



Birding Basics



In A Nutshell

Students will learn about birds, techniques for bird watching, and identification. Students will learn the proper way to use binoculars and will practice their birding skills on a hike at the Refuge.

Grade	2-6
Season	Fall, Winter & Spring
Location	Visitor Center

Learning objectives

After participating in this activity, students will be able to:

- Identify different parts of the bird
- Understand how to properly use binoculars.
- Explain differences in birds using their four common identifying features

Literature Connections

- ***About Birds*** by Cathryn Sill
- ***Bird Calls*** by Frank Gallo
- ***Birds, Nests and Eggs*** by Mel Boring
- ***Charles Harper's Birds & Words*** by Charles Harper
- ***Bird*** by David Burnie
- ***Fine Feathered Friends: All about Birds*** by Tish Rabe
- ***Watching Water Birds*** by Jim Arnosky
- ***Wings on the Wind: Bird Poems*** by Kate Kiesler
- ***Let's Go Birding!*** by Blane Klemek, Minnesota Conservation Volunteer magazine (www.dnr.state.mn.us/young_naturalists/birding)

Pre-Activities

Students will learn what makes birds different from other animals and be introduced to the activity of birding. Students will identify characteristics of birds based on color, shape and size. Students will also learn the basic anatomy of birds. Using observation, communication and critical thinking skills, students will identify bird characteristics and demonstrate what they have learned through a drawing activity.

On-site Activities

Students will be introduced to some of the tools and techniques of bird identification. Using pictures and bird books students will learn how to compare four common physical features when observing birds: size, shape, habitat, behavior, and color pattern. Students will first become familiar with the use of binoculars in the classroom and then participate in a hike, focusing on one of 3 birding habitats found on the refuge. Using binoculars and field guides, students will have the opportunity to identify common birds seen at the Refuge.



CLASSROOM CONNECTIONS

Start a Bird Observation Phenology Log

Ask students to keep track of the species of birds and the bird behaviors they see on and near the school grounds through the seasons. For example, when do the students see the first robins return from spring migration? Compare notes from year to year. Look for patterns. Remember to record weather information along with each bird observation. Ask students to reflect on the role weather plays in bird populations, migrations, and behaviors?

Attract Birds to Your Schoolyard

Ask students to research what would be needed to attract a greater number and variety of birds to your school yard. Design a bird-friendly schoolyard that incorporates plants, feeders and water that will attract birds. Don't forget to include a student observation area into your plan.

Participate in Citizen Science that's "For the Birds"!

Encourage students to continue their bird observation skills as a class or individually by participating in Project Feeder Watch www.birds.cornell.edu/pfw/. Project feeder watch is a winter-long survey to observe and document winter birds that visit feeders. Students who participate in Project Feeder Watch use observation and data collection and interpretation skills while learning about Minnesota's winter birds. The data Feeder Watchers collect is valuable for scientists (like wildlife biologists) who monitor changes in bird populations, and look for trends of change.

Make Pine Cone Bird Feeders with Students

Fun activity for kids of all ages. Materials needed include pinecones, vegetable shortening (Crisco) or peanut butter, popsicle sticks, birdseed, string, newspaper or wax paper for the tables. An option would also be to make them outside! This activity can be messy, but is very fun for kids and gets them excited about seeing birds come to their feeder to eat! For pine cones, students could bring one from home that they find in their yard or a park, the class could go on a pine cone hunt if able to access an area with pine trees, or the teacher could gather them. Visit the following link for complete instructions, pictures, and other activities for students. <http://www.birdsleuth.org/diy-feeders/>

Teacher Resources

- ***Peterson Field Guide to Eastern and Central American Birds*** by Roger Peterson
- ***One Thousand Facts on Birds*** by Jinny Johnson



Birding Basics Pre-visit Activities

Materials

- Variety of MN bird pictures (birds of prey, songbirds, waterfowl)
- Silhouettes of birds (11x17)
- Blue Jay diagram marking features (11x17)
- Crow, Robin, White-throated sparrow cut-outs for size comparison
- Bird Anatomy worksheet (1 per pair of students)
- Scratch Paper
- Crayons/Colored pencils
- Wet erase markers
- *Birds of Minnesota* by Stan Tekiela (1 copy per group)
- *Young Birder's Guide* by Bill Thompson III (1 copy per group)
- Set of "Mystery Bird Detective Cases" #1-10
- Laminated pictures of mystery birds
- Mystery bird case answer sheet

Introduction

(25 min)

Introduce students to the biology of birds by asking them the one feature that makes birds different from other animals (*feathers*). While most birds use feathers to support flight, a few birds like the ostrich and penguin use their feathers for other reasons. Penguins use their feathers for warmth as they swim through icy water, while an ostrich uses its feathers for balance while running and for display during courtship.

