

MARY POPE OSBORNE

MAGIC TREE HOUSE®

#40 SEA OTTER SUNRISE

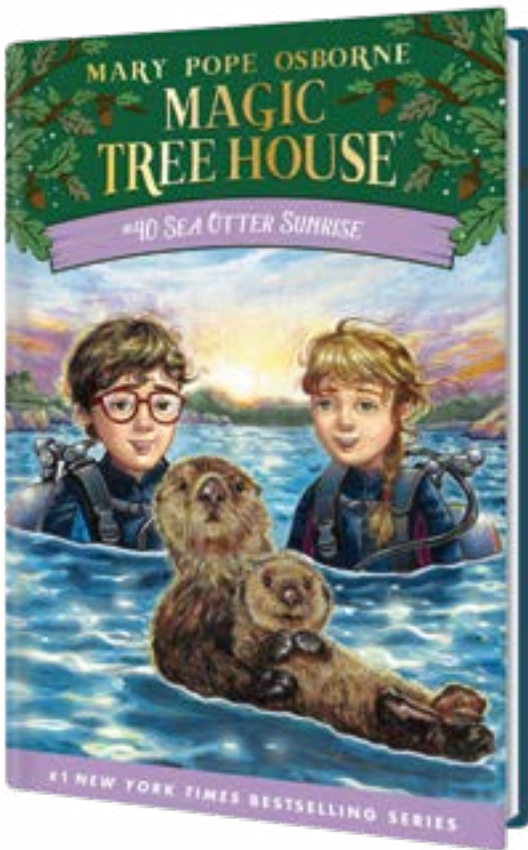


EDUCATORS' GUIDE

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SEA OTTER SUNRISE



About the Book

It's bright and early when the magic tree house spins Jack and Annie to Monterey Bay, California. Their mission is to collect sea urchins in the underwater kelp forests! But they know nothing about collecting sea urchins—can a grouchy boat captain help them? Maybe. But Jack and Annie have another problem when Annie finds a badly injured sea otter. They're not supposed to go near the otter . . . but it's the right thing to do. Can they convince the grouchy boat captain to help them?



About the Author

MARY POPE OSBORNE is the author of the number one *New York Times* bestselling Magic Tree House series as well as coauthor of the Magic Tree House Fact Tracker series, along with her husband, Will; her sister, Natalie Pope Boyce; and her good friend Jenny Laird.



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About the Guide

Sea Otter Sunrise has inspired these activities that plunge students into the wonders of the kelp forest with Jack and Annie. Students will explore how plants and animals in Monterey Bay are connected through food chains and food webs, how sea otters and other species survive and thrive, and how humans can both impact and protect these delicate ecosystems. Along the way, students will discover how divers communicate, express what they've learned through art and poetry, and imagine a brighter future for marine life. From weaving food webs to inventing underwater hand signals, these activities are designed to deepen understanding of science concepts while building empathy, creativity, and curiosity about our natural world.

DIVE IN

Whether they do it for work or recreation, scuba diving lets people explore and experience the ocean. Like Jack and Annie, many students may have never gone scuba diving or have much knowledge about what scuba diving is all about. Start a discussion with the questions below, then work together as a class to research and learn more about scuba diving.

- Have you ever been scuba diving?
- What does “scuba” mean?
- What is scuba diving?
- What equipment do people need to go scuba diving?
- Why do people go scuba diving?
- Where do people go scuba diving?
- What things do people do when they go scuba diving?
- How is scuba diving different from swimming?

If possible, assemble a collection of basic scuba equipment (a mask, fins, a snorkel, a scuba tank, a regulator, pressure and depth gauges, and a buoyancy control device) or print out images of individual pieces of gear. Hide these items or pictures around your classroom or school library, then create a treasure map for your students to follow to find them.

When they have found all the pieces, watch videos of scuba divers in action and talk with students about the things they need to have and plan for when scuba diving. Then ask students to draw themselves as fully equipped scuba divers and include their thoughts about what they would like to see underwater or what they want to learn about the ocean during their dive.

Modifications and extensions:

- Invite someone who scuba dives to share their experiences and read aloud from *Sea Otter Sunrise* in person or virtually.
- Have students explore and research how scuba diving is used in marine science and other [careers](#) and create a poster about a profession where people work beneath the waves.

