Activity 1: Experiential learning: field trips and visiting scientist (Melissa Miller, senior wildlife veterinarian at the Department of Fish and Wildlife) who will discuss the inland and ocean factors which affect the health of sea otters and their population status. She will also highlight how the sea otter is a sentinel species which brings awareness to the overall health and vitality of both inland and ocean ecosystems.

Purpose: This activity has two purposes: (1) to provide students with a real life experience of two local ecosystems: (a) wetlands, by visiting the Watsonville Slough, and (b) oceans, by visiting the Monterey Bay Aquarium. Students will make observations of both biotic (animals) and abiotic (non-living things) at both locations. They will also use tools, such as binoculars and microscopes to get a better visual image of particular animals and plants. The second purpose: (2) to provide an opportunity for students to share their results from their scientific inquiry project on water quality (Lesson 4) and receive constructive feedback from an expert, Melissa Miller.

Materials: Binoculars, microscopes, camera, sketch pad and/or field trip journal, poster boards with students' results (by group): nitrate group, phosphate group, pH group, DO/temp group (dissolved oxygen and temperature), and the bacteria group. Melissa Miller brought: sea otter pelts, skulls, bones, teeth, x-rays, and a PowerPoint presentation. We all celebrated with juice and cookies at the end of Melissa's visit.

Common Core Standards:

English Language Arts Standards:

Speaking & Listening:

Comprehension and Collaboration:
CCSS.ELA-Literacy.SL.3.1 (third), 4.1 (fourth), and 5.1 (fifth) Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 3-5 topics and texts, building on other's ideas and expressing their own clearly.

Presentation of Knowledge and Ideas:
CCSS.ELA-Literacy.SL.3.4 (third) Report on a topic or text, tell a story, or recount an experience with appropriate facts and relevant, descriptive details, speaking clearly at an understandable pace.
CCSS.ELA-Literacy.SL.4.4 (fourth) Report on a topic or text, tell a story, or recount an experience in an organized manner, using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.
CCSS.ELA-Literacy.SL.5.4 (fifth) Report on a topic or text or present an opinion, sequencing ideas logically and using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.

Next Generation Science Standards (NGSS):

Disciplinary Core Idea Progression:

Earth Space Science Progression (ESS2.E): Living things can affect the physical characteristics of their environment.

Earth Space Science Progression (ESS3.C): Societal activities have had major effects on the land, ocean, atmosphere, and even outer space. Societal activities can also help protect Earth's resources and environments.

NGSS Science and Engineering Practices:

Engaging in Argument from Evidence:

- ***Compare and refine arguments based on an evaluation of the evidence presented.***
- ***Distinguish among facts, reasoned judgment based on research findings, and speculation in an explanation.***
- ***Respectfully provide and receive critiques from peers about a proposed procedure, explanation or model by citing relevant evidence and posing specific questions.***
- ***Construct and/or support an argument with evidence, data, and/or a model.***
- ***Use data to evaluate claims about cause and effect.***

Obtaining, Evaluating and Communicating Information:

- ***Obtain and combine information from books and/or other media to explain phenomena or solutions to a design problem.***
- ***Communicate scientific and/or technical information orally and/or in written formats, including various forms of media and may include tables, diagrams, and charts.***

Procedure:

Field trips:

- On the field trips, students can make observations and record them in their sketch pads and/or field trip journals. If you want students to observe particular aspects of an ecosystem or characteristics and/or behavior of an animal, you can provide '*search and seek*' questions for students. These are specific questions for students to seek answers to, i.e., make observations. Your main objective is to have fun and encourage students to use all five senses when exploring and making observations.
- During and after the field trips, provide an open discussion space for students to share their experiences with each other and the teacher (including the adult chaperones attending the field trips).
- See pictures in **Word L4** folder.

Visiting scientist:

- Have each group copy their table and graph from their scientific inquiry template books (on water quality, Lesson 4), onto a poster board or the whiteboard to share their results with the visiting scientist.
- Provide an opportunity for each group to practice sharing their results in front of the class. Students should also practice providing constructive feedback to each group presenting their results.
- Celebrate the event with a treat, such as juice and cookies.
- See pictures in **Word L4** folder and **3rd- 5th Students' work L4** folders.

Rating Activity 1

Teachers:
Teachers rating Activity 1 for effectiveness in helping students learn ____

1 not helpful! 2 a little bit helpful 3 helpful 4 very helpful 5 Wow!

Teachers rating Activity 1 for level of enjoyment _____

1 not fun! 2 a little bit fun 3 fun 4 very fun 5 Wow!

Students:
Students rating Activity 1 for helping you learn _____

1 not helpful! 2 a little bit helpful 3 helpful 4 very helpful 5 Wow!

Students rating Activity 1 for level of enjoyment _____

1 not fun! 2 a little bit fun 3 fun 4 very fun 5 Wow!