



Visiting the Bolsa Chica Wetlands: Grades 6-8

Dear Teacher,

Welcome to the Bolsa Chica Wetlands! We are excited that you chose to visit the Wetlands as a tour and learning experience for your students.

To help your students get the most from their time at the Wetlands, we have prepared a learning activity worksheet (see below) that you can use in your classroom to stimulate thinking about wetlands concepts in the days or weeks before your visit. The activities on the worksheet are designed to coordinate with California's Next Generation Science Standards for Middle School/Junior High.

Students can observe a number of core NGSS ideas for grades 6-8 in action at Bolsa Chica Wetlands, these include but are not limited to:

Core NGSS ideas for middle school/junior high

- How specific characteristics of animals help them succeed in reproducing
- How unique plant structures aid these organisms in reproduction
- How the growth of organisms can be impacted by their surrounding environment
- How resource availability effects organisms and populations of organisms in an ecosystem
- How to notice patterns of species' interactions across multiple ecosystems
- How do humans impact the environment? What are ways to minimize human impact on nature?
- How the increases in human population and human consumption impacted natural resource availability

We encourage you to talk with your students about examples of what they might see at the Bolsa Chica Wetlands that fit these core ideas.

- Bolsa Chica has many unique native plants and animals. The Great Blue Heron, California Ground Squirrel, Side-blotched Lizard, California Horn Snail, are some of the animals we are likely to see on our tour. Some birds of the wetlands, like the Least Tern (*Sternula antillarum*) and Belding's Savannah Sparrow, (*Passerculus sandwichensis beldingi*), are endangered, because there only a few California coastal marshes left for them to nest in.

- Plants that live in the marsh area are adapted to grow in salty soil and be watered mainly by ocean water. Their roots, stems, and leaves have evolved clever methods to keep the plant from being killed by the salt. Examples we can see on the tour are Pickleweed, Saltwort, and Cord Grass. Most house plants and inland plants cannot live in this type of soil.

- Plants along our tour path that are further from the water, such as the California Coastal Sunflower, Buckwheat, and Sagebrush, have adapted to thrive in the southern California climate where most of the rain falls in winter. Just after the rainy season most have more flowers and leaves than in late fall when it is dry. The leaves dry up in fall and the plant is dormant, conserving its energy and waiting for the winter rains to bloom again.

- Shorebirds such as Marbled Godwits, Curlews, and Sandpipers feed on the mud flats in the bay. Their long legs and long thin beaks adapt them to stand in shallow water and pull crabs and other small invertebrates out of the mud to eat. By contrast, sparrows and finches stay near the coastal bushes, where their short thick beaks can pick and crunch seeds. Hummingbirds use their long tiny beaks to reach deep into flowers to drink nectar, spreading pollen as they fly from flower to flower.

- Bolsa Chica Wetlands is on the Pacific Flyway, a migratory path for thousands of birds. Some birds, like ducks, nest in the far north and come to Bolsa Chica with their young in winter, so they can stay warm and find food before flying north again in mid-spring. Others, nest at Bolsa Chica in summer, then fly south with their young in late summer. Still others live at Bolsa Chica year-round. Each bird species follows the pattern that is best for the survival of its offspring.

Everyone can help keep the wetlands healthy.

- ✓ Put all trash in trash containers
- ✓ Recycle and reuse paper and plastic.
- ✓ Use less plastic, and reuse items at home so as not to waste.
- ✓ Help wetlands species survive by not bringing pets into the wetlands that can frighten and disturb the native animals.

THE MOST IMPORTANT THING....

The most important thing you can do is encourage your students to be alert to what they see, hear, and even smell as they explore the wetlands on their tour. Every tour is unique, depending on the season, time of day, whether the sun is shining, or the tides are high or low. Encourage your students to report and remember what they observe, and help them explain how each element fits into the system. Your tour guide will point out the plants and animals, and explain how the wetlands ecosystem functions, in terms your students can understand.