Resources:

California Science Center:
[How Does SCUBA Gear Work?](#)

PADI: [What Is Scuba Diving?](#)

NOAA: [Virtual Dive Galleries](#)



SCUBA SPEAK

After diving into the bay, Jack is amazed by what he sees underwater: "He wanted to share his thoughts with Annie. But he didn't know the hand sign for *paradise*." Help students to understand more about ways we can communicate by exploring scuba hand signals and coming up with some of their own.

Talk with students about how sound behaves differently underwater than in air, moving at a much faster speed. Divers can hear underwater, but because human vocal cords need air to vibrate, talking doesn't work well. Ask students to close their mouths and hold their noses while trying to hum. Explain that they can't hum because no air is flowing, which means there is nothing to make their vocal cords vibrate to produce sound. Divers are getting air from their scuba equipment, but talking would use up air needed for breathing and it's hard to form words with a regulator in your mouth!

When underwater, hand signals are critical for communication, especially when it comes to safety. Ask students to share hand gestures they already know that send a message, like a thumbs-up, waving, or your classroom signal for quiet. Discuss when and why people use these instead of speaking—for example, in loud places, to get someone's attention, or when they are far away.

Then teach students a few basic scuba hand signals (such as "OK," "look," "go up," or "danger") and practice using them in pairs or as a whole class. After becoming familiar with these, divide students into small groups and challenge each group to come up with two or three original hand signals that could help divers share thoughts

or feelings underwater—like "beautiful," "I'm excited," or "paradise." Have each group present their new signals to the class and explain what each one means and why it would be useful for divers to have.

Wrap up with a reflection on how communication changes depending on the environment, and how people adapt to share ideas in creative ways—even without words.

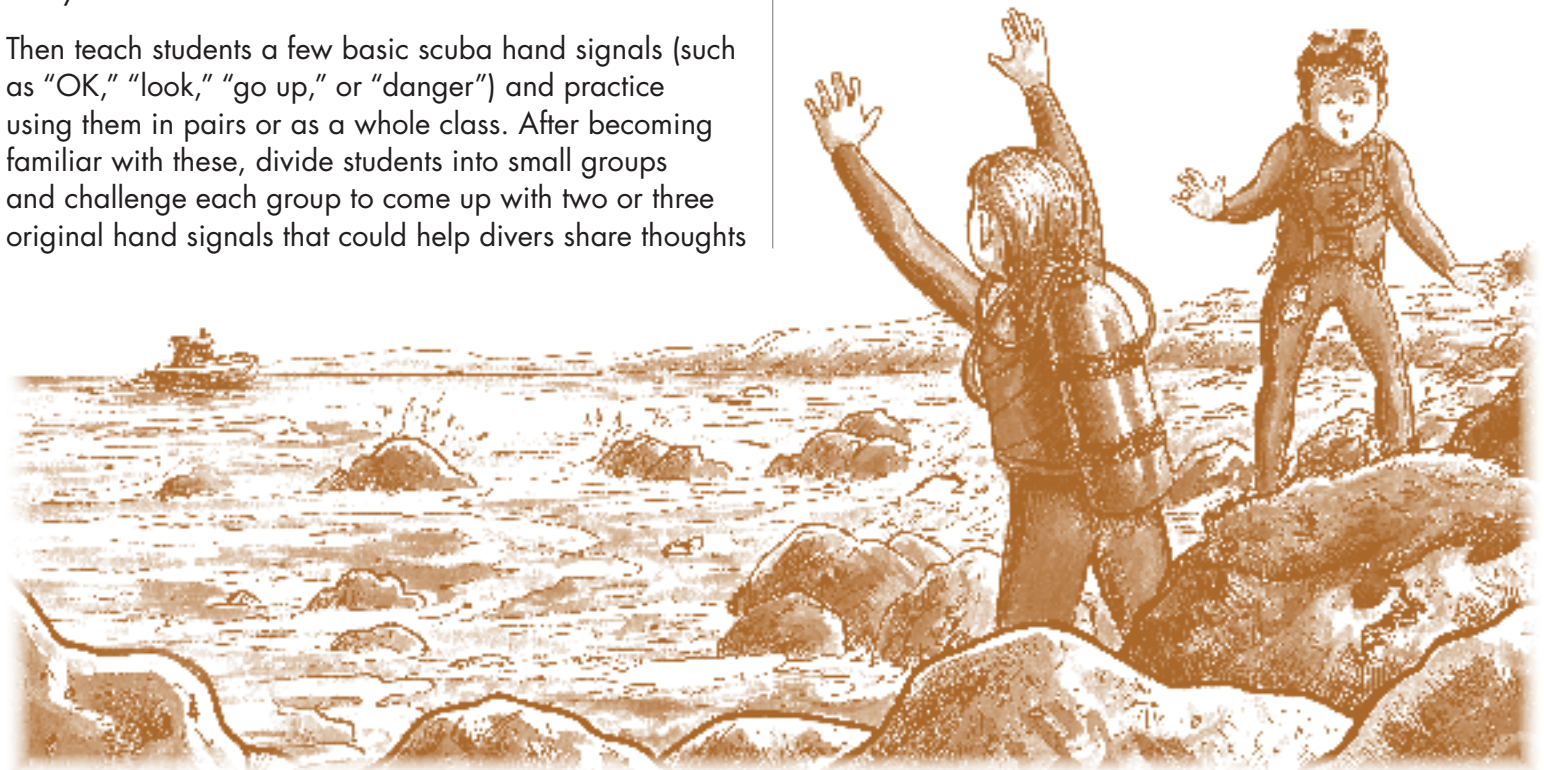
Modifications and extensions:

