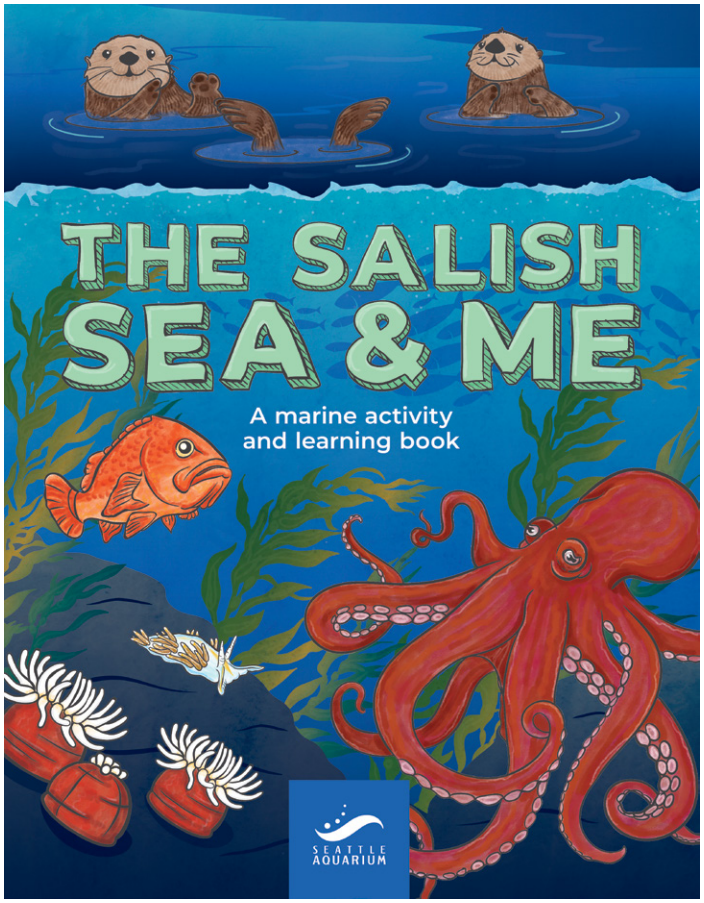
TEACHER'S GUIDE OVERVIEW



This guide has been created for teachers to facilitate *The Salish Sea and Me* activity and learning book with their class, provide more context to the activities and give background information on the marine world. There are also supplemental activities and resources provided.

The activity book can be used in many ways in and out of the classroom. The pages within the book can be taught as standalone activities and used as supplemental information to existing curriculum, or students can be guided through the book in a linear way. This activity book can also be used in a classroom setting or as take-home activities.

Topics were designed to encourage students to interact with peers or other adults to enhance social emotional awareness. Schools and educators are now being asked to support students in areas beyond the core subjects. This guide aims to provide context for educators who are less familiar with marine science or social emotional learning (SEL).

SEL activities help students to better understand themselves and the people they interact with. These activities also encourage students to reflect on their own emotions. Basic activities that help students identify the emotions they are feeling can help a child to feel in control of a situation. Taking the time to focus on integrated SEL lessons will lead to gains in all areas. We hope this activity book gives support to emotional wellbeing in a fun, interactive way.

WHO WE ARE

Seattle Aquarium's mission is *inspiring conservation of our marine environment.*

Our mission is reflected in everything we do—exhibits, events, conservation and education programs, research activities and more. The buildings are located on the Seattle downtown waterfront on the shores of Puget Sound. Puget Sound and the world's one big connected ocean are major themes throughout the Aquarium. Seattle Aquarium's mission begins here at home through community action, conservation action and sustainable operations.

We strive to bring families and the community together in awe and understanding of the ocean and its importance to life on Earth. Beautiful, majestic and teeming with a rich diversity of life, our precious Puget Sound is in trouble.

Our goal is for every visitor to the Aquarium to come away with new knowledge about the life dwelling within the Sound, as well as what can be done to help preserve it. We also make sure we "walk the talk" regarding conservation issues within our facility. We work to ensure sustainability in all aspects of our operations, in ways that are mutually beneficial to all communities.

CONNECTIONS

Honoring Place

What do you think of when you hear the word Suquamish? What about Muckleshoot? These are the names of just some of the indigenous tribes that live around Seattle. Indigenous peoples have lived on this land since time immemorial, or longer than anyone can remember.

Throughout this book, you will see words that may be new to you. These are what native peoples call the plants and animals in their language. There are many different languages, and we have chosen just some of the words used in the area where the animals are found. Indigenous peoples have a special relationship to the land and animals that call it home.

We, too, honor the ocean and know it's a big responsibility to take care of this amazing place that is home for animals. We hope you are inspired to teach other people about ocean ecosystems so future generations can have a healthy ocean, too!

Many students have heard the names of a few indigenous tribes but may not know how many peoples have lived on this land since time immemorial. There are over 29 tribes federally recognized in Seattle, but this does not include all the indigenous people in the area. The curriculum Since Time Immemorial: Tribal Sovereignty in Washington State was tribally designed to help educators teach about tribal history and present-day tribes.

This activity book attempts to describe the perspective of people that are using and interacting with ocean resources daily, and honoring these relationships is an important part of conservation knowledge and work. Seattle Aquarium aims to extend the Since Time Immemorial curriculum taught in schools into understanding the relationships between indigenous people and ocean knowledge.

Seattle Aquarium recognizes the importance of honoring place and recognizing the indigenous stewards of the land since time immemorial. Within the activity book, a child-appropriate land acknowledgment has been included. We encourage teachers to research the indigenous peoples that occupy and care for the land in your area. A website to find recognized tribes is included in the resources section.

Encourage conversations about how the land looked before urbanization and how conservation issues can be tied to the ways we have changed natural spaces. The conversation surrounding the places that we occupy is most important.

Animal Names

People around the world speak many different languages and use many different names for the same animal. For example, a sea urchin is called “wana” in Hawaiian and “sḵʷiċ”” in the Lushootseed language. In the student activity book, you will see animal names in different languages including ones that may use unfamiliar letters, characters and symbols. When you learn a new word, practice saying it out loud with your students to honor all the people that care about our animals and ocean! You can find online pronunciation guides that can help you practice and find many more words this way.

To incorporate an understanding about different languages, the student activity book includes animal names in native languages. Lushootseed is one language used by tribes in the Pacific Northwest, and some animal names include characters not used in English. Use this opportunity to talk to your students about how English uses the 26 letters of the alphabet, but these letters are not used in all languages. Some languages use characters where we use letters. There are even sounds in other languages that are not used in English.

While the Lushootseed language was used to name animals of the Pacific Northwest, choosing one language for animals in other regions is more complex. We have chosen different languages to highlight animals from different areas of the world. The chosen name is a snapshot of how one group of people may speak about an animal, but it should not negate other people’s languages. Our aim is to expose students to different perspectives while recognizing the importance of the many ways that people have relationships with and discuss our ocean’s inhabitants. Using many languages is one way to focus on the importance of the intersection of native and scientific knowledge and explanation.

SEATTLE AQUARIUM LAND ACKNOWLEDGMENT

We are honored to be responsible guests on the traditional and contemporary territories of the Coast Salish people, who have stewarded these lands and waters since time immemorial.

Seattle Aquarium is committed to developing a strong foundation for long-lasting and mutually beneficial partnerships with Tribal Nations, urban Native peoples and, as our mission grows, the Indigenous peoples of the Indo-Pacific and their local diaspora.

We strive for reciprocal, respectful relationships rooted in the sovereignty of our Indigenous hosts. We too give thanks to the ocean and all our ocean relatives we have the honor to care and advocate for, be in relationship with, and be educators with for the future wellbeing of our shared Earth.

SCIENCE STANDARDS

The following standards are covered in the *Salish Sea and Me* marine activity and book as of 2023. We recommend using these standards as guidelines for determining whether these activities can be useful in meeting the goals of your curriculum.

NGSS Standards

3-LS2-1

LS2.D: Social Interactions and Group Behavior
Being part of a group helps animals obtain food, defend themselves and cope with changes. Groups may serve different functions and vary dramatically in size.

3-LS3-1

LS3.A: Inheritance of Traits
Other characteristics result from individuals' interactions with the environment, which can range from diet to learning. Many characteristics involve both inheritance and environment.

LS3.B: Variation of Traits
Different organisms vary in how they look and function because they have different inherited information.

3-LS4-2

Variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates and reproducing.

3-LS4-3

Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well and some cannot survive at all.

4-LS1-1

Construct an argument that plants and animals have internal and external structures that function to support survival, growth and reproduction.

LS1-A: Structure and Function
Plants and animals have both internal and external structures that serve various functions in growth, survival, behavior and reproduction.

5-PS3-1

LS1-C: Organization for Matter and Energy Flow in Organisms
Food provides animals with the materials they need for body repair and growth and the energy they need to maintain body warmth and for motion.