Most birds are lightweight and have strong wing muscles, which helps with flying and quick take-offs. Birds are found in a variety of shapes, colors, and sizes. Many songbirds can be heard using a variety of songs to communicate. Male songbirds also typically display bright vibrant colors used to attract mates. Other birds, like raptors (*hawks, eagles, owls*), are adapted to blend into their surroundings (*camouflage*), have sharp talons, and sharp, hooked beaks, and keen eyesight used for hunting.

Show students the different pictures of birds. Ask them to identify physical characteristics of the bird (*feathers, tail, wings, etc.*). As they list characteristics, write their observations on a large board. Make sure to include behavioral characteristics the students mention as these are also important and helpful for identification (*bird is singing, perching, eating, flying, etc.*).

Tell students that noticing common features and behaviors is a method people use to identify birds. Ask students to think about the most important features they notice when watching a bird. As a group, encourage students to number the items on the class list in the order of importance (1 being of the greatest importance). The importance level determined is neither right nor wrong; it depends on what the students feel is most important and prompts discussions about bird identification.

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Now explain to students there are generally 3 key characteristics people look for when identifying birds: **color**, **size**, and **shape**. Compare their list to these 3 characteristics using the silhouettes picture and the crow, robin, sparrow cut-outs. Did students choose items that reflect the 3 key characteristics?

Activity

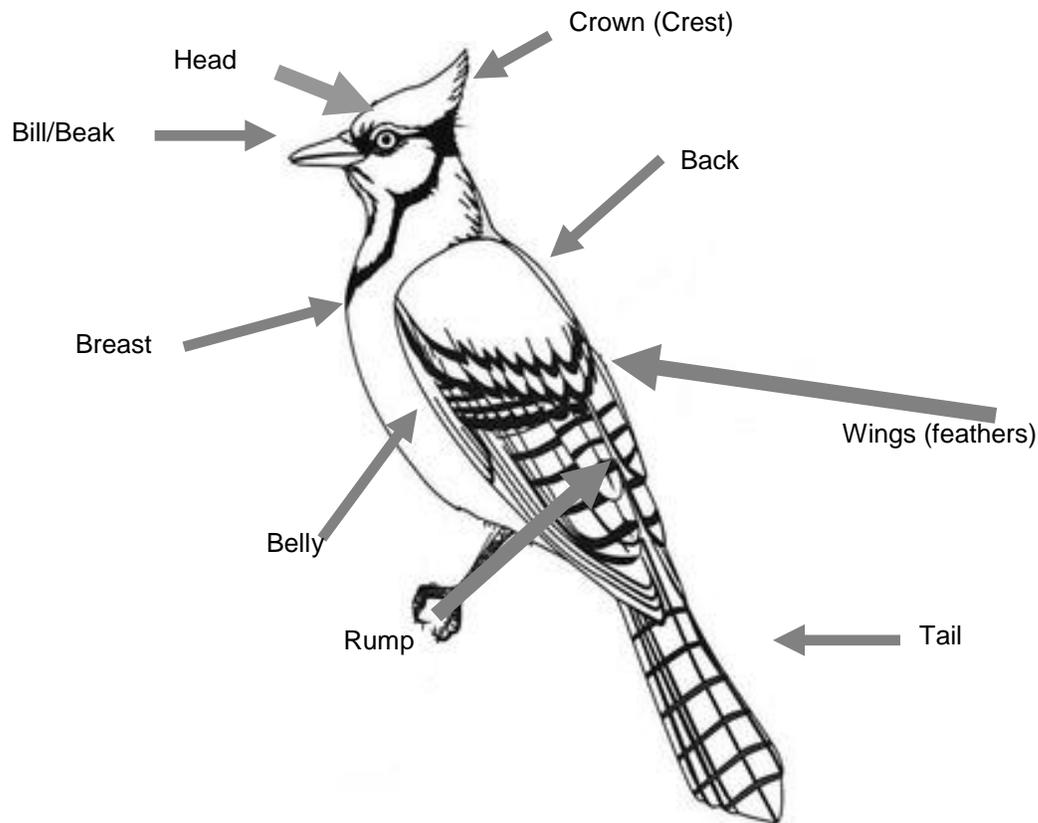
(30 min)

Getting to know a bird

Sometimes identifying one bird from another bird can be tricky. Many birds may look the same, or be a similar size. There are ways to narrow down what type of bird you may be observing.

