

In this activity, students extend their learning about the animals and plants of the West Eugene Wetlands' habitats through Language Arts assignments.

Benchmark Correlations, see Section 7.

Key Concepts:

Through further study, students can increase their knowledge about the animals and plants of the West Eugene Wetlands' habitats.

Objectives:

Students will be able to:

- continue their study of the wetlands through writing (prose or poetry), pictorial representations, and/or oral presentations gaining additional knowledge about the animals and plants of one of the habitats.

Recommended Time:

1-2 hours over several days

Materials:

Copies of *West Eugene Wetland* cards for each group of students

The *West Eugene Wetlands Educator's Guide* and

A separate copy of the glossary from the guide to be available as references

Writing and art materials

Information:

- Students can use the West Eugene Wetlands Educator's Manual as a resource.
- For information about their chosen habitat, students can refer to the Wetland Cards or information in *The Big Picture* introduction section or in the "information" part of the activities.
- Students can use the glossary.
- Check the resource list for other sources of information. Some sources might be available through Willamette Resources & Educational Network (WREN), (541) 683-6494.

Procedure:

1. Divide the students into groups of two or three.
2. Using the West Eugene Wetland Cards and habitat information sheets, the groups choose a habitat (i.e., wet prairie wetland, emergent wetland, upland prairie, shrub wetland, or forest wetland) to complete one of the following assignments.

3. Each group of students will share a copy of the animal and plant cards or information to:
 - Write a humorous story.
 - Create a poster.
 - Compose a song or rap to help others learn names and characteristics of a habitat's animals and plants. Students may put their song or rap on tape or perform it for the class.
 - Write a poem about a food chain of a particular habitat. It can be extended to include a food web.
 - Write about "If I could live in any of the West Eugene Wetland habitats which one would I live in and why?"

For more options, refer to the "Alternatives to Written Reports," located in the appendix.

4. Using the West Eugene Wetlands card have students work on their classification skills. Students classify (put the cards into groups according to characteristics they have in common) all the animals or plants on a chart or diagram. For example, put the insect eating birds in one group. Explain the characteristics used to classify the animals and plants.

Wet Prairie Food Web

In this activity, students take on the role of plants, animals, and physical aspects of the wet prairie. They create a web demonstrating the interconnections and interrelationships of all parts of the wet prairie ecosystem.

Benchmark Correlations, see Section 7.

Key Concepts:

Many plants and animals depend upon the habitats in the West Eugene Wetlands for survival, including the Fender's blue butterfly, Kincaid's lupine, and the Willamette Valley Daisy. When one part of the food web is harmed or disappears, the entire web is affected.

Objectives:

Students will be able to:

- name at least five different wet prairie plants and animals,
- name at least two relationships between wet prairie plants and animals, and
- name two of the endangered species found in the wet prairie and explain why they are endangered.

Recommended Time:

20-30 minutes

Materials:

A ball of yarn or string to create a web;

20 West Eugene Wetlands cards (for more participants, add more cards). Make sure the cards will all make connections.

Information:

- An **ecosystem** is defined as a community of living things and the physical environment with which they interact. There are many relationships and interactions within an ecosystem.
- Four physical elements are necessary for all life: air, water, soil, and sunlight.
- **Interrelationships** describe the ways air, soil, water, plants, and animals depend on each other. These relationships and interactions can be demonstrated as a “web,” with each plant, animal, or physical characteristic connected to each other either directly or indirectly.
- Webbing vividly portrays how these interactions function together in a balanced **Web of Life**.
- Wet prairies such as those found in West Eugene form a very unique environment.
- When one part of the web is touched, other parts are affected.