- Have students create an illustrated communication guide that includes both real and invented hand signals, complete with meanings and when to use them.
- Invite a scuba diver (in person or virtually) to demonstrate hand signals and talk about how they use them during dives.
- Have students research how marine animals communicate underwater and compare it to how humans communicate.

Resources:

Great Divers: [Scuba Hand Signals](#)

PADI: [Scuba Diving Hand Signals](#)



KELP FOREST FOOD WEB

The man aboard the *Summer Sailor* gives Jack and Annie a brief science lesson on how some of the organisms in the bay are connected through what they eat, outlining a kelp → sea urchin → sea otter food chain. Have students explore who eats what in the kelp forest by developing food chains and food webs for the plants and animals Jack and Annie encounter as well as other species that live in Monterey Bay.

Start by talking with students about how producers like kelp and other plants and algae make their own food using sunlight, while consumers such as sea urchins and sea otters eat plants, algae, and other animals to get energy. Explain that this is how a food chain works. Because animals eat more than one kind of food, a food web is used to represent how food chains are connected, which helps us see how all living things in an ecosystem depend on each other.

Next, work together to make a list of the birds, animals, algae, and plants that Jack and Annie come across. Assign each student an organism to research, asking them to focus on the other living things their organism depends on to get their energy. So that every student has a unique organism to research, add other species that live in Monterey Bay as needed.

After students have researched their organism, have them draw and label it on a large index card. Provide a hole punch and yarn so that each student is wearing a card. Ask students to imagine they are their organism as they move around the room to look at their classmates' cards for species they eat or are eaten by. As they meet other species and determine their place in different food chains in the ecosystem, have students create food chain diagrams that include a series of arrows, each pointing from one species to another, representing the flow of energy from food.

Next, gather everyone in a circle. Using a big ball of yarn, begin building a food web, starting with you as the sun. Toss the yarn to a student with a card that features a producer, then ask that student to toss the yarn to a consumer. The recipient of each toss should explain what links them, such as "kelp uses sunlight to make food" or "sea urchins eat kelp," before tossing the yarn to the next species. If someone is at the top of a food chain, they

should throw the yarn back to the sun. Continue until everyone is holding part of the yarn, forming a web.

As students look at the web they've created, discuss how any change in one link of a food chain can impact the food web. Where do humans fit into this food web? How do humans impact the food webs they are part of?