Introduce students to the main parts (*features*) of a bird. These features are often referenced when describing a bird. Pass out a copy of the bird anatomy worksheet and a wet erase marker per pair of students. Ask students to work with their partner to fill it in the best they can using the key words at the top.

Once everyone has had time to work on it, review the worksheet with the class using the Blue Jay diagram to help students locate the most notable features. While pointing out these terms to students, explain this is a good way to describe bird features they notice to someone else.



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Learning how to describe characteristics of a bird and being able to share the characteristics using common terminology is important for identification. Based on the parts of the bird students learned, they should use these terms to complete the following age appropriate description activity.

Activity #1 (*best activity to do if younger students*)

After students appear comfortable with naming the common bird parts, engage them in an activity that will use observation, communication and thinking skills. Instruct each student to sketch and color a bird of their choice. Each student's drawing must include the main bird features illustrated on the worksheet. Provide photos or let them use one of the field guides for examples. Reassure students ***that it does not matter how well the bird is drawn or whether they draw a real or an imaginary bird.*** Tell them not to share their picture until the second portion the activity is complete.

Have students get into pairs and sit back to back so they are unable to see each other's work. Ask one student to describe the bird they drew, focusing on unique features, as the other student draws the bird being described. Sitting back to back will challenge students to communicate clearly and visualize carefully as each bird is described. This will build important observation skills which are used by bird watchers to identify birds using a field guide. The more descriptive a student is, the more successful his/her partner will be at drawing a picture that matches the original drawing. When both students have had a turn, they should compare the original drawings with the new drawings. Were they successful in drawing the same or similar bird? Explain that good observation and communication skills help birdwatchers describe the birds they see to other people.

Activity #2

People often refer to bird guides to help them determine the type of bird they may have seen in a forest, at the park or visiting a bird feeder. Guides are great tools that have been developed by people using common body part terms, photos and quick facts about where birds live, their habits, the food they eat and what time of year they may be seen in certain regions.

For this activity students will become bird detectives, and use the terms they just learned and their reading skills to decipher a description of a bird.

1. Assign students into groups of 2-3 depending on the class size (*there are 10 mystery bird cases*). Provide each group with a Mystery Bird Case Number, a wet erase marker, scratch paper, color pencils, and one of each type of field guide. Each group needs to read their case together and fill out the report using what they might already know as well as the field guides for help.
2. Explain to students the field guides are not all designed the same. Briefly review the differences between the two guides and encourage students to page through each book to note their similarities and differences.

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3. Explain the worksheet to students. When trying to identify the mystery bird it is recommended for students to begin using the Birds of Minnesota Field Guide as the birds are categorized based on the dominant colors of the birds. Student can compare information from both books to fill in their case report.
4. When the students have completed the mystery case, give them the laminated picture of their bird to sketch/color. Once everyone is done, ask each group to share their mystery bird with the class. Hold up the corresponding mystery bird large photo for the class to see while the detective group reads aloud their bird description and provides the answers to their case report and interesting fact.

Wrap Up (10 min)

Understanding why people watch birds

Many people enjoy birds. When people watch birds, they are participating in a common activity known as birding. People that watch birds for a hobby are often referred to as birders. Bird watching is a challenging yet fun activity that can happen almost anywhere outside. Plus, as people observe birds they can monitor changes happening in the natural environment. Many birds of all type and variety are good signs that the environment is healthy enough to support birds. If birds are no longer seen in quantity and variety where they once were abundant, this may be an indicator that something is not right in the natural environment and scientist may need to further investigate.

Ask students to think about places where they may look for birds. Most people can see some type of bird from their window at home, in a park, or a schoolyard, as birds are almost everywhere. No matter what type of bird you are looking for, bird watching is enjoyable and can be exciting.

Share with students the plan for their trip to the National Wildlife Refuge. The National Wildlife Refuge is a special place where animals live in a natural setting, including many common birds found in Minnesota. While on the Refuge, students will learn how to look for, listen for and identify some very common song birds found in Minnesota. Students will test their new skills using binoculars during a bird watching hike to observe refuge birds. Advise students that much of their fieldtrip will be outside, and to dress appropriately for the weather.