Procedure:

1. Review the cards to see how connections can be made.
2. Copy the cards, cut apart, and mount on poster board. Educators can poke holes in the top of the cards and tie yarn through so the students can wear the cards. (For younger students you may copy the picture and type a simpler description so the young students can read them.)
3. Ask the students to form a circle. The students can either stand or sit.
4. Hand out a food web card to each student (NOTE: Save the sun card for yourself.)
5. Tell the students that some of them will have the same plant or animal. These are on the bottom of the food web. Ask the students, “Why do we have more of these in the food web?” (Because the bottom of the food web needs to be larger to support the animals at the top.)
6. Have the students read their cards aloud to the rest of the students. Let the students know that they need to listen and learn about each organism in order to build the food web.
7. Once all the cards are read, you can begin forming the food web by showing the students the sun card and telling the students “I am the sun. Everything on earth depends on me. In my hands, I hold the web of life.”
8. Show the students the ball of yarn and tell them, “Because all life depends on energy from the sun, I am connected to all of you.” Pick a plant and ask “Can the (plant) tell how I am connected to it? (I am the sun and I’m connected to the (plant) because I provide the energy the (plant) needs to make its own food.”
9. Wrap one end of the yarn around your hand and pass the ball of yarn to the student with the (plant) card.
10. Have the student tell who or what they are and how they are related to some other plant, animal, or physical feature represented by another card. For example, “I am the Townsend Vole and I am eaten by the red fox.” NOTE: Relationships can be direct or indirect. For instance, the Western meadowlark is a predator that eats the grasshopper, but it also depends on air and water.
11. The student holds onto the yarn and passes the ball to the next student. The students continue to say who they are, how they are connected and to pass the yarn. A student may receive the ball more than once depending upon the interrelationships other students recognize.
12. Once everyone is connected by the yarn, ask the students:
 - What does the yarn look like? (A spider web).

- If I tug on the yarn, who can feel it? (All students should be able to feel it.)
- Is anyone not connected to the rest of the group?
- You have created an ecosystem. What does this tell us about an ecosystem? (In an ecosystem everything is connected and everything is important.)