LS2-B: Cycles of Matter and Energy Transfer in Ecosystems
Matter cycles between the air and soil and among plants, animals and microbes as these organisms live and die.

ACTIVITY GUIDES

Below you will find guides for each page within the activity book. Each section starts with a suggested script, but you know your students the best. Use this as a guide, but feel free to modify and utilize these pages in whatever way works best for your classroom.

The guides also include some background on the activity, providing information on animals and SEL concepts. Recommended extension activities are also included.

❶ SUGGESTED SCRIPT

A more detailed explanation of the activity that you can read to your students. Feel free to read this verbatim or put in your own words.

❷ ACTIVITY OBJECTIVES

The core idea behind the activity that we hope students take away from it.

❸ SEL STANDARDS

Social Emotional Learning standards covered. You can use these to track which standards are taught. Updated 2023.

❹ SCIENCE BACKGROUND

Extra science information that you might find useful in the activity. Many more facts about marine animals can be found at Seattle Aquarium's website.

❺ SEL BACKGROUND

Extra social-emotional learning information that you might find useful to understand the purpose of the activity.

❻ FACILITATION TIPS

Suggestions for setting students up for success as they do the activity.

❼ TOPIC EXTENSIONS

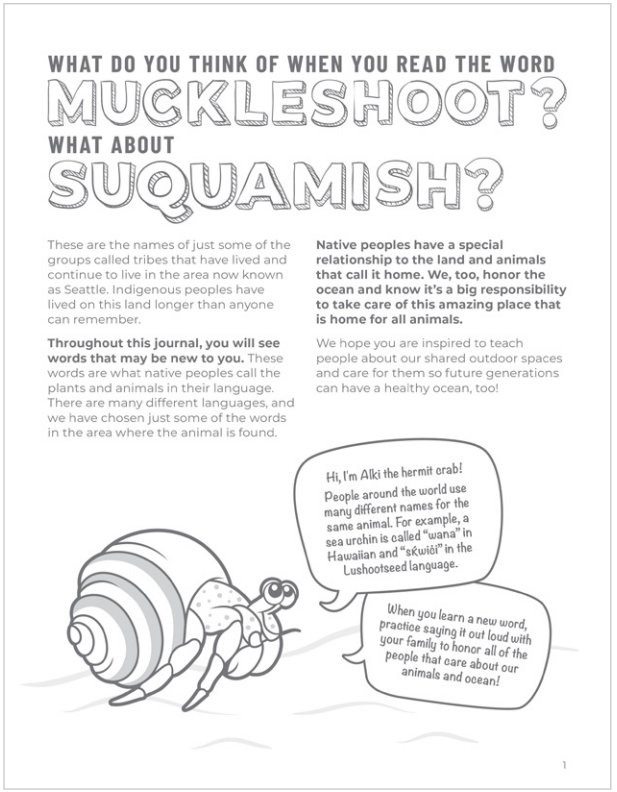
Optional ways to extend this activity beyond these pages including discussions, crafts or a related activity.

Honoring Place

INTRODUCTION: PAGE 1

Seattle Aquarium recognizes the importance of honoring place and recognizing the indigenous stewards of the land since time immemorial. Within the activity book, a child-appropriate land acknowledgment has been included.

We encourage teachers to research the indigenous peoples that occupy and care for the land in your area. A website to find recognized tribes is included in the resources section. Encourage conversations about how the land looked before urbanization and how conservation issues can be tied to the ways we have changed natural spaces. The conversation surrounding the places that we occupy is most important.



What's on the Menu

ACTIVITY 1: PAGE 2-3

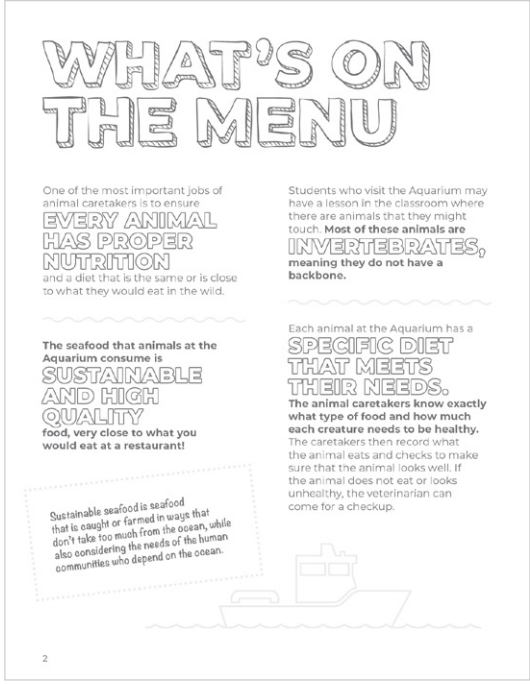
❶ SUGGESTED SCRIPT

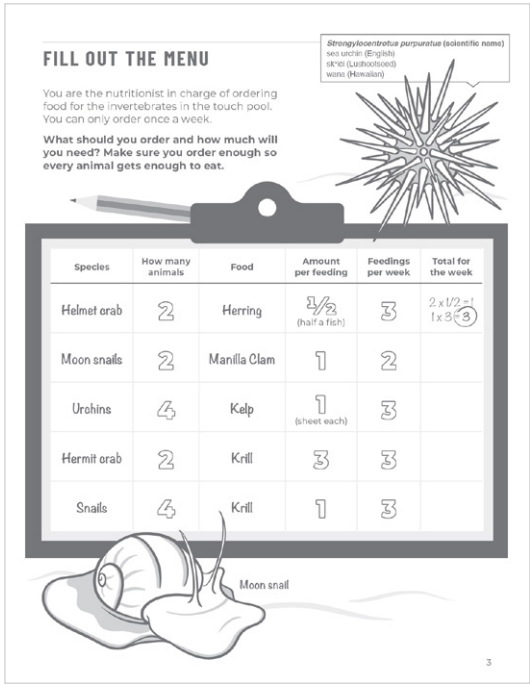
Every organism needs food and water to survive. Animals under human care, such as those at Seattle Aquarium, need a diet that accommodates what they would eat in the ocean. Proper nutrition ensures that animals grow healthy.

Most aquarium animals are fed sustainable, restaurant-quality seafood that was frozen and thawed. Offering frozen food decreases the chance that there will be parasites that could be transferred to the animals. In addition, the food is caught sustainably so that enough of each fish is left in the ocean for future generations. The food provided is often the same quality as the food that you could order in a restaurant!

Keeping detailed, accurate records of what the animals eat is vital to animal health. Making detailed observations about the animals in their care ensures that potential diseases are noticed, and the veterinary care staff can be called if anything abnormal is noticed.

For this activity, you will pretend that you are an animal care staff. Your job is to prepare the weekly diet for the invertebrates in the classroom. There are five species in the Aquarium, but there might be more than one individual of each species. Use the chart to calculate how much total weekly food you will need to order for the collection. The first example for the helmet crab is done for you.





What's on the Menu

ACTIVITY 1: PAGE 2-3

❷ ACTIVITY OBJECTIVES

The students will consider the needs of another animal and understand how animals' needs are met under human care.

❸ SEL STANDARDS

- Standard 2: Self-Management 2B
- Standard 3: Self-Efficacy 3A
- Standard 4: Social Awareness 4B

❹ SCIENCE BACKGROUND

Each animal at the Aquarium receives proper nutrition through a specialized diet. Animal care staff ensures that the animals receive the correct calories and food type to accommodate what they naturally eat.

❺ SEL BACKGROUND

Students will notice that animal needs are similar to their own. Students may have a special diet if they are allergic to certain foods or may have things they prefer to eat. Their guardians may prepare their specialized meals similar to what the animal care staff does for organisms in their care.

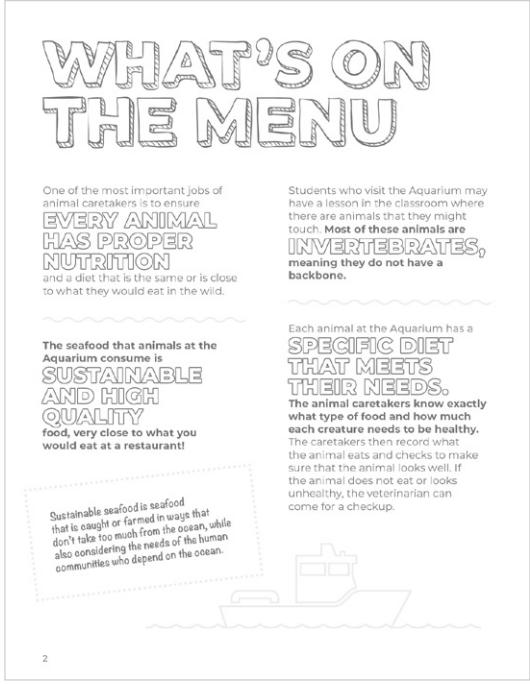
❻ FACILITATION TIPS

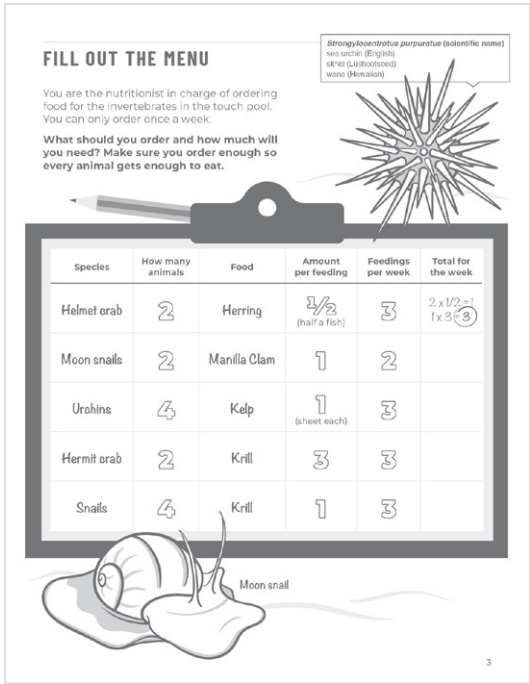
Depending on your students, you can do more of the chart with the whole class or have them work in pairs.

