



OUR WETLANDS, OUR WORLD

A High School Activity Guide
to Upper Newport Bay



CALIFORNIA
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COMMISSION



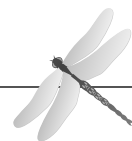


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A Project of the Community-Based Restoration and Education Program





Foreword

Located in the heart of coastal Orange County, Upper Newport Bay (UNB) comprises approximately 1,000 acres of open space—representing the largest remaining intact estuary in southern California, where an estimated 97 percent of historic wetlands has been lost. Known as one of the best birding sites in North America, UNB is a refuge for migrating birds and also supports a wide array of plant and animal life, including several endangered species. Upper Newport Bay's vegetation filters and cleans degraded water coming from a 154 square-mile watershed stretching from Santiago Oaks to the Pacific Ocean.

Unfortunately, this rich ecosystem has been seriously degraded. The area surrounding the wetland has been disturbed and converted by grazing, development, species introductions, and other human activities. Without our attention, invasive plants, which currently make up 48 percent of the Bay's flora, will out-compete and displace native species that once provided habitat. Protecting and improving the vitality of Upper Newport Bay's wetland ecosystem requires educating the Orange County community and restoring the endangered habitats.

The California Coastal Commission, whose mission is to preserve and restore the biodiversity and health of California's coastal and marine ecosystems, initiated the Marine Education Project in 2002. This project, now its own entity relying entirely on outside funding, operates the Community-Based Restoration and Education Program (CBREP) at Upper Newport Bay, a collaborative effort involving landowners and other stakeholders, including the County of Orange, the Department of Fish and Game, the City of Newport Beach, and the Newport Bay Naturalists and Friends.

The primary goal of CBREP is to protect and restore coastal habitats while creating an avenue for community involvement and education. The *Our Wetlands, Our World* activity guide for high school classrooms is part of the program's effort to promote wetlands education and restoration through hands-on learning. *Our Wetlands, Our World* is based on CBREP's premise that if people develop a personal relationship with an environment, they will be more motivated to protect it.

We invite you to share the commitment to conservation, education, appreciation, and stewardship of wetland habitats. It is critical to the viability of Upper Newport Bay that future generations understand the value of coastal habitats and participate in their protection and restoration.

For more information, or to order copies of this activity guide, contact:

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www.acornnaturalists.com

Cabrillo Marine Aquarium, 3720 Stephen White Drive, San Pedro, CA 90731, (310) 548-7562
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Frank M. Roberts, Jr., Artwork on pages 144 (top); 147 (bottom).

International Project WET, 201 Culbertson Hall, Montana State University, P.O. Box 17057,
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National Science Teachers Association,
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Save The Bay, 350 Frank Ogawa Plaza, Suite 900, Oakland, CA 94612,
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Newport Bay Naturalists and Friends, Artwork on pages 147 (top); 148 (bottom); 149 (top);
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Our Wetlands, Our World

A High School Activity Guide to Upper Newport Bay

Our Wetlands, Our World provides information and activities to help high school students learn about the importance of wetlands and to become involved in restoration of these valuable, unique environments. It also helps bring State Content Standards to life by linking science concepts to local resources. The focus of the guide is on Upper Newport Bay in Orange County; however, much of the information is applicable to other wetland sites.

Organization

The guide is divided into three sections:

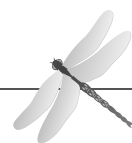
- I. Watersheds and Wetlands
- II. Human Impacts
- III. Taking Action

Each section begins with **information** on that topic written for the student. This information provides the background for many of the activities within the section.

Following the text in each section are **activities** to provide students with classroom and sometimes field experience to bring concepts to life. The activities were chosen based on several criteria, including inquiry-based learning, hands-on instruction, relation to Upper Newport Bay's specific habitats and issues, adaptability to various classroom settings, interest to students, ease of use, and correlation with State Standards.

The **appendices** at the end of the guide include:

- **UNB Inhabitant Cards.** These cards provide information on 30 inhabitants of Upper Newport Bay. There are six cards in each of the following categories: plants, birds, land animals, fish, and other marine animals. The cards are used in many activities throughout the guide. It is suggested that you photocopy the cards onto cardstock and laminate them, especially if they will be used in field studies.
- **Species Common to Upper Newport Bay.** This list shows some of the plants, birds, land animals, fish, and other marine animals common to the region. Students may see these species on a field trip to the Bay; and they can use this list to make other UNB Inhabitant Cards.
- **Resources.** The lists of organizations, wetlands, and websites can help both the students and the teacher in pursuing further knowledge and involvement opportunities available at Upper Newport Bay and other wetlands.