13. Have a discussion about endangered species. Ask the students:

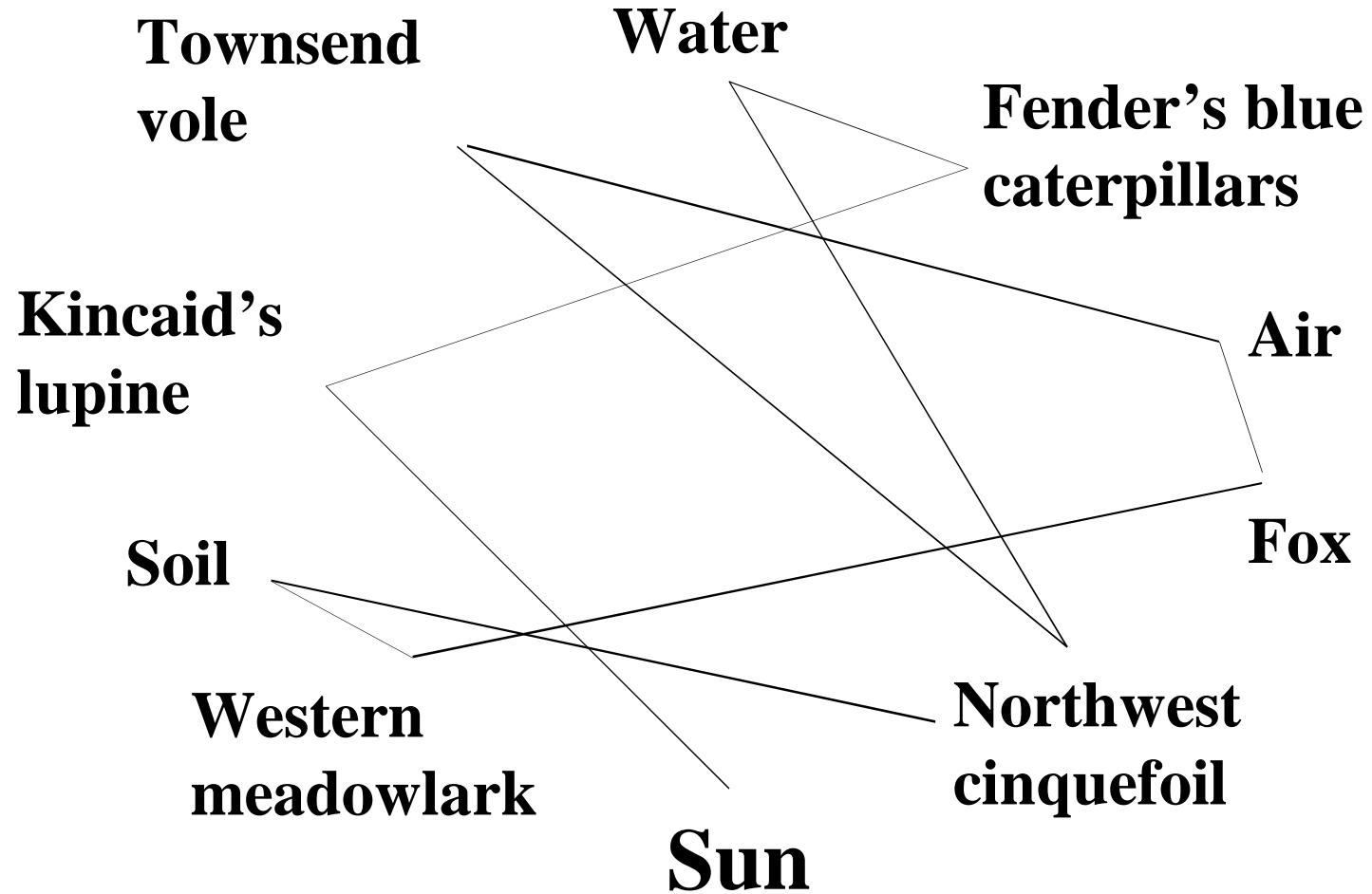
- What does it mean when a species is listed as endangered? (Plants and animals are considered endangered when there are so few of a particular species left that run the risk of becoming extinct. A plant or animal is extinct when it no longer exists.)
- Which of the animals or plants in the web are threatened or endangered? [Included could be the Fender's blue butterfly (EN), Kincaid's lupine (TH), Willamette Valley daisy (EN), or the Bradshaw's lomatium (EN).]
- Why do you think these animals or plants are endangered? (Habitat loss is the biggest cause of decline for these threatened and endangered species. Less than 1% of the Willamette Wet Prairie remains.)
- What do you think we can do to help the threatened and endangered species of the West Eugene Wetlands?

14. Have all the students stand if they are sitting down. Choose either the Fender's blue butterfly or the Kincaid's lupine to be removed from the web due to extinction. The selected player should sit down and pull on his/her yarn. Other students sit down and tug when they feel the pull. Soon the entire circle will be sitting on the ground.

15. Ask the students, why does the loss of one species affect other species? (If one species becomes extinct then another species will lose part of its food supply and could then prey more heavily on other species.)

16. Tell the students that everyone in the web is affected by the loss of one species.

Web of Life



West Eugene Wetland Hotel

In this activity students will use the West Eugene Wetlands bird cards to make a chart to study when and why migratory birds stop in the West Eugene Wetlands.

Key Concepts: Migratory birds move seasonally between northern nesting grounds in the summer and warmer southern areas in the winter. While traveling between the two, migratory birds need wetland habitats, such as the West Eugene Wetlands, to feed and rest.

Benchmark Correlations, see Section 7.

Objectives:

Students will be able to:

- define migration and explain why birds migrate
- name three hazards encountered during migration.

Materials:

Copies of West Eugene Wetlands bird cards

- Use all the bird cards or only the cards of the birds that migrate.
- One set of bird cards for the class to divide or one set for each group

Copies of Birds of the West Eugene Wetlands Student recording sheet

- One for each student or group

A large Bird Recording Chart

A copy of the Birds of the West Eugene Wetlands information sheet

Migratory Bird Information:

Migration means to change location periodically, especially to move seasonally from one region to another. Birds that change location are called migratory birds.

