



Live Dive: High School Lesson Plan

Overview Students explore the kelp forest with a park ranger-diver through an interactive distance learning program. Program emphasis is on the park's kelp forest inventorying and monitoring program and the rationale for creation of marine protected areas (MPAs). Affects of human activities on kelp forests are also explored.

Grade level Ninth to twelfth grade

Objectives addressed

- Explain the importance of biodiversity to the overall health of an ecosystem.
- Provide examples of human activity that can influence the biodiversity of natural systems.
- Recognize the usefulness of scientific monitoring in determining the health of an ecosystem.
- Describe some controversial aspects associated with creating a network of marine protected areas.

Essential questions

How does change in an ecosystem affect the entire ecosystem?
What affect do humans have on ecosystems?

Duration 30 minutes for Live Dive; variable amount of time for using accompanying materials

Group size Suggest not more than two classes for ideal viewing and interactivity

Setting Classroom or other suitable broadcast location

National/state standards

NS 9–12, C/Life Sciences: Interdependence of organisms; F/Science in Personal and Social Perspectives: Natural resources, environmental quality

Vocabulary Producer, primary consumer, secondary consumer, third-level consumer, decomposer, ecosystem, energy pyramid, food chain, food web, biodiversity

Background See *From Shore to Sea*, Story 4:

www.nps.gov/chis/forteachers/classrooms/from-shore-to-sea-curriculum.htm

The target audience for this curriculum is fourth to ninth grade, but many activities can be adapted for other grade levels:

Materials For How to Participate and the PDF listed below:
www.nps.gov/chis/forteachers/learning/divehs.htm

Live Dive data sheet (PDF)
Pencils

Procedure Follow steps in How to Participate to reserve a Live Dive for your students.
Archived programs are also available: www.nps.gov/chis/planyourvisit/archived-programs.htm

Before the Live Dive

From Shore to Sea, Story 4 provides background information and activities about the kelp forest ecosystem. A short video clip on Story 4 focus question What is Kelp? is also available online: www.nps.gov/chis/forteachers/classrooms/from-shore-to-sea-curriculum.htm

During the Live Dive

The Live Dive lasts 20 to 30 minutes. If you are participating in an interactive Live Dive event, your students will be able to ask the diver questions. Students must speak loudly and clearly. In order to hear them, the diver needs to hold her/his breath, so questions need to be asked quickly. If the ranger cannot hear a student's question, please be ready to repeat the name of the student and the question. The ranger will also ask questions of the students. Many times they can answer loudly in unison.

If you are watching an archived program, you can pause the broadcast when the diver asks a question, allowing your students to answer before hearing the response of the recorded audience.

Students can use Live Dive data sheet throughout the program to record the species they observe. During Live Dive programs for students, a park researcher will be shown recording observations on the same data sheet being used by the students.

After the Live Dive

Exercise 6.2 (Marine Reserves—Where Do You Fit In?) in *From Shore to Sea*, Story 6 is an excellent follow-up to the Live Dive. This digital lab is accessible online: www.nps.gov/chis/forteachers/classrooms/from-shore-to-sea-curriculum.htm

Additional resources

11.11.5 *Many Voices, Many Visions: Analyzing Contemporary Environmental Issues*; 12.2.2/12.2.7 *Sustaining Economies and the Earth's Resources*, California Education and the Environment Initiative (EEI): www.californiaeei.org/Curriculum/

Programs for classes and other organized groups are also available at the park visitor center. Floating Classroom programs to the islands are available through Island Packers, a boat concessioner. www.nps.gov/chis/forteachers/classrooms/fieldtrips.htm

The visitor center bookstore carries many excellent educational materials relating to the park. Educators receive a 20 percent discount upon request.