❼ TOPIC EXTENSIONS

Students can examine the lunch menu at their school. How much food is ordered weekly to feed all of the students? How does the staff ensure that balanced, healthy meals are provided?

Students can also create a weekly food order for an animal of their choice. How would they ensure that the organisms receive all of their dietary needs?





Vet Care For Animals at the Aquarium

ACTIVITY 2: PAGE 4-5

❶ SUGGESTED SCRIPT

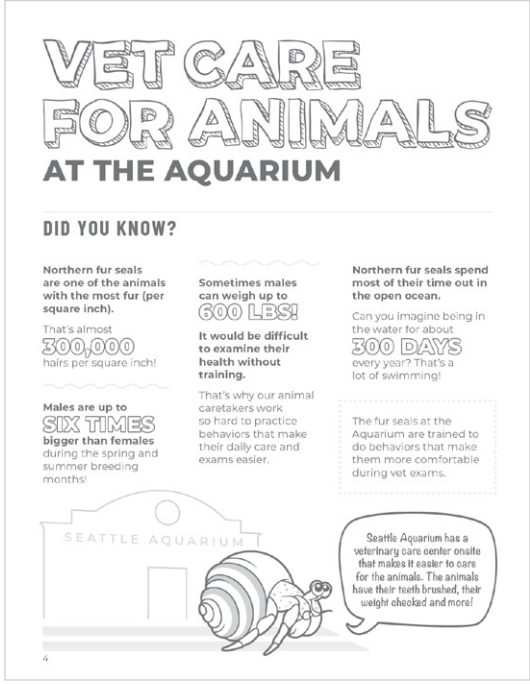
Think about when you go to the doctor. You may be there because you are not feeling well or you may need to go for a routine checkup. Every animal at the Aquarium—from tiny to very large—receives medical care from an expert veterinary team. The team includes vets who are board-certified in zoological medicine or certified in fish medicine.

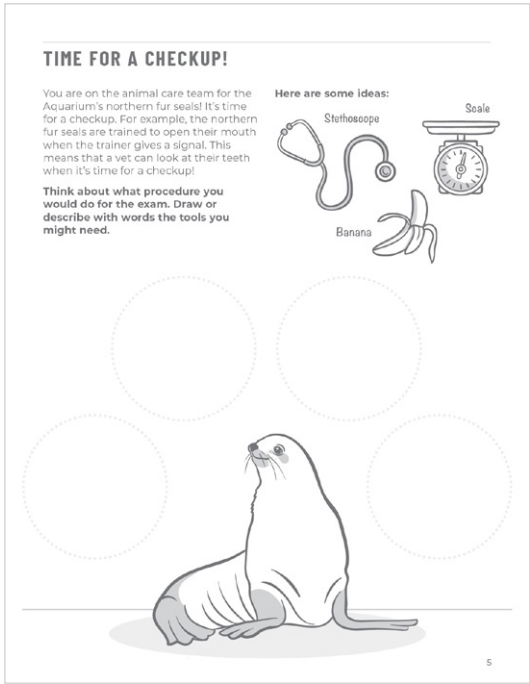
Seattle Aquarium's Veterinary Care Center includes state-of-the-art medical equipment (digital x-rays, ultrasound and endoscope) and a public viewing window so that the vet team can share what they do. The team handles a wide range of patients and issues, from a tufted puffin's routine checkup to emergency care for hypothermic sea turtles that wash ashore on the outer coast.

The animal care staff works hard to make sure that the Northern fur seals are healthy. Regular checkups ensure that changes in behavior or other differences are noticed quickly by the vet team.

Training animals makes their vet care less stressful. Animal care staff practice behaviors with the seals daily, such as opening their mouth on a hand signal. This means that the animals are comfortable doing the behavior and will readily open their mouth if someone from the vet team needs to examine their teeth.

The animal care staff uses special tools to examine the animals. Draw or write about what tools you would use if you worked at Seattle Aquarium.





Vet Care For Animals at the Aquarium

ACTIVITY 2: PAGE 4-5

2 ACTIVITY OBJECTIVES

Students will consider the needs of another animal, understand how to take care of animals under human care and explore careers in the animal field.

3 SEL STANDARDS

- Standard 2: Self-Management 2B
- Standard 3: Self-Efficacy 3A
- Standard 4: Social Awareness 4B
- Standard 6: Social Engagement 6B

4 SCIENCE BACKGROUND

Northern fur seals belong to the “eared seal” family. Due to the fur trade, this species population decreased by 50%, but Northern fur seals and all other marine mammals are now protected under the Marine Mammal Protection Act and the Fur Seal Act.

5 SEL BACKGROUND

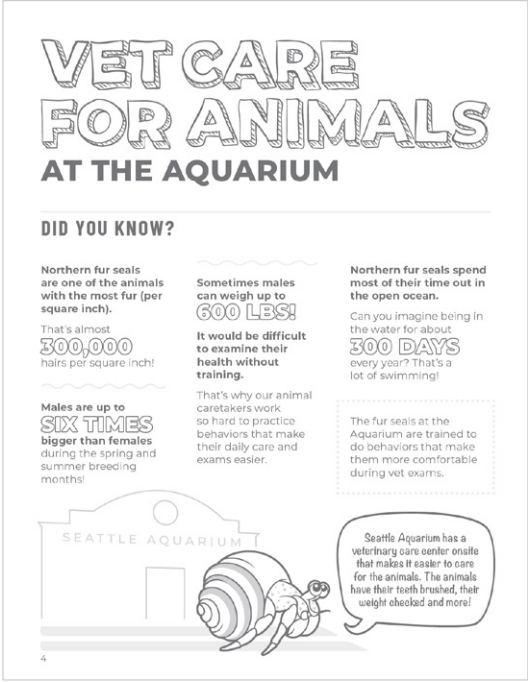
Research shows that encouraging and developing empathy for animals in children is an important motivator toward action on the animals’ behalf. Creating empathy for animals is one of the first steps toward taking steps for ocean conservation.

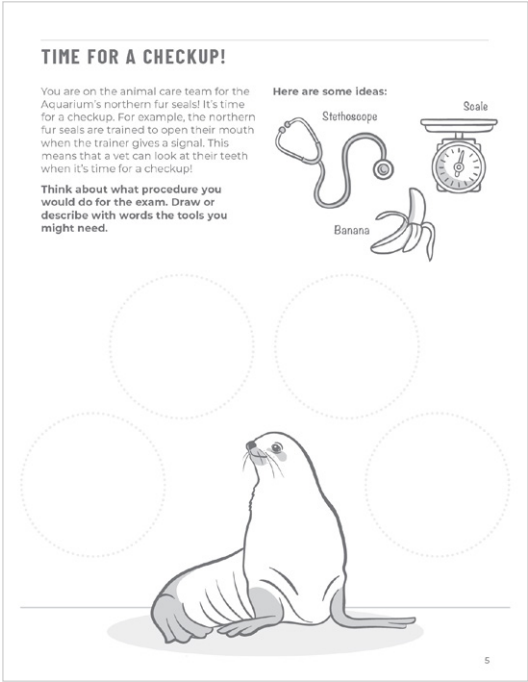
Through this activity, students will see the connections between medical care and the importance of offering high-quality veterinary care for animals. They will begin to understand what it takes to keep animals healthy at the Aquarium and how different careers at the Aquarium help care for animals.

6 TOPIC EXTENSIONS

Here are some more questions you can ask students:

- How would a vet’s job be different if they were rescuing seals in the wild? How would you keep humans and animals safe?
- What would you do if you found an injured animal on the beach?
- What tools does a human doctor use? Are these the same or different than veterinary tools?
- What behaviors could you practice with an animal to make it less stressful during a vet exam?