- Every year throughout North America, ducks, geese, shorebirds, and a number of other types of birds, make very long migratory flights, usually along one of four major routes.
- In the summer months, birds breed and raise young in the north where there is an abundance of food and space.
- Birds travel south to warmer climates in the winter, but return to the north every summer for the breeding season.
- Times and distances of annual migrations are not the same for all birds. Some birds begin their fall migration in late summer, others in late fall. Migratory birds may travel during the day, night, or continuously. Some birds migrate thousands of miles, while others travel less than one hundred. Some have a leisurely migration, while others fly swiftly to their destinations. Spring migrations are generally faster than fall migrations because of the stimulus to breed and nest.

- Most migratory birds have very powerful flight muscles, highly developed respiratory systems, hollow bones, internal air sacs, and specialized body shapes. All these adaptations allow birds to fly high, fast, and for long periods of time.

The routes that migratory birds take on their journeys are called flyways. There are four major flyways in North America: the Atlantic Flyway, Mississippi Flyway, Central Flyway, and the Pacific Flyway.

- **The West Eugene Wetlands is an important part of the Pacific Flyway. Its wet prairie and other wetlands provide important resting and feeding grounds. Birds stop to feed and rest and then continue their journeys.**
- The West Eugene Wetlands Partnership is working together to protect the wetland habitats for migratory birds.

Scientists study bird migration in order to determine a number of things, including (a) which habitats are important to migratory birds as they travel, (b) whether or not migratory birds are finding sufficient food during their journeys, and (c) what hazards the migratory birds may encounter on their journeys.

- Scientists study the migratory habits of birds through a variety of methods, one of which is bird banding.
- In the United States, a Bird Banding Laboratory in Maryland is administered by the United States Geological Survey (USGS), in order to study migratory birds.
 - ✓ Licensed bird banders around the country operate stations where migratory birds are safely captured. Numbered bands are attached to their legs and physical information is recorded. The birds are then released unharmed.
 - ✓ Hunters and others send bands they find on birds and facts of their recovery to the Bird Banding Laboratory, along with information on where and when they got the band.
 - ✓ The National Biological Service can use the information on when and where the birds were found to learn about population dynamics, migratory routes, lifespan and habitats of that species. This kind of information is used to create distribution reports.
 - ✓ If you see a bird with a bird band, record the number on the band as well as the date and location of the sighting. Send this information to: USGS Patuxent Wildlife Research Center, Bird Banding Laboratory, Office of Migratory Bird Management, 12100 Beech Forest Road, Laurel, Maryland 20708-4037, or call 1-800-327-BAND (2263), or visit www.pwrc.nbs.gov/bbl. You will be sent a Certificate of Appreciation and the person who banded the bird will be notified of your report.

Procedure:

Preparation: Copy the West Eugene Wetlands bird cards on card stock.

1. Ask students if they have seen large flocks of ducks or geese flying in the air during the spring or fall. These are probably birds migrating.
2. Review the migratory bird information with the students.
3. Ask the students what migratory birds they think use the West Eugene Wetlands. Accept all answers and make a list. (Students can contact the Lane County Audubon Society with questions about birds that use the West Eugene Wetlands at www.laneaudubon.org.)
4. Tell the students they will be studying some birds to find out if they migrate to the West Eugene Wetlands or if they live at the wetlands year round.
5. Tell the students they will be given some West Eugene Wetlands bird information cards. They are to read their cards to find out if and when their birds migrate to the West Eugene Wetlands. What habitats do their birds use?
6. Depending on the time of year the birds are present, usually the students can infer what their birds would be doing in the West Eugene Wetlands. Ask the student to guess if their birds would be: eating, resting, and/or nesting. (Birds present during the summer months would be nesting and raising their young in the area. If the birds are not at the wetlands during that time they probably migrate somewhere else to nest.)
7. Divide the students into groups of three. Pass out and review the student recording sheets.
8. Pass out the cards. Give the students enough time to complete their recording sheets.
9. Bring the students together. While the students complete the large chart have them discuss their results. The students can compare and contrast their findings. Ask the students, “What birds did you or might you see on your field trip?”
10. Ask students to brainstorm what hazards migratory birds might face during their travel.
 - Habitat destruction and degradation, including:
 - wetland drainage,
 - urban expansion,
 - conversion of wetlands to farm land, and
 - conversion of natural waterways to canals;
 - environmental pollution including contamination of water;
 - weather conditions including drought, flooding, and heavy snow;
 - also disease, predation, and illegal hunting.

