

UC Santa Barbara

Educational Materials

Title

Birding Lesson

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Storke Wetland: Birding

Next Generation Science Standards

2-LS4-1. Make observations of plants and animals to compare the diversity of life in different habitats. [Clarification Statement: Emphasis is on the diversity of living things in each of a variety of different habitats.] [Assessment Boundary: Assessment does not include specific animal and plant names in specific habitats.]

3-LS4-2. Use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing. [Clarification Statement: Examples of cause and effect relationships could be plants that have larger thorns than other plants may be less likely to be eaten by predators; and, animals that have better camouflage coloration than other animals may be more likely to survive and therefore more likely to leave offspring.]

3-LS4-3. Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all. [Clarification Statement: Examples of evidence could include needs and characteristics of the organisms and habitats involved. The organisms and their habitat make up a system in which the parts depend on each other.]

4-LS1-1. Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction. [Clarification Statement: Examples of structures could include thorns, stems, roots, colored petals, heart, stomach, lung, brain, and skin.] [Assessment Boundary: Assessment is limited to macroscopic structures within plant and animal systems.]

Education and the Environmental Initiative

Principle II: The long-term functioning and health of terrestrial, freshwater, coastal and marine ecosystems are influenced by their relationships with human societies.

Concept a: Students need to know that direct and indirect changes to natural systems due to the growth of human populations and their consumption rates influence the geographic extent, composition, biological diversity, and viability of natural systems.

Concept b: Students need to know that methods used to extract, harvest, transport and consume natural resources influence the geographic extent, composition, biological diversity, and viability of natural systems.

Concept c: Students need to know that the expansion and operation of human communities influences the geographic extent, composition, biological diversity, and viability of natural systems.

Lesson Plan: Birding

Objective: To introduce the activity of birding: *Using optics, locating birds, identifying birds, creating valuable field notes, assessing biological importance of information*

Materials needed: Scope, binoculars, bird guide, field note template

Preparation: Set up station in an area with a broad view corridor, set up scope at a height level appropriate for kids, have binoculars in good working order and ensure you have an adequate number of pairs for the expected number of students

I. Binocular usage and safe handling

Before passing out binoculars explain their proper usage and handling:

1. Remove binoculars from case and immediately place binocular strap around the neck (explain that strap must always be worn in order to prevent the binoculars from being dropped. They are expensive, easily damaged, and dust and dirt will destroy the precision optics).
2. Store binocular case in clean, dry location (dirt in the case is the same as dirt on your binoculars).
3. Remove lens caps and if not permanently attached, store them in the case for safe keeping.
4. If the binoculars lenses are dusty they may be wiped with the soft cloth provided in the case (Never wipe binocular lenses w. shirt or other clothes. This can permanently damage optics).
5. Pass out the binoculars in an orderly fashion, and ensure students follow proper procedure above.

Now that the binoculars have been distributed explain their proper usage:

1. Hold the binoculars up to eyes and adjust the center pivot point so that they fit each individual's eye width.
2. Then use focus wheel at center of binoculars to focus clearly on a point not too far in the distance (image should be clear).
3. If image does not clear completely rotate the diopter wheel that is part of the right eye piece until images can be focused on clearly using the focus wheel.
4. Ensure that all students can see clearly and can properly adjust focus wheel to see at varying distances.

II. Scope usage and safe handling

Before using scope explain its proper usage and handling: **1.** Explain that scopes are much more powerful than binoculars and may be used once a bird has been sighted for closer inspection (they are not especially good for scanning the landscape for birds). **2.** Because scopes are very expensive and fragile optical instruments the station leader will manipulate the scopes operation, not the students. **3.** Once a bird has been sighted and is relatively still loosen the knob that allows the scope to move and use the handle to point the scope at the bird while looking through the eye piece. **4.** Once the bird is centered you may need to focus using the focus wheel on top of the instrument. **5.** Now that the bird is centered in the scopes viewing window and the image is clear you may tighten the scopes movement knob to lock scope in place. **6.** Allow the students to view the subject, making sure to instruct them not to handle the scope, but just to carefully look through the eyepiece.

III. Locating Birds

*Now that we are familiar with our instruments let's find some birds. (****It is very useful to be looking for birds in between groups, so that we can ensure that some birds may be viewed in each session, because chances are you will be the best birder.) Start with some questions:*

Where might we expect to see birds? *In the air, in trees, shrubs and other vegetation, on the ground, and in the water.*

What types of bird habitat are visible to us now? *Wetlands, woodlands, shrublands, grasslands, and open ground.*

Sometimes birds may be hard to see. Why? *Birds are often colored to match their surroundings. This is known as camouflage.*

What are some other adaptations available to us that may allow us to detect a bird even if we can't see it? *Hearing. We may use our ears to detect a bird's call. Each bird species has a distinct call that may allow us to detect its presence in a given habitat and also what kind of bird it is.*

1. Instruct the kids to pick a certain type of habitat in the area, and have them carefully scan those habitats with their binoculars for birds. Have them look for anything out of the ordinary. Most habitats have some sort of regular structure, and color, so if we see a blob that doesn't quite look like the shape of the rest of the tree we ought to examine this more closely. If the majority of a tree is a reddish-green and you notice a patch of brown, look closer. Also it is extremely valuable to look for movement.
2. Once a bird is sighted instruct the children to announce their discovery and its location to the others. If the bird is still, utilize the scope for a closer look.

IV. Identifying Birds

Now that we have located some birds how do we identify them? Ask some more questions:

What important characteristics about a bird may help us identify it? *Size, color, shape, flight pattern, is it calling, is it alone or in a flock, what habitat is it located in, what is it doing (feeding, flying, swimming)?*

Patterns made up of this information can lead us to a positive identification using a field guide. As things are observed it is crucial to take detailed notes.

1. Have the kids say what characteristics they see out loud, and help them along.
2. Take notes on what is observed by the kids.
3. After a sighting is complete introduce them to the field guide, and the notes you took. (Make sure to document the date, time and location on the map along with the details they see). Instruct them that it is more important to write down observations during the event and consult the guide later, because often times your chance for viewing the animal is short lived and time shouldn't be spent reading at the moment you are trying to gather key info.
4. See if you can make some positive ID's, show the children and explain the information written on the species. With this information we can learn more about the patterns we want to look for next time we view that species. This is how we become more effective birders over time.

V. Ecological Importance of the birding information

Now that we have successfully viewed and identified some species we should think about the importance of the information we have gleaned.

Why would someone want to bird? For entertainment, science, conservation, preservation and protection.

What can bird observation tell us? Observing certain species can tell us about their populations. How is the health of the population? Is it expanding or contracting? How do they interact with other species and the ecosystem around them? Birds can tell us a lot about the health of the habitat we find them in. Healthy, complete ecosystems should contain all of the bird species we should expect, or maybe there is something wrong. Have you ever heard of the canary in the coal mine? We can use wild bird populations in the same way. They can help us predict changes to our ecosystem and its proper function before things go wrong. This may give us time to fix the situation, before it becomes unfixable, so that all parts of our ecosystem including us humans can live in harmony together.

VI. Clean Up

- Ask the student to return their binoculars properly
- Replace the lens caps
- Remove strap from neck
- Place back in the case
- Put back in box
- The station leader is responsible for counting all the equipment between each group and at the end of the day to ensure that nothing is lost or damaged