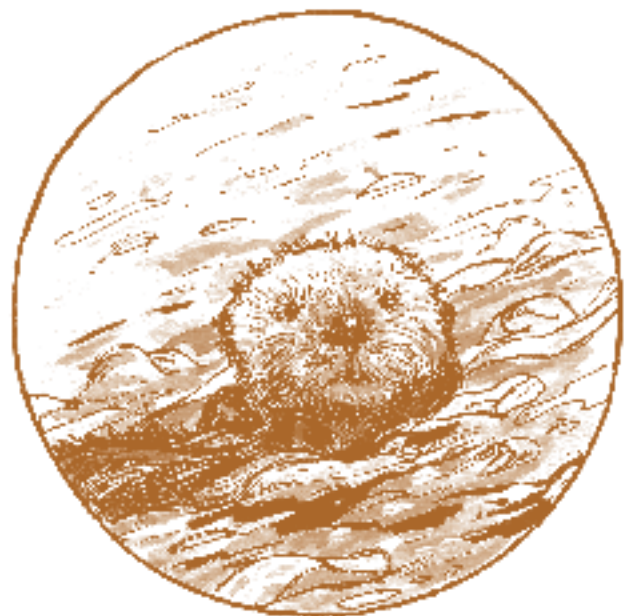
Modifications and extensions:

- If class size dictates, pair students up to research an organism together. They can each make a card, but during the food web activity, one partner catches the yarn and the other tosses it.
- Make this an individual activity by having students pick one living thing from the book and describe or draw how it is connected to others via a food chain or web.
- Explore what happens to this ecosystem if a species is removed. Have students discuss what they think would happen to the habitat and other creatures if a species were to disappear from the food web.

Resources:

Crash Course Kids: [Food Chains Compilation](#)

Monterey Bay Aquarium: [Animals A to Z](#) (including algae and plants)



HEAD INTO THE KELP FOREST

Jack and Annie refer to kelp as trees, but kelp is actually giant brown algae. Kelp might look like a tree, but it has no roots to absorb nutrients. Like trees in a forest, kelp provides food and shelter for many organisms. Reinforce the idea that kelp forests are bustling habitats filled with life when you have students make a crown of kelp to wear.

Start with sharing a video or images of kelp and talk about how it makes an underwater forest. You might also want to introduce some kelp vocabulary—such as algae (plantlike organisms), holdfast (kelp part that attaches kelp to the rocky bottom), and blade (leaflike kelp part that soaks up sunlight)—to help students identify the kelp parts they include in their crown.

Students should also get familiar with the marine animals of the kelp forest. Assign students or small groups of students three or more marine animals that live in or depend on the kelp forest. Students will research their animals—either through books, classroom resources, or guided searches—and focus on what their animals eat and how they use the kelp forest to survive. After completing their research, have students draw, color, and cut out their animals.

To make their kelp crowns, provide each student with a strip or strips of sturdy paper or cardstock to form a headband. Have them create kelp fronds from yellow-green, green, and/or brown construction paper or tissue paper. Secure the fronds to the inside edge of the headband with staples or tape so they rise up or drape down like kelp floating in the current. Then have students add their cut-out marine animals to their kelp forests, spreading them throughout the fronds and securing them with glue or tape.

Once crowns are complete, have students wear them for a “Kelp Forest Walk,” where they walk around the classroom, looking at the diversity of marine creatures in everyone’s headgear before taking a turn to share how kelp helps one of the animals on their crown survive.

Modifications and extensions:

- Provide precut fronds, animal line art, or printed images of marine animals for students who may need support with drawing, coloring, or cutting.
- Offer the option of adding student drawings of Jack and Annie in diving gear in their kelp crowns.
- Have students compare the kelp forest to a terrestrial forest, such as a rainforest or temperate forest, by drawing both on separate halves of the same sheet of paper.