11. Remind the students: **The West Eugene Wetlands are important habitats for migratory birds. There are many people working together to protect and restore these wetlands.**
12. Ask the students what they think they can do to help these important habitats.
13. Have the students use bird identification books or the Internet to research more about their birds. They can find out where their birds migrate and what they do at the locations.

Birds of the West Eugene Wetlands

Information Sheet

#	Bird	Fall	Winter	Spring	Summer
B1	American goldfinch	R	R	R	R
B2	American robin	R	R	R	R
B3	Belted kingfisher	R	R	R	R
B4	Black-capped chickadee	R	R	R	R
B5	Canada goose	R	R	R	R
B6	European starling	R	R	R	R
B7	Great blue heron	R	R	R	R
B8	Killdeer	R	R	R	R
B9	Mallard	R	R	R	R
B10	Northern flicker	R	R	R	R
B11	Northern harrier	R	R	R	R
B12	Red-winged blackbird	R	R	R	R
B13	Western meadowlark	R	R	R	R
B14	Western scrub-jay	R	R	R	R
B15	Violet-green swallow	M		M	M
B16	Short-eared owl		M		
B17	Western kingbird			M	M
B18	Golden-crowned sparrow	M	M	M	
B19	Great egret	M	M	M	
B20	American crow	R	R	R	R
B21	Osprey			M	M
B22	Green heron	R	R	R	R
B23	Anna's hummingbird	M	M		
B24	Brown-headed cowbird			M	M
B25	Ruddy duck	M	M	M	
B26	Dunlin	M	M	M	
B27	Red-tailed hawk	R	R	R	R

Birds with an “M” are migratory birds. The “M” marks the season(s) they are found in the West Eugene Wetlands.

Birds with an “R” are year-round residents in the West Eugene Wetlands.

Some types of birds both resident and migrant are more common than others and are more likely to be seen.

Birds of the West Eugene Wetlands
Student Recording Sheet

#	Bird	Fall	Winter	Spring	Summer
	Resident or Migrant				
	Resident or Migrant				
	Resident or Migrant				
	Resident or Migrant				

What Can I Eat With This Beak?

In this activity, students will use tools that represent a variety of birds' beaks to discover that birds have physical adaptations they use to feed on different foods in different habitats.

Benchmark Correlations, see Section 7.

Key Concepts:

Birds are dependent upon different wetland habitats in West Eugene. Each bird has a beak adapted to feed on different organisms in different habitats.

Objectives:

Students will be able to:

- describe beak adaptations of birds
- describe how beak adaptations relate to feeding behavior
- name three habitats at the West Eugene Wetlands

Recommended Time:

30 minutes

Materials:

Copies of *What Can I Eat With This Beak?* data sheet or large chart
Paper cups, one per person (bird stomach)

Food: provide an adequate food supply for each person

Marbles (snails)
Pipe Cleaners, cut up (worms)
Metal Washers, 3/16 (beetles)

Beak Types: one beak per person

Spoons
Scissors
Tweezers
Clothespins

Background Information:

- Wetland Ecosystems provide habitat for many types of birds. Every bird has a beak adapted for different feeding techniques. Each bird has a unique diet that depends on its beak type.
- Many birds have tweezers-like beaks. A bird with a short “tweezers” beak eats animals near the surface of a mudflat, whereas a bird with a long “tweezers” beak can reach animals that burrow deep into the mud.
- Some birds have scissor-like beaks that rip their food apart into bite sized pieces while other birds have clothespin-like beaks that are excellent for crushing the hard covering of seeds.
- Lastly, birds may have a spoon-like beak that can scoop up large numbers of small fish or strain plant material from the mud.

