



Student Guide Book High School

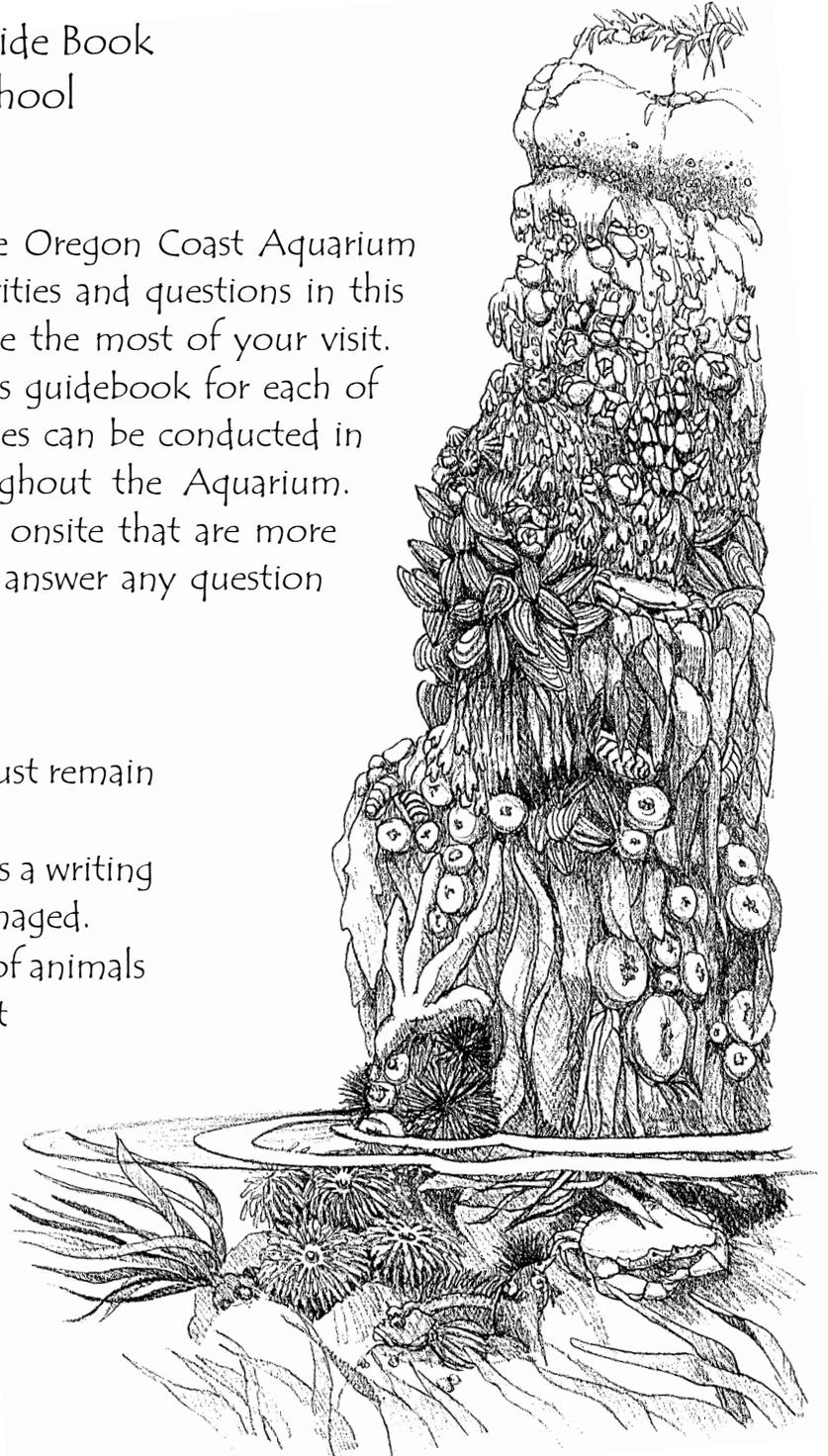
Dear Teachers:

We are so excited you chose the Oregon Coast Aquarium for your field trip. Use the activities and questions in this book with your students to make the most of your visit. Make a double-sided copy of this guidebook for each of your students. All of the activities can be conducted in the galleries and exhibits throughout the Aquarium. There are also trained volunteers onsite that are more than happy to help students and answer any question they might have.

Keep in mind:

- Students and chaperones must remain together at all times
- Please don't use our tanks as a writing surface – they are easily damaged.
- Over 500 different species of animals live here. Keep in mind that tapping on the outside of their tanks won't make them come closer; it will probably scare them into hiding.

Thank you for coming to the
Oregon Coast Aquarium!



Ecosystems

A **habitat** is the physical surroundings in which a species can normally be found. It's kind of like an organism's address. It includes all of the living, or biotic factors, and nonliving, or abiotic factors, needed for an individual to survive including food, water, space and shelter.

Biotic and abiotic factors in an ecosystem interact, and scientists call the study of these interactions **ecology**.