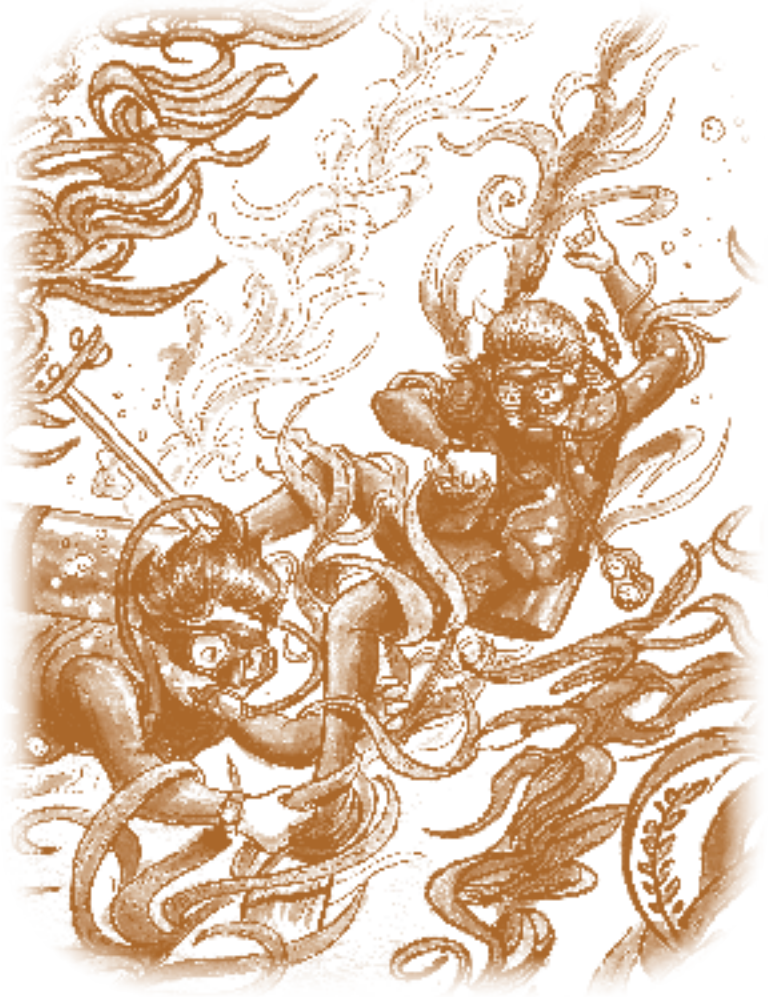
Resources:

Smithsonian Ocean: [Kelp and Kelp Forests](#)

NOAA Office of National Marine Sanctuaries: [Kelp Forest](#)

NOAA: [What Lives in a Kelp Forest](#)

Monterey Bay Aquarium: [Kelp Forest Game and Ebook](#)



THE FUTURE OF SEA OTTERS

Help students explore environmental problem-solving as they envision a hopeful future for sea otters. Have students write a letter from the point of view of a sea otter who lives twenty years in the future that explains the positive actions people took to protect their species and habitat.

Talk with students about what it means for an animal to be extinct, endangered, or threatened; why some animals are endangered; and why humans protect endangered species. Discuss the reasons for animal endangerment and extinction, including those shared in *Sea Otter Sunrise*.

In the first part of their letter, students should describe what life was like for sea otters living in today's world, sharing basic facts about sea otters and threats to their species. In the second part of their letter, have students imagine what people did to help sea otters recover and thrive. Get them thinking about what actions can make the ocean a safer, healthier place. Students can do research and include real solutions like marine protected areas, habitat restoration, or laws that help reduce pollution, or their own ideas that they think could help. To close their letter, students should write what they imagine their sea otter of the future wants to say to children who are living in the present.

Have students read their letters aloud or create a display. Use their work to launch a class discussion about how they can be involved in educating others about protecting species of all kinds and encouraging action.