Birding Basics On-site Activities

Materials

- Migratory Flyways map (11x17)
- Variety of MN bird pictures (birds of prey, songbirds, waterfowl)
- Bird behavior scavenger hunt
- Crow, Robin, White-throated sparrow cut-outs for size comparison
- Identifier (if available in the classroom)
- Birding Basics Guide (Fall, Winter, or Spring)
- *Field Guide to Birds of North America* by Kenn Kaufman
- Binoculars (one pair per student)

Introduction

(30 min)

Welcome students to Minnesota Valley National Wildlife Refuge. Summarize what students learned about birds during the pre-activity. Explain the fieldtrip events. During the fieldtrip students will learn some easy ways to identify birds, how to properly use binoculars, and good manners for watching birds. Then, the group will travel outside to hike the trails and look for birds that live on the refuge.

Identifying Birds

Begin with the explanation that a National Wildlife Refuge provides habitat for many types of birds. Ask students what the 4 components of habitat are (*Food, Water, Shelter Space*). Minnesota Valley National Wildlife Refuge is a special place for birds that migrate every year, with a great source of water (*wetlands and the Minnesota River*), food and shelter (*forests, prairies and wetlands*). This is an important place for birds to use as a stopover to rest and refuel as they make their long migration journey. Show them the Migratory Flyways map and point out that MN is in the Mississippi flyway.

Show students pictures of different types of birds they may see on the National Wildlife Refuge (*birds of prey, waterfowl, and song birds*). Explain to students that many of the birds we will look for today are known as song birds. They are small birds that you may commonly see at bird feeders.

Introduce, or review, with students the four common identifiers that will help them with their identification skills. Over time people have developed four common identifiers, or characteristics, people notice most often about birds: **size and shape, habitat, behavior, color and patterns**. Knowing a little more about these common identifiers make it easier to identify the birds you find.

Pass out a copy of the **Birding Basics Bird Guide** (according to the season you're at the refuge) and the **Field Guide to Birds of North America** to each group. Have groups glance through it to familiarize themselves with the birds they might see on their hike, noting the *sizes, shapes, colors*, etc. Discussion points for each are below.

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Size and Shape

Just like humans, birds are found in different shapes and sizes. Some birds are very large, like Bald Eagles. Some birds, like hummingbirds, are small. Use the bird photos to compare shapes and sizes of birds. Most birds on the refuge can be compared to these three birds – Sparrow size, Robin size, and Crow size. Show the life size photo examples as reference. Next, compare a variety of birds using the pictures provided to the common bird sizes. Show these birds side by side (Bluebird and Indigo Bunting) (Downy Wood Pecker and the Red Bellied Woodpecker) (Sparrow and Goldfinch). Ask students to share what is similar, and then ask students to compare what is different about the two birds.

Habitat

Where a bird lives is called its habitat. A good habitat will provide four basic needs: food, water, shelter, and space. A bird's shape and size, and what the bird is able to eat will determine where its habitat will be located. Some birds live on the Refuge year round (*Blue Jay, Downy Woodpecker, and Goldfinch*), while other birds are only able to find the food they need to eat during the warm spring and summer months (*Oriole, Hummingbird, Bluebird*).

Here on the Refuge we have 3 types of habitat where birds may live: prairie, forest and wetland. Birds that eat a lot of bugs and seeds and like open space will live in the prairie (*Bluebird, Swallows*). Birds that eat bugs that live on, in and around trees, and like covered shelter live in the forest (*Sparrows, Woodpeckers, Orioles*). Birds that eat insects or seeds from plants that live in or near the water will live in a wetland (*Red-winged Blackbirds, Warblers, Ducks*). Sometimes when you watch the bird feeders at the refuge you will see a variety of birds.

Behavior

Watching how a bird acts will give you many clues to its identity. The way a bird acts is called behavior. Behavior includes the way a bird sings, flies, perches, eats, flaps its wings, moves its tail feathers and reacts to stress. Looking at a bird's behavior can narrow down the type of bird it may be. For example: a woodpecker will stand on the side of a tree and tap to find food; a hummingbird beats its wing very fast and can hover over flowers to gather nectar; a hawk will soar high above to look for food on the ground. During nesting season many male birds will sing musical songs to attract a mate. All these activities are called behaviors.

Use the Identifier (if available) to introduce students to the bird calls of common birds on the refuge. (Another option is to play calls on your phone). Explain to students that using their sense of hearing is another way to find and observe birds.