I'm a Baby Harbor Seal

ACTIVITY 3: PAGE 8-9

1 SUGGESTED SCRIPT

Has anyone ever seen a marine mammal in the waters around Seattle? What is a marine mammal? Have you ever seen a seal? How would you know if it was a seal or a sea lion? Harbor seals do not have external ears and have short flippers on the front of their body. Harbor seals are found year-round in Washington waters, and are often found resting on beaches and rocks. They lift their head and back flippers when resting on land, making them look like the shape of a banana!

All marine mammals are protected under the Marine Mammal Protection Act, so humans have to take special precautions when they are around them. This means that people have to stay a certain distance away whether the animal is on land or in the water. People are not supposed to disrupt natural animal patterns, such as migrating, breathing, nursing, breeding, feeding or sheltering.

Many kinds of marine mammals live in the Puget Sound and harbor seals are one of them. Seals spend time on land when they are not traveling or foraging at sea. They will also gather in groups on land to avoid predators.

Females also give birth and nurse their pups on land. When a seal is born, it can swim right away and hold its breath for up to two minutes after it is only a couple days old. When the pup is a month old, it can swim on journeys of more than 100 miles!

Mother seals take care of their babies for a while and then the pups go out on their own. There are many things that can hurt a young harbor seal. Follow the maze to see some hazards a pup might encounter.

YOU CAN HELP MARINE ANIMALS THAT ARE STRANDED, OR STUCK, ON LAND.

Remember that not all seals on land are injured or sick; they are usually healthy if they are in the "banana shape" (with their head and back flippers off the ground). If you are worried about the animal, you can call the Marine Mammal Stranding Network.

I’m a Baby Harbor Seal

ACTIVITY 3: PAGE 8-9

❷ ACTIVITY OBJECTIVES

The students will understand that animals must avoid predators and obstacles to survive, and humans can help marine mammals by understanding them and contacting the proper authorities if they think they need help.

❸ SEL STANDARDS

- Standard 1: Self-Awareness 1C
- Standard 2: Self-Management 2B
- Standard 5: Social Management 5C

❹ SCIENCE BACKGROUND

Harbor seals are a familiar sight in the Puget Sound region. Their heads pop out of the water while we walk along the shore, cross the Sound by ferry, sit in a waterfront restaurant or look out over Elliott Bay when we visit the Aquarium’s harbor seal exhibit! Charming and playful, harbor seals captivate us with their gentle eyes, droopy whiskers and round bodies.

During the pupping season, mother seals give birth on secluded local beaches. They occasionally need to go out to sea to feed themselves so that they can produce enough milk for the fast-growing pup. During this time, the pup is vulnerable and relies on its spotted fur for camouflage.

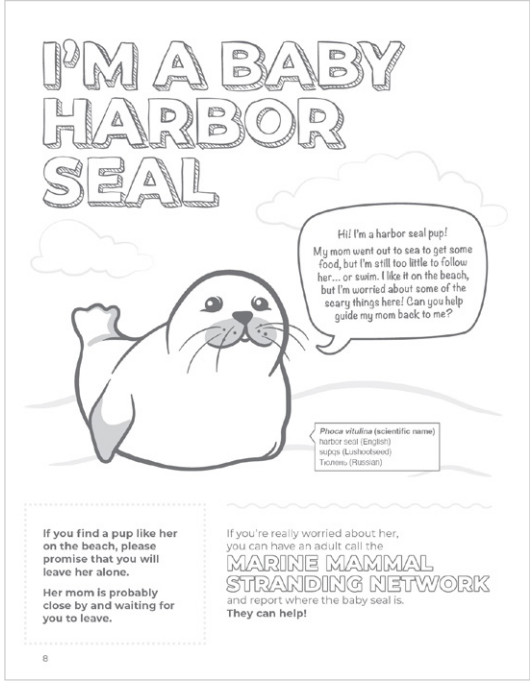
❺ SEL BACKGROUND

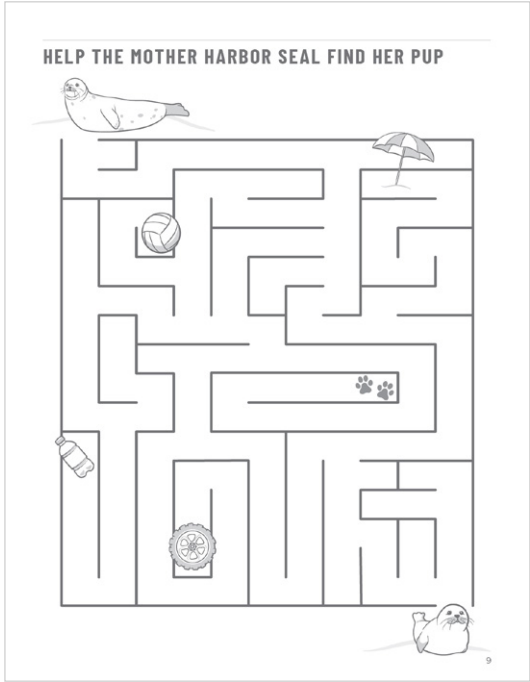
Students are starting to understand that their actions have an effect on animals and habitats. Marine mammals take care of their young, similar to humans taking care of babies. Students can compare the care needed for harbor seals with human babies.

❻ TOPIC EXTENSIONS

What would you do if you saw someone doing something that violated the Marine Mammal Protection Act? How would you ensure that the animal is safe and make sure that you are safe as well?

Research areas around Washington where harbor seals are found. How would you make sure that these spots are safe for seals for generations to come?





Animal Ethogram

ACTIVITY 4: PAGE 10-11

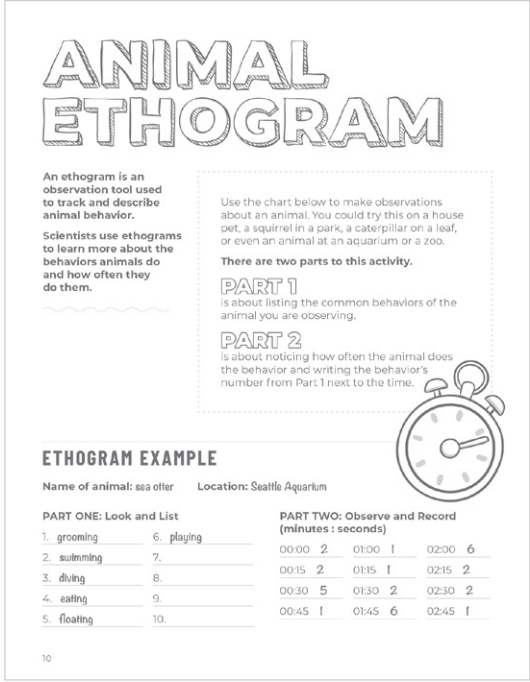
1 SUGGESTED SCRIPT

What is an observation? An observation is something you notice. When you observe something, you use your senses. You may see something with your eyes. Scientists make a lot of observations. How do you think they keep track of and remember their observations? They might use a notebook. They might draw what they see. They might even record a video of whatever they are observing.

One tool that many scientists use when making observations is an ethogram. An ethogram is a chart that scientists fill in with times and behaviors of an animal they are actively observing. A scientist may observe an animal for a set amount of time. During that time, they may set a timer and each time that timer goes off they will write down what that animal is currently doing. This way, scientists get an idea of how often a behavior happens.

Ethograms can be used anywhere and for any animal. Some animals are more active and will do a lot of different behaviors. Others may do the same behavior during the whole time they are being observed. That is okay because what we are trying to discover is what behaviors an animal does most regularly.

This activity has two parts. First, we will observe an animal and write down all the behaviors we see them doing. Then, we will set a timer and at set times we will write down the behavior that the animal is doing at that exact moment.



ANIMAL ETHOGRAM

An ethogram is an observation tool used to track and describe animal behavior.

Scientists use ethograms to learn more about the behaviors animals do and how often they do them.

Use the chart below to make observations about an animal. You could try this on a house pet, a squirrel in a park, a caterpillar on a leaf, or even an animal at an aquarium or a zoo.

There are two parts to this activity.

PART 1 is about listing the common behaviors of the animal you are observing.

PART 2 is about noticing how often the animal does the behavior and writing the behavior's number from Part 1 next to the time.

ETHOGRAM EXAMPLE

Name of animal: sea otter Location: Seattle Aquarium

PART ONE: Look and List

1. grooming	6. playing
2. swimming	7.
3. diving	8.
4. eating	9.
5. floating	10.

PART TWO: Observe and Record (minutes : seconds)

00:00 2	01:00 1	02:00 6
00:15 2	01:15 1	02:15 2
00:30 5	01:30 2	02:30 2
00:45 1	01:45 6	02:45 1

10

FILL OUT YOUR ETHOGRAM

NAME OF ANIMAL:

LOCATION:

PART 1: Look and List

1.	6.
2.	7.
3.	8.
4.	9.
5.	10.

PART 2: Observe and Record (minutes : seconds)

00:00	01:00	02:00
00:15	01:15	02:15
00:30	01:30	02:30
00:45	01:45	02:45

DRAW YOUR ANIMAL HERE!