Procedure:

1. Begin the activity with a general discussion about bird beak types. What kind of beaks have they seen? (*Long, Pointy, Short, Wide, etc.*) Hold up the beak utensils one at a time and ask the youth to think of examples of birds that have a beak similar to the utensil. Some potential answers are in the following chart

Spoon beak	Clothespin beak	Scissor beak	Tweezers beak
Mallards	Sparrows	Hawks	Egrets
Geese	Marsh wrens	Owls	Hérons
	House finches	Eagles	Killdeer

2. After your bird beak discussion, tell the youth they are birds and that the area between them represents their habitat. Hand a stomach (cup) and one bird beak to each bird (youth). Explain the following rules:
 - Birds must pick up their food, using only their beaks, and put it into their stomachs.
 - Food may not be scooped or thrown into the stomach—the cup must be held upright.
 - Birds may only feed when given permission to do so.
3. Distribute one type of food evenly within the habitat. Give the birds permission to feed. Allow the birds to feed for one or two minutes and then tell them to stop feeding. Have similar beak-types get together to count the total amount of food they collected; record their results on the data sheet.
4. Repeat the feeding steps for each food item. For a more natural situation, mix all three types of food; an area seldom has one type of food. Record the data.
5. The activity leader is a hawk that eats birds. Unusual behavior of a bird draws attention so a predator will notice the bird and eat it. Unruly behavior or violations of the rules result in the hawk capturing the conspicuous bird and making it sit out for a round.
6. Discuss the following:
 - Graph and discuss data results.
 - "Why are some beaks better at eating a particular food item than other beaks?"
 - "What differences did you notice in feeding behavior when all food items were passed out?"
 - "What other parts of a bird are important to its feeding success?"
 - "In which habitat does each beak type forage for its food?"

What Can I Eat With This Beak?

Data Sheet

<i>Food</i>	Worms	Snails	Beetles	All Food Types
<i>Beak Type</i>				
Scissors				
Tweezers				
Spoons				
Clothespins				

Design a Bird

In this activity, students will design a bird adapted to live in a wetland habitat.

Benchmark Correlations, see Section 7.

Key Concepts:

All birds have unique adaptations that allow them to live and survive in their habitats and environment.

Objectives:

Students will be able to:

- define adaptation
- describe the importance of adaptations in birds.
- describe the adaptations a bird would have for a habitat.

Recommended Time:

45 minutes to an hour

Materials:

Pictures of birds and other animals that show adaptations

Clay, Styrofoam, pipe cleaner, colored paper, beans, scissors, staplers, Popsicle sticks, etc.

Copies of *Bird Adaptation Chart*

Information:

- A **habitat** is the place where an animal lives that provides food, water, shelter and space. Birds rely on the habitats of the West Eugene Wetlands to rest, eat, nest, and raise their young. The wetlands are vital to the survival of migratory birds.
- An **adaptation** is a trait that helps a plant or animal live and survive in a particular environment. Birds using the habitats in the West Eugene Wetlands have specialized beaks, feet, and other adaptations.
- Most migratory birds have very powerful flight muscles, highly developed respiratory systems, hollow bones, internal air sacs, and specialized body shapes. All these adaptations allow birds to fly high, fast, and for long periods of time.

Procedure:

1. Talk about a bird the students are familiar with, for example, duck. Ask the students what special adaptations a duck has that allows it to live and survive in its habitat. (Webbed feet for swimming, rounded body for floating on water, large wings for flying, short thick legs for holding up its body, etc.)

2. Discuss with the students other various adaptations birds might have and the advantages of each. Review the Bird Adaptation Chart. If the students are not familiar with the birds on the chart you could have the West Eugene Wetlands bird cards available for their use.
3. Divide the students into groups of three.
4. Tell the students that they will have a chance to design their own original bird. Each student should first decide and record what habitat(s) their bird lives in.
5. Have each group answer and record the following questions:
 - Where will the bird live?
 - What does the bird eat?
 - How does the bird move around?
6. Based on their answers, the students will decide what adaptations are necessary for their bird to survive.
7. Have the students create their bird using the materials provided.
8. When students are done with their birds, have the groups share their birds and describe the unique adaptations that help the birds live and survive in their habitat(s).

