

UC Santa Barbara

Educational Materials

Title

Coal Oil Point Reserve Birds Lesson

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Coal Oil Point Reserve: Bird Walk

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.]

Lesson Plan: The Threatened Western Snowy Plover and Other Shorebirds

Cognitive Learning Objective:

Students will learn about the life cycle of the Snowy Plover, why it is considered threatened, as well as the implications of a species being declared as “threatened.” Students will learn about the Western Snowy Plover’s habitat and habitat loss on the

California coast. Students will gain experience with binoculars to locate and identify several other local shorebirds.

Affective Learning Objective:

Students will feel connected to the local environment and motivated to learn more. Students will feel a sense of responsibility for their environment, and be motivated to protect important habitats.

Materials: KIN Journals, Binoculars, Beach blanket or sheet, phone to play bird calls (speaker optional), KIN bird ID materials, tweezers, scissors, strainer, chopsticks, bird photo cards

Location: Coal Oil Point Reserve

Preparation: Prior to the student's arrival, walk down the beach and locate the nesting plovers and any other points of interest. Spread out a blanket or sheet on the beach. The purpose of the sheet is to keep sand off of the fragile binoculars.

Get bird recordings ready on phone:

Crow: https://www.allaboutbirds.org/guide/American_Crow/sounds

Great Horned Owl: https://www.allaboutbirds.org/guide/Great_Horned_Owl/

Western Gull: https://www.allaboutbirds.org/guide/Western_Gull/

Time: 1-2 Hours

Introduction:

Engage: First, sit in a circle on the blanket and play the bird calls using a phone. Ask students if they have heard them before, where and when they have heard them, and if they can identify the different calls.

Explore: Then transition towards the Snowy Plover and other shorebirds. Ask the students if they have seen Snowy Plovers before and if they know anything about them. Ask them if they know why Coal Oil Point Reserve is important for Snowy Plovers. They may know that it is a protected habitat because snowy plovers are a

threatened species. Sands Beach, at Coal Oil Point Reserve, is designated as “Critical Habitat” for the Western Snowy Plovers, which have suffered a population decline due to loss of dune habitat along the Pacific coast. Western Snowy Plovers build their **scrapes** under the protection of **dunes**, vegetation, or driftwood near the ocean or nearby streams and ponds. Between March and September the plover’s breeding season, you may be able to find their scrapes.

If you are nearby beach **wrack**, the organic materials that wash ashore, pull some aside and ask what the students observe. They can watch all the little beach hoppers and small **invertebrates**, such as beach hoppers, flies, and beetles scurry around under it. Ask why they might be important for the Snowy Plovers. The Snowy Plovers forage among the **wrack** in the **intertidal zone**, the zone that is underwater at high tide and above water at low tide.

Explain: Discuss what it means to be a **threatened, endangered** or **extinct** species. Threatened means at risk of being endangered, endangered means at risk of being extinct, and extinct means gone completely. Ask for examples of other species that may be threatened, endangered or extinct. Ask them if they have heard of the Endangered Species Act, the 1973 law to protect endangered species and their habitats. Ask students for ideas of why these species might be threatened. Guide them to understand why habitats like Coal Oil Point are so important, to protect the habitat of these at risk species.

Now we are going to talk about adaptations, specifically shorebird adaptations. For this part of the lesson you will need the strainer, scissors, tweezers, and chopsticks as well as the cards with the photos of birds on them, specifically the Long-billed Curlew, Western Snowy Plover, California brown pelican, and Western Gull. Each prop corresponds to the beak type of one of these birds, who have different adaptations to survive in the coastal environment. Lay the card and the props out on the blanket, and ask students to match the beak type to the prop. The correct answers are that the Long-billed Curlew has a long slender beak like chopsticks, the Western Snowy Plover has a small beak like the tweezers, the California Brown Pelican has a scoop beak called a gullet like the strainer, and the Western Gull has a strong sharp beak like the scissors. Ask why these different beak types might be useful in different tasks. Emphasize that this is an example of how these birds have different adaptations.

Evaluate: Now that students have some background about adaptations and shorebirds, allow students to take binoculars and the KIN bird ID cards and look for shorebirds, while trying to identify their adaptations. The students should have already received a short lesson on using the binoculars, but a short review and a little practice may be necessary as well as a special caution to keep the equipment free of sand. (Note: hand out binoculars after the introduction discussion to avoid distraction.)

I. Binocular usage and safe handling

Before passing out binoculars explain their proper usage and handling:

1. Remove binoculars from the case and immediately place a 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 the binocular case in a 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 the focus wheel at the center of binoculars to focus clearly on a point not too far in the distance (image should be clear).
3. If the 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 the focus wheel to see at varying distances.

Ask them to specifically be on the lookout for different adaptations that shorebirds might have, such as their colors and body type. Ask them to have some ideas about more adaptations to share when we regroup. Remember to establish boundaries about how far the students can go and remind them not to go in the water. Ask to meet back at the blanket in 20 minutes, depending on your time constraints. When you regroup, ask what they noticed and what kind of birds they were able to find and if they noticed any adaptations. Some additional examples are that shorebirds often have long legs, webbed feet, have camouflage plumage, and are colored dark underneath and lighter on top. If you have time, after discussing these additional adaptations allow the students to go out with the binoculars again and see if they can spot these different adaptations.

At the end, ask the students to carefully replace the binocular's lens caps, remove the straps from their neck, put them back in the case, and put them back on the blanket as well as return the bird ID materials.

Photo cards for Western Gull, Western Snowy Plover, California Brown Pelican, and Long Billed Curlew:

Brown Pelican



Snowy Plover



Western Gull



Long-billed Curlew