Activity Format

Each activity is organized as follows:

Summary. Provides an overview of the lesson and its intent.

California State Content Standards. Lists the Standards addressed in each curricular area (Science, History/Social Science, Math, English/Language Arts).

Objectives. States the goals; that is, what students will learn to do in the activity.

Materials. Specifies the materials needed to conduct the activity, such as worksheets that are included and any other materials (e.g., chart paper, soil samples, test tubes).

Preparation. Describes the steps that need to be taken prior to conducting the activity (e.g., copy worksheets, obtain water samples, set up testing stations).

Time Required. Gives the approximate amount of time needed to conduct the activity.

Procedures. Provides a step-by-step guide to conducting the activity.

Follow-up. Includes discussion questions and/or culminating actions to review students' work, highlight what students have learned, and provide closure.

Extensions. Suggests further activities to expand the study, to specifically meet your curriculum framework, and/or to apply the knowledge directly to students' community.

Field Studies

Several of the activities are labeled "Field Study" (or "Optional Field Study" or "Partial Field Study").

- Explore a Wetland (page 35)
- Wetland Soil (page 43)
- Measuring Decomposition (page 51)
- Water Quality (page 79)
- Space for Species (page 90)
- Seed Experiments (page 116)
- Plant Monitoring (page 124) *Monitoring is done March-June.*
- Stewardship (page 138) *Planting is done September-February; seed collecting is done May-August.*



These activities incorporate a field trip to Upper Newport Bay or other wetland or, perhaps, another natural site. If your class takes a field trip to a wetland site, you may want to conduct some or all of the above activities while at the site.

Some activities require samples of soil, water, or seeds from a wetland or other natural site. You can use a class field trip to Upper Newport Bay to collect samples in preparation for these activities, or if you are not planning a class field trip, you can collect all the necessary samples yourself during one visit to a wetland site. See the materials lists and preparation steps for the following activities requiring samples:

- Wetlands Soil (page 43)
- Measuring Decomposition (page 51)
- Water Quality (page 79)
- Seed Experiments (page 116)

Suggestions for Use

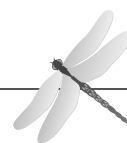
The three sections of this guide are sequential, progressing from an overview of wetlands, to the effects humans have had on these habitats, and then finally to the steps being taken to restore wetlands. Though each section is self-contained, presenting the information in this order will provide students a more complete picture.

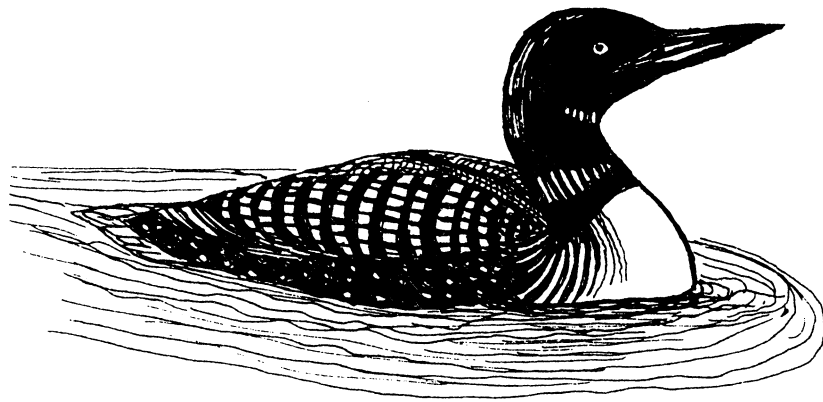
It is suggested that you photocopy the informational text in each section for students to read and to discuss prior to conducting activities in that section. The activities are also presented in a sequential order, but each activity is a separate lesson that can be used independently. Choose those activities—and extensions—that fit your curriculum and the level and interest of your class to move students from awareness to experience and action.

A field trip to Upper Newport Bay, or other wetland, is strongly encouraged though not required for students to understand and appreciate the importance of wetlands. The first field trip activity, *Explore a Wetland*, will give students first-hand knowledge of the chosen site and will serve to engender a sense of stewardship. Taking this field trip toward the beginning of your wetlands study will also allow you to collect samples to be used in other activities.

Correlations with California State Content Standards

All activities have been correlated with California State Content Standards in Science, History/Social Science, Math, and English/Language Arts for grades 9-12. The Standards addressed by each activity are listed at the beginning of the activity. They are also presented in matrix format for quick reference in the appendix.





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