Bird Adaptation Chart

Adaptation – Traits that helps a plant or animal live and survive in a particular habitat and environment.

<u>Bird</u>	<u>Adaptation</u>	<u>Advantage</u>
Dunlin	Beaks: Long, thin	Can probe shallow water and mud for insects
Woodpecker	Pointed, strong	Can break and probe bark of trees for insects
Hawk, osprey	Curved, strong	Can tear solid tissue like meat
Finches	Short, stout, strong	Can crack seeds and nuts
Hummingbird	Slender, long, tiny	Can probe flowers for nectar
Duck, goose	Feet: Webbed	Aids in paddling in water
Heron	Long toes	Aids in walking on mud
Hawk, osprey	Thick clawed	Can grasp food when hunting prey
Songbirds	Grasping	Aids in sitting on branches, roosting, protection
Songbirds	Legs: Flexor tendons	Aids in perching, grasping
Heron	Long, slender	Aids in wading in water
Osprey, hawk	Powerful muscles	Aids lifting, carrying prey
Osprey	Wings: Large	Aids flying with prey, soaring while hunting
Hummingbirds	Small, fast	Allows bird to hover over flowers
Male birds	Coloration: Bright plumage	Attraction in courtship, mating rituals
Female birds	Dull plumage	Aids in camouflage while nesting, protection in shelter

The Key to Categorization and Classification

In this activity, students will use observation, categorization and classification skills while practicing using keys.

Benchmark Correlations, see Section 7.

Key Concepts: Keys are necessary and used extensively by scientists to identify and classify plants, animals, habitats, and much more in nature.

Objectives:

Students will be able to:

- use observation skills to distinguish features of similar natural objects.
- use a key to classify objects/organisms based on physical features.
- develop a key.

Recommended Time:

30 minutes

Materials:

Chart paper and markers

Objects to sort and use to develop a key

Colored pictures of plants or animals

Pencils and paper

Sample key(s) you will use on your field trip

Information:

- Categorization and classification are important skills in making order and sense out of things. These skills are used in developing identification keys.
- Identification keys are helpful since it is often difficult to identify different plants, birds, insects, or other natural objects.
- Being able to identify objects helps us determine and record their function, interrelationships, and importance to an ecosystem.
- Scientist use keys found in field guides to help them determine species of plants, birds, and insects found in the field.

Procedure:

1. Ask students what are some examples of places or situations where we categorize. (library, supermarket, file cabinet, drawers, shelves)
2. Tell the students that scientists use categorization and classification to be able to identify objects.

3. Talk about birds or natural objects the students are familiar with, for example, ducks. Ask the students how they can tell them apart. Explain that different kinds of ducks have different colors, sizes, and shapes.
4. Pick two students to come to the front. Ask the group to compare these two. How are they alike? How are they different? Explain that plants and animals, like people are different. They may look alike from a distance; however, when you look carefully or get closer, there are many differences.
5. Demonstrate the development of a key using a group of eight objects that are the same, but have individual differences. You may use eight students, eight leaves, eight bird pictures, or eight shoes.
6. Record their responses as you guide the students. Students pick any criteria (color, shape, style, etc.) and divide the eight objects into two piles. There does not need to be an equal number of objects in each pile. Choose another criteria and divide each pile into two piles. Continue to choose criteria and divide the piles until each object is by itself.
7. Review what was done and recorded on the chart paper. Tell students they have just developed a **KEY**.
8. Divide students into groups. Give them objects or pictures and have them develop their own keys.
9. Groups exchange keys and objects, then see if they can follow the other groups' keys.
10. Review and practice using the keys that will be used on your field trip to the West Eugene Wetlands.

Key Sample