11

Animal Ethogram

ACTIVITY 4: PAGE 10-11

❷ ACTIVITY OBJECTIVES

Students will have a tool to observe an animal. By following this procedure, the students will observe different behaviors and notice the frequency of behaviors in an animal over a short amount of time.

❸ SEL STANDARDS

- Standard 3: Self-Efficacy 3A
- Standard 4: Social Awareness 4A

❹ SCIENCE BACKGROUND

Ethograms are a tool used by many scientists. They are often used to understand what behaviors are normal for an animal or if a change in environment has changed the behaviors of an animal.

❺ SEL BACKGROUND

Being aware of the things you notice and paying close attention to your surroundings can lead to more self-awareness. By categorizing behaviors of others, you may become more aware of the things you do.

❻ FACILITATION TIPS

Here are some additional questions for your students to consider:

- Did the animal do the same behavior throughout the time you were observing or did the animal do many different things?
- Did you observe something you had never seen this animal do before?
- What would you do differently next time you use an ethogram?
- Did the animal do the same thing many times? Is there a way you could break down that behavior into different types of behaviors? For example: Grooming could be broken down into grooming foot and grooming tail.

❼ TOPIC EXTENSIONS

This ethogram only has room for 10 behaviors and has time slots every 15 seconds for three minutes. You could make your own ethogram with a longer list and a different amount of time. For example, you could make an ethogram for a 10-minute observation with a slot for a behavior every 30 seconds.

Using ethograms, you can compare different individuals of the same species, different individuals of different species or even the same individual in different settings, such as location or time.

Ethograms could also be used to make observations of other people. Make sure that if students do this, they get consent to observe each other beforehand.

Animal Habitat

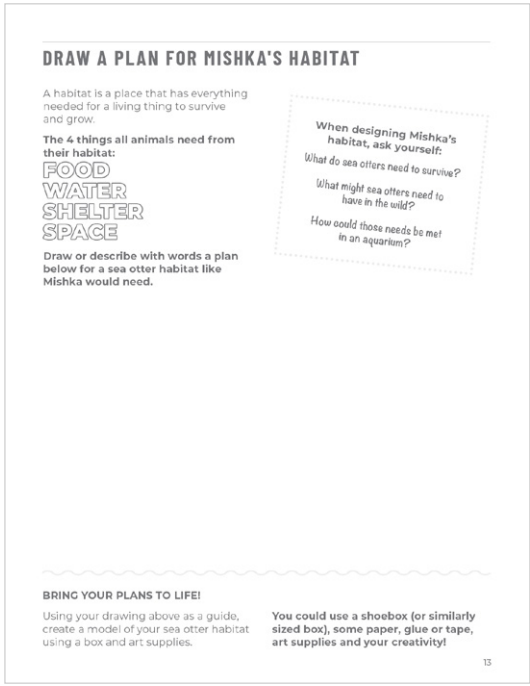
ACTIVITY 5: PAGE 12-13

❶ SUGGESTED SCRIPT

What is a habitat? A habitat is a place that has everything needed for an organism to live and grow. Parts of a habitat include food, water, shelter, and space. We are going to learn about Mishka, a sea otter at Seattle Aquarium. Her favorite food is shrimp and she loves sitting in a barrel of ice. The animal care team at Seattle Aquarium makes sure all her needs are met. They also make sure she has regular enrichment. Enrichment could be things like that barrel full of ice or a special toy.

I would like you to think of the things a sea otter needs to have in their habitat. Draw your ideas of the habitat. Then using a shoe box and other art supplies, we are going to make a model of a sea otter habitat.


BUILD AN
ANIMAL HABITAT
A SEA OTTER BIOGRAPHY
HELLO MY NAME IS
Mishka
Меня зовут: Мишка
BORN IN:
2014
She was found entangled in a fishing net and rehabilitated by the Alaska SeaLife Center.
FAVORITE FOOD:
SHRIMP
She even loves to eat the shrimp tails, too! These are a good source of fiber, which is extremely important for a sea otter's digestive system.
FAVORITE THINGS:
ICE
She loves to crunch on ice and sit in a barrel of ice.
12


DRAW A PLAN FOR MISHKA'S HABITAT
A habitat is a place that has everything needed for a living thing to survive and grow.
The 4 things all animals need from their habitat:
FOOD
WATER
SHELTER
SPACE
Draw or describe with words a plan below for a sea otter habitat like Mishka would need.
When designing Mishka's habitat, ask yourself:
What do sea otters need to survive?
What might sea otters need to have in the wild?
How could those needs be met in an aquarium?
BRING YOUR PLANS TO LIFE!
Using your drawing above as a guide, create a model of your sea otter habitat using a box and art supplies.
You could use a shoebox (or similarly sized box), some paper, glue or tape, art supplies and your creativity!
13

Animal Habitat

ACTIVITY 5: PAGE 12-13

❷ ACTIVITY OBJECTIVES

Students will consider the needs of an animal. Students will use their imagination, make a plan by drawing and then use resources to create a model.

❸ SEL STANDARDS

- Standard 2: Self-Management 2B
- Standard 3: Self-Efficacy 3A
- Standard 4: Social Awareness 4B

❹ SCIENCE BACKGROUND

A habitat includes food, water, shelter and space. Different organisms meet these needs in different ways. Some animals need a lot of space to move around, while others may stay in a small area. Some animals need to eat many times a day, while others can go months without food.

❺ SEL BACKGROUND

This activity has students using empathy to think of what a sea otter needs to survive and thrive.

❻ FACILITATION TIPS

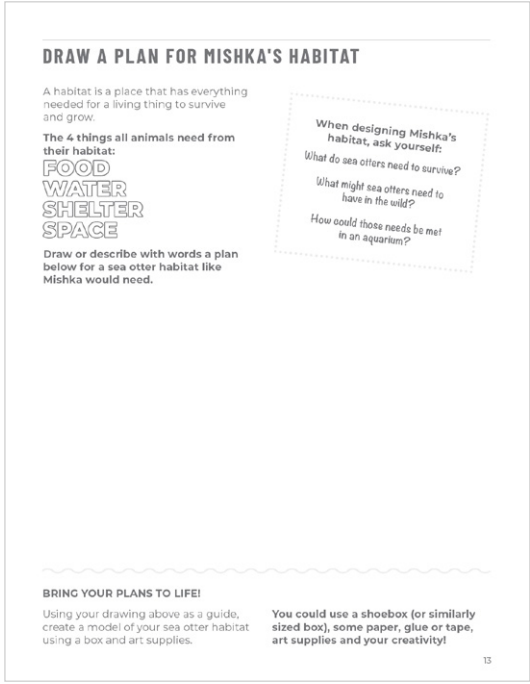
When brainstorming the things a sea otter may want in its habitat, students might mention things you know would not actually be helpful. That is okay. Will a sea otter use a pizza oven for food? No. Does it show that students are considering the needs of another and relating those needs to their own? Yes.

❼ TOPIC EXTENSIONS

This activity can be paired with the Dream Home activity to give students a chance to think of both their needs as well as another animal's.

This activity could be done for any organism. You could have your students pick their own animal and create a whole ecosystem of habitats in your classroom.


BUILD AN
ANIMAL HABITAT
A SEA OTTER BIOGRAPHY
HELLO MY NAME IS
Mishka
Меня зовут: Мишка
BORN IN: 2014
She was found entangled in a fishing net and rehabilitated by the Alaska SeaLife Center.
FAVORITE FOOD: SHRIMP
She even loves to eat the shrimp tails, too! These are a good source of fiber, which is extremely important for a sea otter's digestive system.
FAVORITE THINGS: ICE
She loves to crunch on ice and sit in a barrel of ice.
12


DRAW A PLAN FOR MISHKA'S HABITAT
A habitat is a place that has everything needed for a living thing to survive and grow.
The 4 things all animals need from their habitat:
FOOD
WATER
SHELTER
SPACE
Draw or describe with words a plan below for a sea otter habitat like Mishka would need.
When designing Mishka's habitat, ask yourself:
What do sea otters need to survive?
What might sea otters need to have in the wild?
How could those needs be met in an aquarium?
BRING YOUR PLANS TO LIFE!
Using your drawing above as a guide, create a model of your sea otter habitat using a box and art supplies.
You could use a shoebox (or similarly sized box), some paper, glue or tape, art supplies and your creativity!
13

Dream Home

ACTIVITY 6: PAGE 14-15

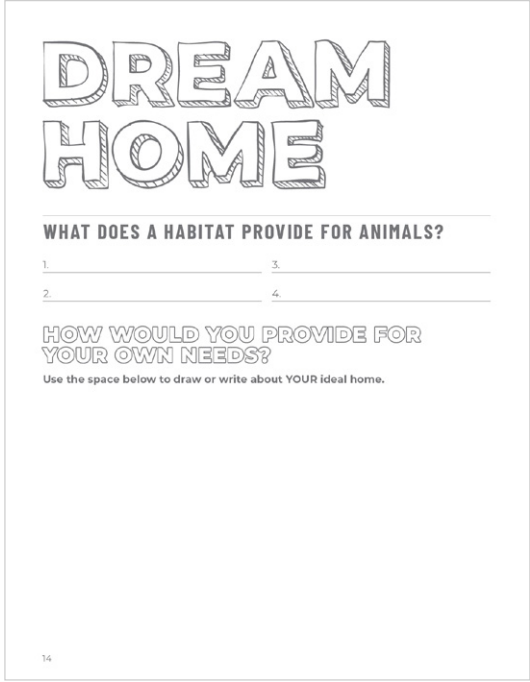
❶ SUGGESTED SCRIPT

What is a habitat? A habitat is a place that has everything needed for an organism to live and grow. Parts of a habitat include food, water, shelter and space. Those needs are met in different ways for different animals.