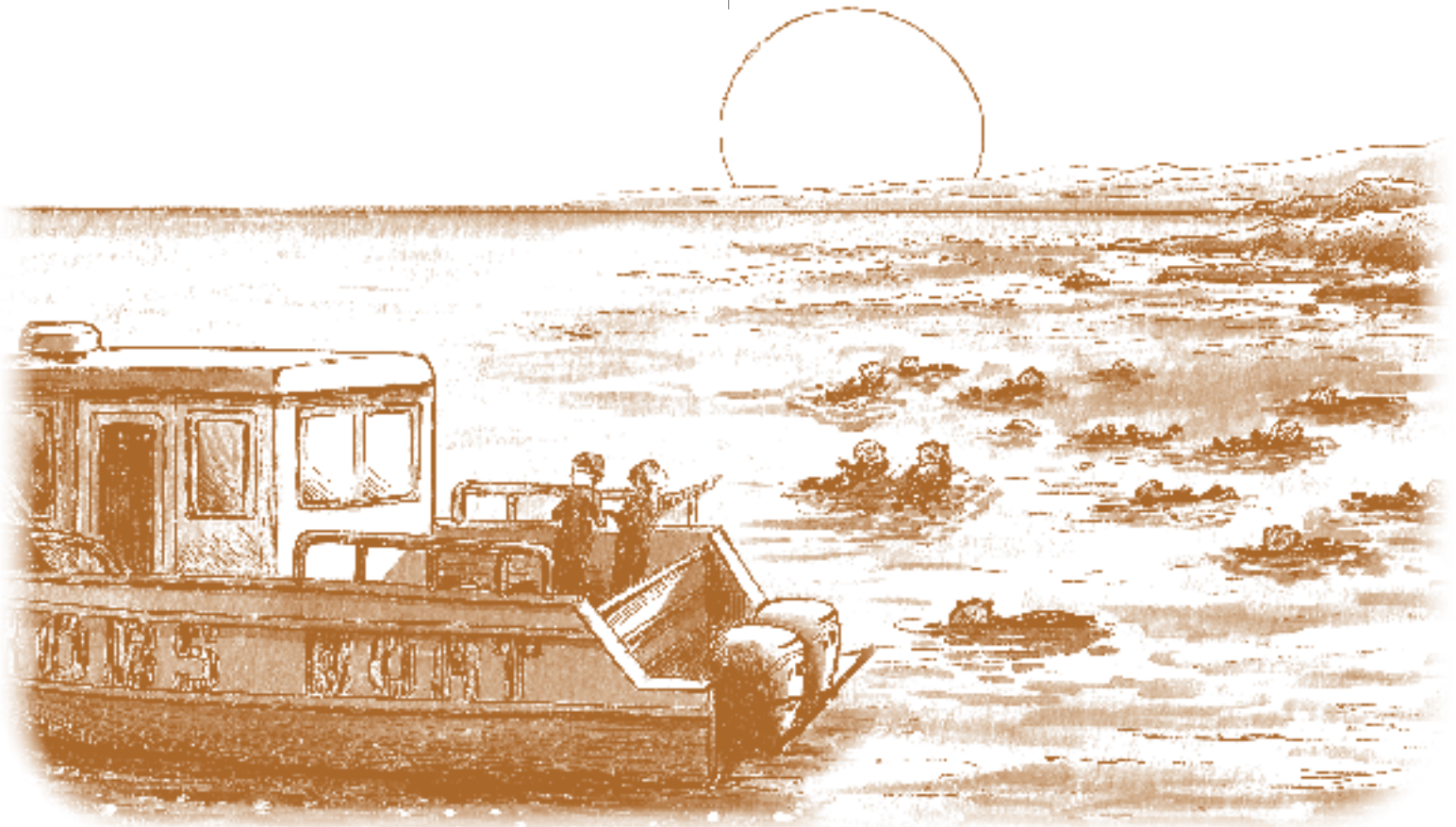
Modifications and extensions:

- Have students illustrate their letter with drawings of the sea otter's habitat—as it is now and what it could look like in the future.
- Students can write a letter from Sunrise's or Bobby's point of view that shares what happened to them after they were rescued.
- Let students know they can speak up for sea otters and other endangered animals by writing letters to lawmakers or by setting up information tables about endangered species to encourage people to learn more.

Resources:

California Coastkeeper Alliance: [The Otter Project](#)

Defenders of Wildlife: [The Extraordinary Sea Otter](#)



OTTERLY ACROSTIC!

Annie loves sea otters! Have students share in her excitement by writing an acrostic poem that describes and celebrates these playful marine animals.

Begin by introducing students to the idea of acrostic poetry, where the first letter of each line spells out a word and each line relates to that word. Review and discuss some fun facts about sea otters. Invite students to consider how sea otters behave and how sea otters make them feel. You can have them use the Otterly Acrostic reproducible for writing the final version of their sea otter poem. When poems are finished, hold a Sea Otter Celebration, where students can share their work aloud or display it around the classroom.

Modifications and extensions:

- Invite students to illustrate their poems with drawings of sea otters or their ocean habitat.
- Let students write their poem about their favorite marine animal.