Visiting the Bolsa Chica Wetlands: Introductory Worksheet

Name: _____

Date: _____

Introduction

Wetlands are a unique habitat that can be found on every continent of the planet. The soil in wetlands are wet for at least part of the year, and can be found along bodies of water like rivers, lakes, oceans, and prehistoric lake beds. Plants and animals that live in wetlands have evolved adaptations to aid in their survival in wetlands, such as animals with webbed feet and plants that can pump oxygen into their roots from their leaves. If it weren't for these adaptations, many plants and animals would not be able to survive.



Southern Tarplant

The Bolsa Chica Ecological Reserve is one of the largest remaining coastal saltwater marshes in Southern California. Located in a highly urbanized area, Bolsa Chica has over 1,400 acres of natural habitat and native wildlife, and is home to rare plants like the Southern Tar Plant (*Centromadia parryi* ssp. *australis*) and Pickleweed (*Salicornia* sp.), and endangered animals like the Belding's Savannah Sparrow (*Passerculus sandwichensis beldingi*) and the Ridgway's Rail (*Rallus obsoletus*). Migratory birds use wetlands as a pit stop, to rest and refuel during their travels. Many spring visitors, like the endangered California Least Tern (*Sternula antillarum*), come to Bolsa Chica to nest and raise their young. Like all wetlands, Bolsa Chica benefits both the wildlife that resides within it, and the humans residing around it.

Ridgway's Rail



From recreation, to flood control, wetlands are a vital aspect of our ecosystem. Wetlands are great at minimizing flood damage, reducing water pollution, and recharging groundwater sources. The soil in wetlands acts like a giant sponge, soaking up water and making it readily accessible to the plants and animals that live there. Water slows down as it travels through the wetlands, allowing sediments and pollutants to settle at the bottom of the water. This makes the mud in the wetlands a feast to all, including even the smallest bacteria. The combined functions of water absorption and filtration, allow for

water to return to the water table-much cleaner than before-where we can then use it for human consumption.

And yet, despite these important natural resources, most of California's coastal wetlands have been altered or destroyed. It is estimated that about 90-95% of California's coastal wetlands have been

severely impacted by human activity - for reasons including agriculture and urbanization.

During your visit to the Bolsa Chica Wetlands with the Bolsa Chica Conservancy, you will learn about wetland functions, animal adaptations, watershed ecology, and how your local community is connected to wetlands. Prepare yourself to learn about these topics by working on questions below, before you arrive.



Tide Gates at Bolsa Chica

Warm-up Questions

1. What is a wetland? _____

2. What type of wetland is Bolsa Chica? (Circle your answer.)

Bog Marsh Swamp Fen

3. Name two (2) functions of a wetland.

4. Has human activity affected (coastal) wetlands in California?

5. What is something you can do to help protect wild spaces like Bolsa Chica?



Visiting the Bolsa Chica Wetlands: Introductory Worksheet - KEY

Name: _____

Date: _____

Warm-up Questions

1. What is a wetland? Wetlands are a habitat where the land is wet for at least

part of the year/Lands that are wet/Wet lands

2. What type of wetland is Bolsa Chica? (Circle your answer.)

Bog Marsh Swamp Fen

3. Name two (2) functions of a wetland.

Recreation, flood control, minimizing flood damage,

reducing water pollution, recharging groundwater resources,

water filtration/cleaning, bird migration

4. Has human activity affected (coastal) wetlands in California?

California wetlands have been majorly impacted by human activity.

Over 90% of coastal wetlands have been destroyed or changed by

by human activity.

5. What is something you can do to help protect wild spaces like Bolsa Chica?

Volunteering, throwing away trash, pack it in pack it out mentality,

not altering the space when you visit (ie. rock stacks/cairns), staying

on the trail, following trail/park/reserve rules (ie. no pets/bikes/etc.)