I want you to think about the habitat that you call home. If you could create your own dream home, what would you include? Your basic needs must be met, as well as other things to enrich your life.

❷ ACTIVITY OBJECTIVES

Students will think about what makes a habitat a home for animals and relate that to their own wants and needs by creating a version of their own ideal home.


DREAM HOME

WHAT DOES A HABITAT PROVIDE FOR ANIMALS?

1. 3.

2. 4.

HOW WOULD YOU PROVIDE FOR YOUR OWN NEEDS?

Use the space below to draw or write about YOUR ideal home.

14


A HERMIT CRAB'S DREAM HOME

There are more than 500 SPECIES of hermit crabs around the world!

Each hermit crab might think different things make a dream home.

Alki the hermit crab is trying to find a NEW SHELL that will be his dream home.

His abdomen isn't covered by a tough EXOSKELETON like the rest of his body, so he wants a shell that is hard to protect him.

Hermit crabs can smell dead or dying snails and follow the scent to find newly emptied shells.

As Alki gets older, he will MOLT his exoskeleton and will also need to find new, bigger shells.

This shell is getting tight! I need a bigger shell with plenty of space inside. It needs to be solid so it will protect me from predators.

Which of these do you think Alki the hermit crab would like as his next shell?

A. B. C.

15

Dream Home

ACTIVITY 6: PAGE 14-15

3 SEL STANDARDS

- Standard 1: Self-Awareness 1C
- Standard 2: Self-Management 2B

4 SCIENCE BACKGROUND

A habitat includes food, water, shelter and space. Different organisms meet these needs in different ways. Some animals need a lot of space to move around, while others may stay in a small area. Some animals need to eat many times a day, while others can go months without food. It all depends on the ways that animals have adapted to live in their environment.

5 SEL BACKGROUND

Students will reflect on their own needs in this activity.

6 FACILITATION TIPS

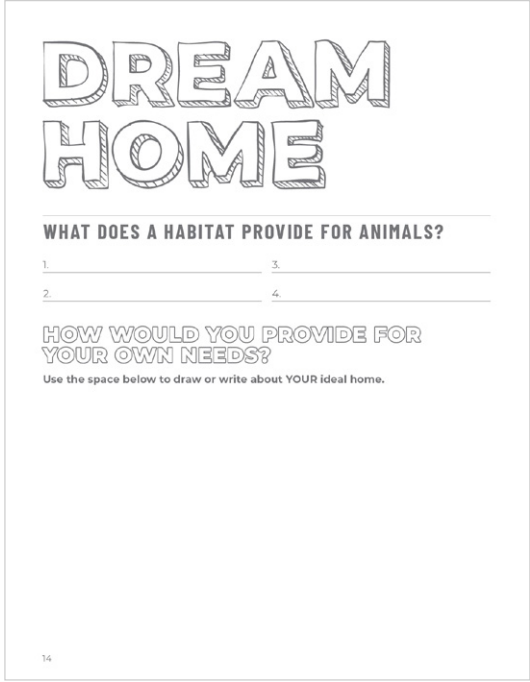
Have your students think of the parts of a habitat and how they would apply those needs to themselves.

- How will you get food? Will you have a place to store food? A place for food to grow? A kitchen to prepare food?
- Do you like a lot of space to move around or a cozy room like a cave?
- How will your home keep you safe from weather?

7 TOPIC EXTENSIONS

Just as with the Animal Habitat activity, you could have students create a model of their ideal home.

Students could share their dream homes in smaller groups and have a conversation with other students to understand how different people prioritize different needs in their life. Students could discuss the things they would like in a dream home and then create the plans for their partner's dream home. They could present their ideas to each other and ask more questions and then make a second plan. This would introduce iterative thinking to the process and receiving peer feedback.


DREAM HOME

WHAT DOES A HABITAT PROVIDE FOR ANIMALS?

1. 3.

2. 4.

HOW WOULD YOU PROVIDE FOR YOUR OWN NEEDS?

Use the space below to draw or write about YOUR ideal home.

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Which of these do you think Alki the hermit crab would like as his next shell?

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15

You Otter Know

ACTIVITY 7: PAGE 18-19

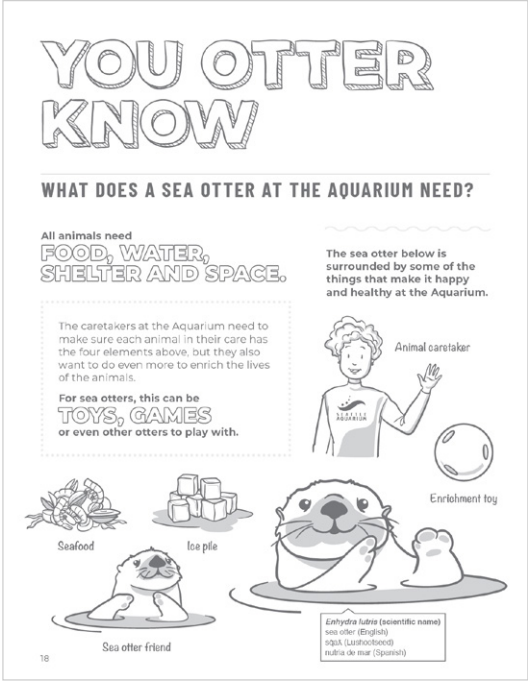
❶ SUGGESTED SCRIPT

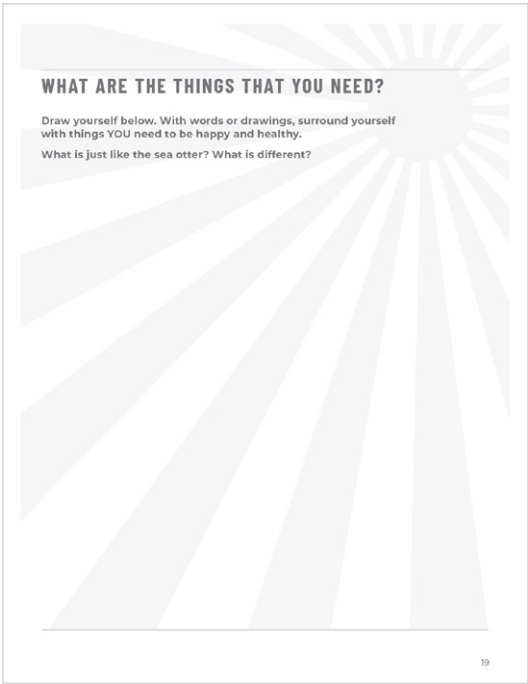
What do you need to keep you happy? What is needed for survival? Do animals need the same things that you do? What about sea otters at Seattle Aquarium?

All animals need food, water, shelter and space to survive. Sea otters eat 25–40% of their body weight every day to stay healthy and warm. That is like a human that weighs 100 pounds eating 25 pounds of food daily. That is about 12 personal pizzas!

Seattle Aquarium animal care staff gives the sea otters enrichment like puzzles and toys to keep their minds active.

Think about what a sea otter would need to survive and what you need to keep yourself healthy. What do you have in common? What is different? Draw or write about it in the space on the page.





You Otter Know

ACTIVITY 7: PAGE 18-19

❷ ACTIVITY OBJECTIVES

Students will understand that humans and animals need basic things to keep them healthy.