Resources:

Birch Aquarium: [Kelp Cam](#)

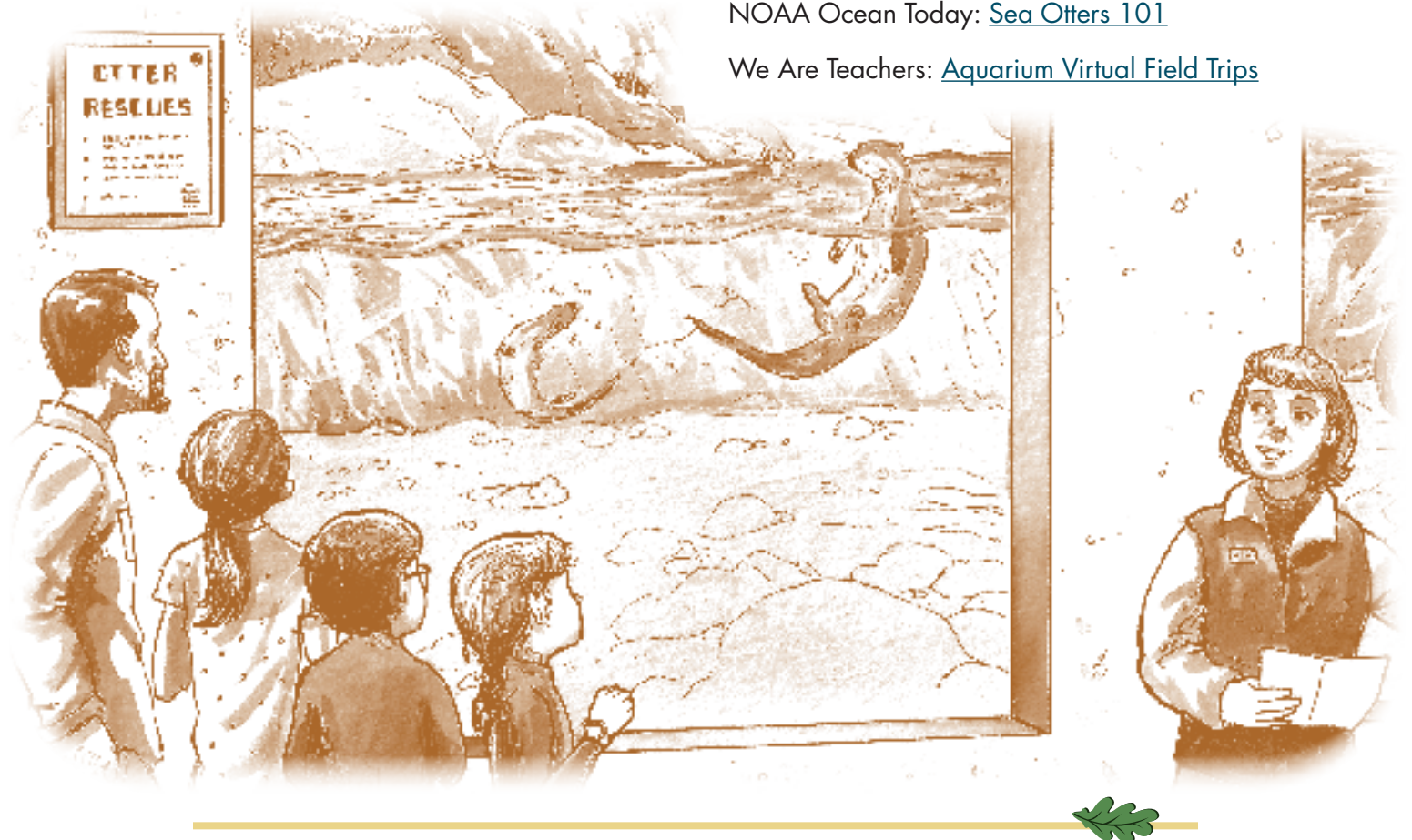
Exploratorium: [Condiment Diver](#)

Monterey Bay Aquarium: [Otter Spotters](#)

NOAA: [Monterey Bay National Marine Sanctuary](#)

NOAA Ocean Today: [Sea Otters 101](#)

We Are Teachers: [Aquarium Virtual Field Trips](#)



Rachael Walker (belleofthebook.com) created this guide. She consults on a wide variety of educational programs and multimedia projects, and develops educational materials and reading resources for children, parents, and teachers.



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OTTERLY ACROSTIC!

Give sea otters some love! Write an acrostic poem that celebrates these playful marine animals. For each letter in the words "SEA OTTER," you write a word or phrase that starts with that letter and describes these creatures.

S _____

E _____

A _____

O _____

T _____

T _____

E _____

R _____



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