Color Pattern

There are many kinds of birds with many different colors and patterns throughout the world. When watching birds, it is important to look closely at the color of the bird. Is it mostly blue, mostly red, mostly black, or black and white? Is it another color? Is it many

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colors? It's also important to know that some birds may be the same species but a different color. This happens especially with songbirds. The male is often a bright vibrant color. This is important for attracting mates and defining nesting territory. The female, on the other hand, is commonly a dull gray or brown color. This helps the female blend into her surrounding for protection (especially important when sitting on the nest).

The pattern on a bird is a special way its markings may appear. The Red-bellied Woodpecker is a good example; it has a checker board back and red head. A Chickadee has a black cap, a light colored belly, and gray wings.

Using a Field Guide

Share with students that because there are so many birds with different shapes and sizes, scientist over time have grouped birds into categories known as orders. For example, birds of prey include birds with hooked beaks and talons; while ducks have flat beaks, large bodies, webbed feet and small heads.

Discuss with students the two examples of field guides they have and compare them with the ones they used in the pre-activity. Point out where inside the book it lists the common orders (usually on the contents page found near the front). Go through the orders and look at example pictures. Explain to students when using a field guide to identify birds, they will notice that birds with similar characteristics will be grouped together on similar pages because they are in a similar order.

Minnesota has 400 types of birds, with songbirds the most commonly seen and heard group. Because there are so many songbirds, scientists break these birds into small groups known as families. To explain, show students two pictures (Grosbeak, Goldfinch) as examples. Point out the differences in the beak, size, posture, wing and tail shape. Explain to students both birds are songbirds, however the differences between these birds place them in to separate families. Encourage students to look at other families using their field guides. Knowing the order of a bird will help students locate a bird much quicker in the field guide.

Equipment

Show students a pair of binoculars and explain how useful this tool is to observe birds, especially birds at a far distance. Students will use binoculars to look at birds during their hike.

Binoculars

Binoculars are tools people use to see things that are far away. Binoculars are like magnifying glasses, meaning they can make things that appear small from a distance bigger and closer than it would appear with your own eyes. Binoculars are great tools for birders.

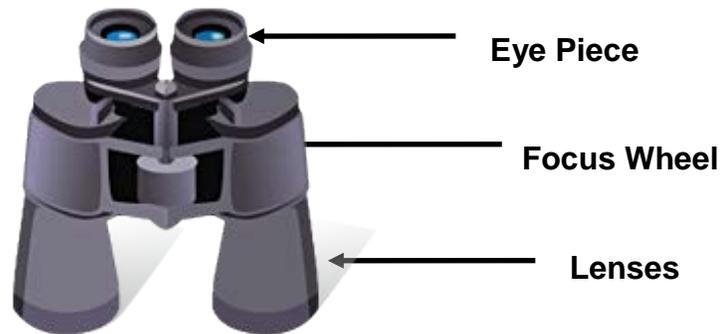
Guided Discovery - Exploring binoculars

Explain to students that during the hike they will use binoculars to look for birds. Tell students you will hand out binoculars; however before you do, explain these rules for using binoculars:

- The binocular strap must be worn around each student's neck at all times. This prevents swinging, scratching or breaking the binoculars and keeps the binoculars in good condition for all students that visit the Refuge.
- Binoculars are not toys, use them properly.
- When finished with the binoculars place them back into the case and return.

Before taking the group outside for the hike, explain the parts of the binocular and allow students to explore the binoculars they will use.

Pass out binoculars to each student. Begin by showing students how to properly wear binoculars, then how to fit the binoculars to their eyes. Now, explain the parts of the binoculars.



- **Eye Piece** – the eye piece is the part of the binocular that you look through. Instruct students to hold the binoculars up to their eyes and look through. Explain if their binoculars are clear the picture is already in focus and what they see will show up larger. Explain to students that binoculars are not always clear right away, and can be focused to make the picture clearer.
- **Focus Wheel** – the wheel located toward the center of the binoculars just past the eye piece. It is located here so your fingers can turn the wheel while you are looking through the binoculars.
 - Explain how to turn the focus wheel until the picture comes into clear view. Ask students to focus on an object in the classroom (such as a picture on the board). Ask chaperones to help students obtain a clear picture. Continue until all students see a clear picture.
- **Lenses** – the lenses are larger and on the opposite side of the eyepiece. The lenses pick up the light needed to pass the picture through the mirrors to the eyepiece.