Species Study

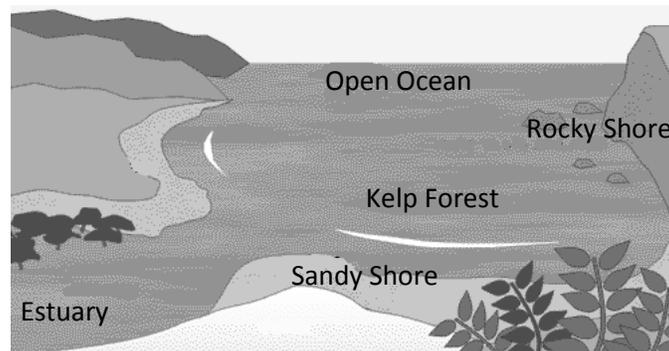
Select a gallery and one specific species that you would like to make careful observations. You are going to do a brief study of this species.

Answer/Complete the following:

Species Common Name:

Scientific Name:

Which ecosystem would you find your species of study? Indicate on the map below.



Describe its natural habitat:

Carefully observe your animal's physical characteristics. Draw and write your observations.

What physical characteristics help your animal survive?

What abiotic factors does your animal need to survive (climate, nutrients, etc.)?

What other organisms are present with your animal?

Briefly describe how your animal interacts with those organisms?
(predator/prey, symbiotic relationships, competition, etc.)

How might your animal's behavior help it survive?

Observe your animal for at least 5 minutes. Check the behaviors you observe and add any behaviors not listed.

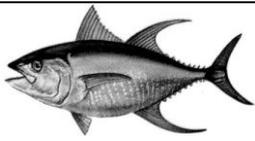
- | | | |
|---|--|---|
| <input type="checkbox"/> dominance behavior | <input type="checkbox"/> grooming | <input type="checkbox"/> interacting with other species |
| <input type="checkbox"/> territorial behavior | <input type="checkbox"/> sleeping | <input type="checkbox"/> Other: |
| <input type="checkbox"/> submissive behavior | <input type="checkbox"/> gathering food/eating | |
| <input type="checkbox"/> resting | | |

Natural Selection

Natural selection is a difference in survival or reproduction among individuals based on how well their traits suit them for their environment. Over the course of generations, traits that were favorable are passed along to offspring and become a trait within the population/species.

Fish Form and Function

The body form of fish species is the result of natural selection. Body shapes allow aquatic animals to swim fast or slow, to mimic their surrounding, and to protect themselves. Each habitat a species lives in has dictated, through natural selection, the body type an animal needs to have to survive.

Body Shape	Type	Example	Fish
	Fusiform- appears round head on and bullet shaped		Tuna
	Compressed- flattened from side to side		Angelfish
	Depressed- flattened from top to bottom		Flounder
	Eel-like- shaped like a long tube or ribbon		Eel

Find an example of each of these body shapes. Make the following observations of each:

1. Draw the fish.
2. Describe how the fish moves through the water? (Consider speed, motion, etc.)
3. What part of the habitat does it appear to reside? (Near the surface, on the ground, near plants, etc.)

FUSIFORM

COMPRESSED

DEPRESSED

EEL-LIKE

Choose one of these examples and describe how the species shape might help increase survival in its habitat.

Conservation

The ocean and humans are closely connected. Humans use the ocean for natural resources, transportation, recreation and food. We, as humans, have direct impacts on ocean ecosystems. There are a number of species on display at the aquarium that are closely connected to humans, sometimes in negative ways.

List some of the evidence/examples you have seen in exhibits today that highlight the connection between humans and animals.

What is an environmental issue that you think affects an Oregon marine species you have seen today?

Develop a **research question** about this environmental issue and how it may impact a species you have seen today.

Form a **hypothesis**.

Test your Hypothesis.

Create a plan of how you could collect evidence that proves or disproves your hypothesis.

PLAN

1. What observations can you make about the species, where they live and their physical and behavioral characteristics?
2. How can you use resources at the Oregon Coast Aquarium, such as up close animal observations, staff, volunteers and signs to test your hypothesis?
3. What additional resources could you use outside of the aquarium to test your hypothesis?

DO

1. Make careful observations of the species or ecosystem. What do you observe about species' behaviors and physical characteristics? What do you observe about the environment?
2. Ask volunteers and/or staff and read signs for additional information that helps test your hypothesis.

Analyze your Data:

1. From your observations, highlight evidence that supports or disproves your hypothesis.
2. Do you have enough evidence to prove or disprove your hypothesis?
3. Do you need to collect more information?

Draw Conclusions:

Write a conclusion sentence describing how your evidence proves or disproves your hypothesis. If you cannot make a conclusion at this time, how do you need to modify your question or data collection?

What can humans do to reduce the impact of marine debris on ocean ecosystems?

Share your Results:

How can you share your results about this conservation issue with others?

Extension: When you return to the classroom, study the effects of marine debris on your species or ecosystem even more. Share your results with other students, parents, teachers, etc.

Creative Writing

Rockfish are one of the longest living fish, possibly living as long as 200-years in some areas of Alaska. Write the story or thoughts of a wise old rockfish.