❸ SEL STANDARDS

- Standard 6: Social Engagement 6A, 6C

❹ SCIENCE BACKGROUND

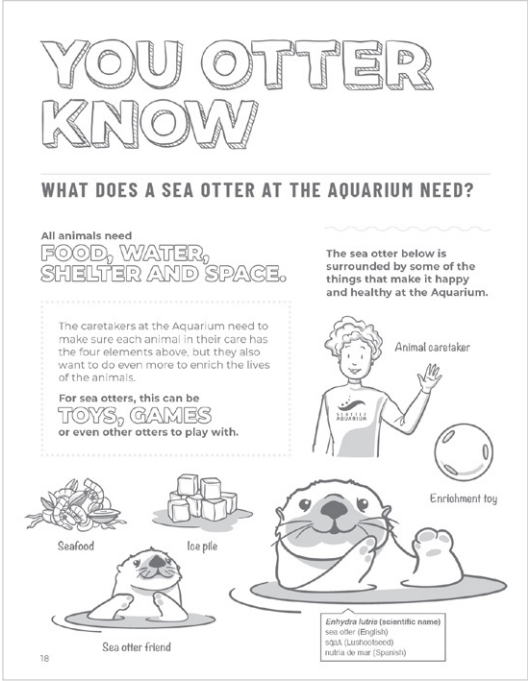
Sea otters, like many other marine mammals, are intelligent and social animals. Because of this, animal care staff have to think of creative ways to invoke their natural behaviors. For sea otters, this often means encouraging them to solve puzzles and demonstrate training behaviors to receive yummy treats.

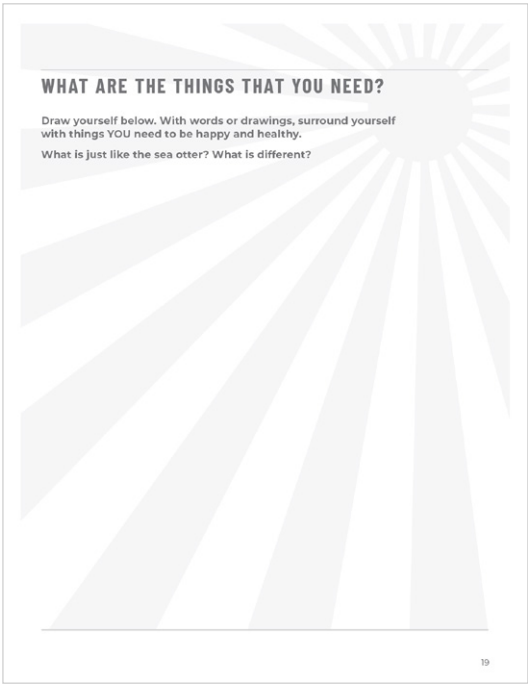
❺ SEL BACKGROUND

Students are beginning to understand the differences between needs and wants. All animals, including humans, need food, water, shelter and space. Students can identify the similarities and differences between what they need and what sea otters need. Things like toys and games are not necessary for survival but make life more fun!

❻ TOPIC EXTENSIONS

What things would sea otters like to play with? What things might they like but are not safe? What things do wild sea otters do for fun? How do they teach their babies about what is safe?





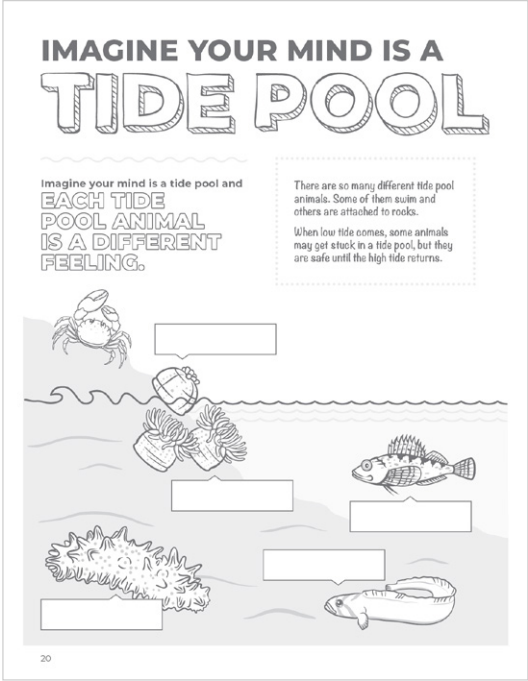
Your Mind is a Tidepool

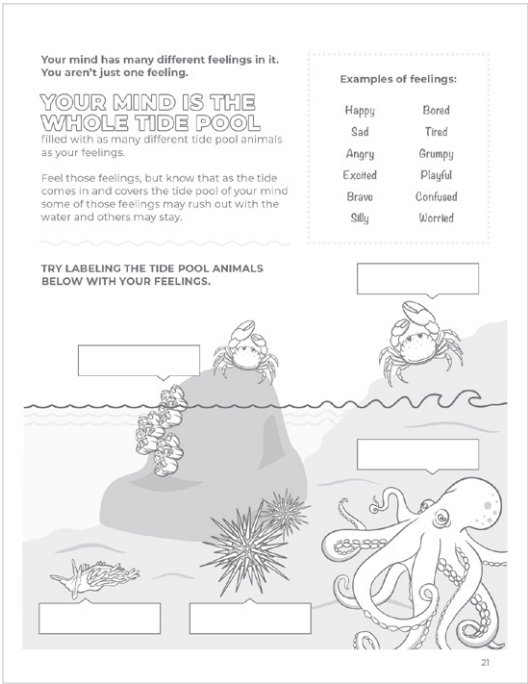
ACTIVITY 8: PAGE 20-21

❶ SUGGESTED SCRIPT

What is a tide pool? A tide pool is an area on a beach where water remains even when it is low tide and the rest of the ocean has retreated. When it is high tide, the tidepool may be covered in water and connect to the ocean, but during low tide it may be separated from the ocean. Some animals that live on the beach find safety in tidepools during low tide.

Just how the tide pool is full of so many different animals, there are a lot of feelings that we all feel at different times during the day. What are some feelings you have felt recently? For this activity, I would like you to think of your mind as a tide pool. Your feelings are the animals that live on the beach. Some of your feelings might feel overpowering, but I would like you to remember that the tide will change. Other feelings will join your tidepool. You are the whole tide pool, not just one feeling.





Your Mind is a Tidepool

ACTIVITY 8: PAGE 20-21

❷ ACTIVITY OBJECTIVES

Students will think of themselves as more than just the feelings they are feeling in this moment, but as a whole person who has many feelings.

❸ SEL STANDARDS

- Standard 1: Self-Awareness 1A
- Standard 2: Self-Management 2A

❹ SCIENCE BACKGROUND

The intertidal zone is a complex ecosystem. The organisms that live there are well adapted to live among so much change while still specializing to their unique area on the beach.

Animals like sea anemones, sea urchins and sea stars hold on tight to rocks while waves crash over them. As the tide changes on the beach, the animals change as well. Barnacles that become exposed to air will close to retain moisture. Small fish will find a safe spot in a tide pool where water will remain until high tide returns.

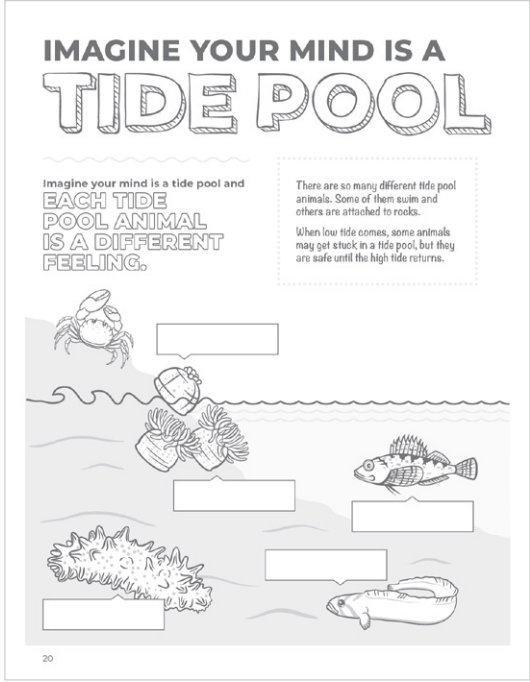
On most coastlines, there are two high tides and two low tides per day.

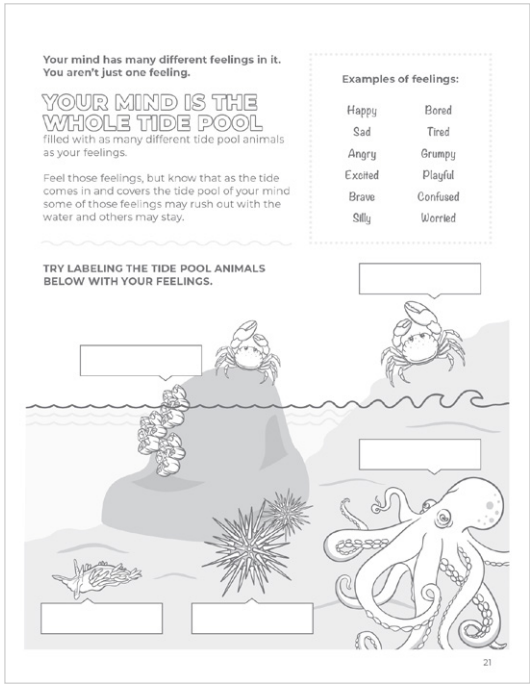
❺ SEL BACKGROUND

There is a commonly used mindfulness technique of imagining your mind as a pond with different types of fish swimming. This activity takes that and adapts it to a tidepool.