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Allow students a few minutes to explore their binoculars at their tables. Place the small bird photos somewhere in the room for them to practice focusing.

Birding Etiquette

Before you head outdoors, it is important to share important bird etiquette. When bird watching, there are a few things birders always remember. Songbirds are often small, and noises and quick movements can frighten them to fly away to a safe spot. The best thing to do when bird watching is to be as quiet as you can and move slowly, so not to startle the birds. Find a spot to watch birds that is not too close, but close enough to see birds through binoculars. Carry a bird book and binoculars. Always wear your binoculars around your neck and do not swing them around. This will prevent the binoculars from striking something and breaking. Enjoy the sounds and activities of birds. Don't give up, the birds are out there, you just need patience.

Activity

Bird Watching Hike

(60 min)

Take students on a hike through the Refuge. Each group should have 1-2 field guides and a laminated birding scavenger hunt. Review the scavenger hunt with students and chaperones so they know what the descriptions of what they're looking for mean. Explain that when they see or hear a bird, to mark it on the scavenger hunt. Tell students to place the binoculars around their necks, and to leave the binoculars there until they return to the classroom. Practice with students on how to focus on a natural object outside before starting on the hike.

Wrap Up- Management Connection

(30 min)

When the group returns from the hike, collect the binoculars and field guides. Please be sure that binoculars are put into cases properly. On the white board, make a list of birds the students saw and a list of birds they heard. Explain to students that today they were birders. They learned the basic identifying skills necessary to identify a bird in its natural habitat. By practicing good birding manners and using characteristics to identify birds, students may find bird watching to be an exciting new hobby.

Why are National Wildlife Refuges important for birds? National Wildlife Refuges have been established to protect habitat for wildlife. Many Refuges in the Central United States (including Minnesota) are located in a major migratory bird "flyway". Traveling from as far away as South America, migratory birds depend on healthy habitats to survive. By observing birds, Wildlife Refuges and natural resource managers can monitor the health of habitats, and determine if more habitat is necessary to place under protection. Birds can be indicators of natural and unnatural changes.

Birding Basics Inside Alternative

Materials

- Clipboard with a blank sheet of paper (one per student)
- Color crayons or pencils
- Field guide (one per student)
- Birding Basics Winter (or Spring) Bird Guide Book and Checklist (one per student)
- Binoculars (one per student)
- Flip chart paper or dry erase board and markers

Activity

(60 min)

Bring the bird observation hike inside. Minnesota Valley National Wildlife Refuge maintains bird feeding stations at both the Bloomington Visitor Center and Rapids Lake Education and Visitor Center. Bird feeders are a great way to introduce everyone to viewing wildlife up close.

Divide students into two groups. Pass out a clipboard with a blank sheet of paper to each student. Color crayons or pencils will be available in each classroom. Ask students to fold their paper into three sections (like they are folding a letter). Explain that this paper is their field journal. As materials allow, give each student a field guide, a Birding Basics winter or spring bird guide book, and a checklist. Instruct students to observe three birds and identify the birds using their field guides. On their field journal, students should draw a picture of each bird and list at least three features they noticed about each bird they observe (including color and patterns, size, and behavior).

Lead each group to one of the two bird feeding station viewing windows. Ask students to bring their binoculars, field guides and clipboards. Explain to students that even in rainy weather, birds need to eat and bird feeders are a reliable source of food. Allow students to observe the feeders for 30 minutes. During their 30 minutes they should mark in their bird checklist all the birds they observe, and pick at least three different birds to draw and note features in their field journal. In the event that birds are not actively feeding, ask student to pick out 3 birds from their field guides. On their field journal they should draw a picture of each bird they selected, and write down 3 features they noticed.

Wrap Up

(30 min)

Gather students together in the refuge classroom. In their group, students should assemble a list of the birds they observed at the feeders. The list should not repeat birds already noted. From this list, students will be asked to report the birds they observed and the features they used to identify it.

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When the groups are finished making their list, begin to assemble a class list by asking group one to share the list of birds they noted in their field journals. Write the birds they name on the board. Then, ask group two to share any additional birds that they noted in their field journal not already named by group one. Write the birds they name on the board using a different color marker.

Now select one student to share a bird they observed at the feeders and the three features they listed in their journal to describe the bird. Continue selecting students to describe the birds they saw working through the list on the board as time allows. You may also continue this back in the school classroom.