It is helpful for students to be able to identify their feelings, acknowledge them and not be controlled by their feelings. The student's mind is the whole tidepool, not just one of those feelings. Having this activity focus on a tidepool also brings in the time element of the changing of the tides.

During low tide, a tidepool may feel crowded and like there is only one feeling, but over time the tide will return. The tidepool will be reconnected with the ocean and those feelings can drift back out with the tide.





Your Mind is a Tidepool

ACTIVITY 8: PAGE 20-21

6 FACILITATION TIPS

To introduce this concept, you could first discuss tides and the differences on the beach between high and low tide. Show a picture of a high tide and ask the students what animals might be under the water. Then show a picture of low tide and ask the students which animals swam out with the water and which animals found safe spaces in tide pools or are exposed to the air.

Have your students imagine their mind as one tidepool that is fully underwater during high tide but cut off from the ocean during low tide. Which feelings are swimming around in their tidepool? Which feelings are just waiting for a change to move back toward the ocean and which ones have found a permanent home in the tidepool?

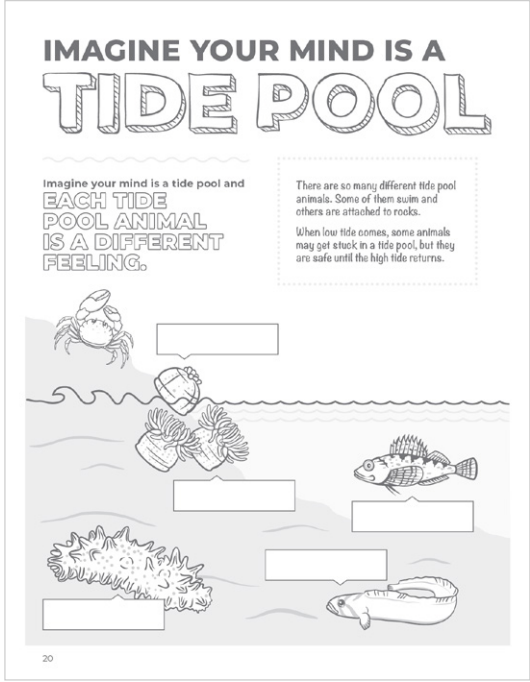
Breathing exercises and any mindfulness practices you already use in your classroom may pair well with this activity.

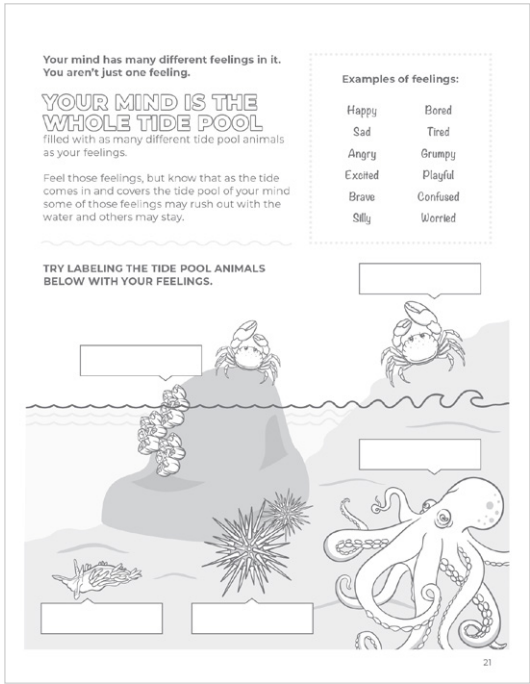
7 TOPIC EXTENSIONS

Movement activities can also help with describing tides. You could use blue scarves or fabric and have students lift them up for high tide and lower them for low tide.

When filling out this page, you can encourage students to think about the animals they are using to represent their feelings. Maybe an octopus is playful while a crab is angry. What goes into students deciding where they will place their feelings in the tidepool?

You could work with your students to create an artistic interpretation of this tidepool activity in your classroom, such as on a wall of the classroom, with each animal representing a student. Students can share how they are feeling that day with you by changing the emotion of the tidepool animal.





Design a Sea Jelly

ACTIVITY 9: PAGE 22

❶ SUGGESTED SCRIPT

Have you heard of a jellyfish? Even though fish is in their name, jellies are Invertebrates that are found in the ocean worldwide. Many people just call them sea jellies since they are not fish.

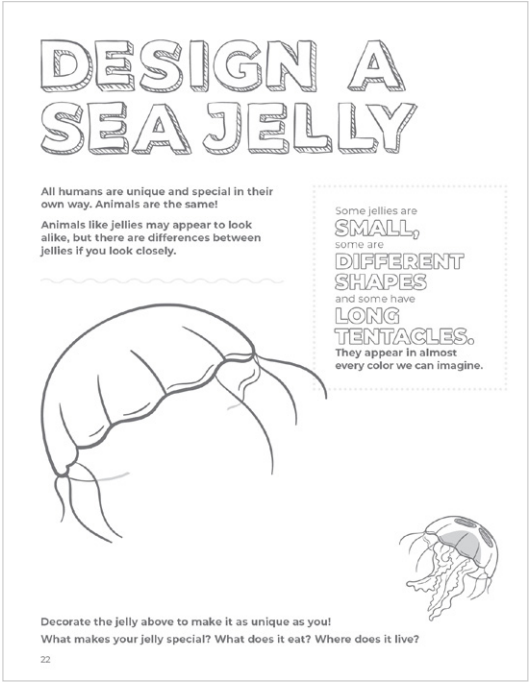
They are found in both warm and cold waters. They have been around since the time before the dinosaurs. They range in size from the size of your fingernail for the Irukandji jelly to up to 120 feet long for the lion's mane jelly.

Jellies move by squirting water out of their bell to pulse and then ocean currents move them with the water. All jellies sting with nematocysts to stun their prey, but not all are dangerous to humans.

Jellies eat everything from fish to shrimp to even other jellies. Sometimes sea turtles eat plastic bags in the ocean because they think it is a jelly, one of their favorite things to eat! You can help ocean animals by not using plastic bags.

For this activity, you will design a jelly that is as unique as you. Jellies are sometimes clear or can be many different colors, such as purple, yellow or blue. They can even display bioluminescence (where they produce their own light and glow in the dark). You are different from all other humans. Some traits like hair or eye color are inherited from your parents, but other things like your feelings make your personality unique.

Color a jelly to match your personality. Are you calm and lightly colored or bold and patterned? Each jelly will be uniquely different just like you!



Design a Sea Jelly

ACTIVITY 9: PAGE 22

❷ ACTIVITY OBJECTIVES

Students will create a unique jelly and reflect on how they are unique as well.

❸ SEL STANDARDS

- Standard 1: Self Awareness 1B
- Standard 3: Self-Efficacy 3C
- Standard 4: Social Awareness 4B

❹ SCIENCE BACKGROUND

A group of jellies is called a bloom or smack. Jellies are not social like some other animals but instead drift along the currents of the world's oceans where they can find food. Unlike many animals, these organisms might benefit from climate change since they adapt well to warm waters. In some areas, populations may decrease while other areas may see increases in jelly populations.

❺ SEL BACKGROUND

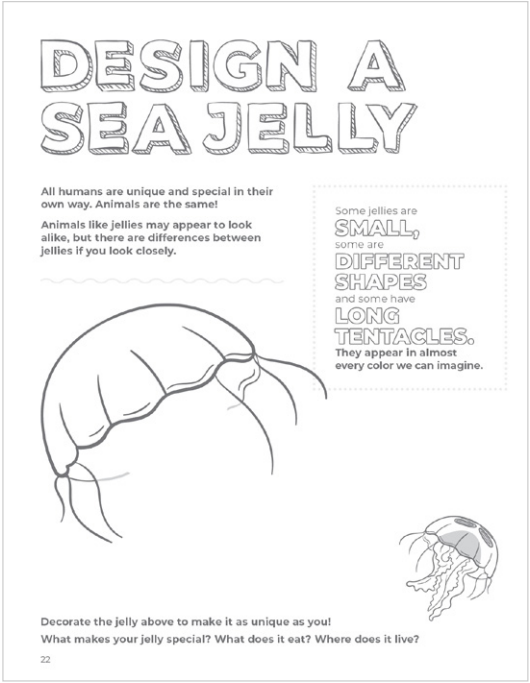
At first glance, jellies may look similar, but there are differences in size, shape and color. Examining a jelly close up shows these differences. Your students are also uniquely different, and this activity aims to show those differences. Offer a variety of art supplies so students can express their creativity freely. Students can turn to a partner to describe how their jelly visually depicts the differences they are proud of within themselves.

❻ FACILITATION TIPS

Students that better express themselves through words may choose to write about how they are unique rather than color the jellyfish. They can even write their words in lines to form the tentacles of the sea jelly.

❼ TOPIC EXTENSIONS

Research the jellyfish in the Puget Sound to determine which species are dangerous to humans. Might jelly populations around Seattle increase or decrease with climate change and changing ocean temperatures?



Assumptions

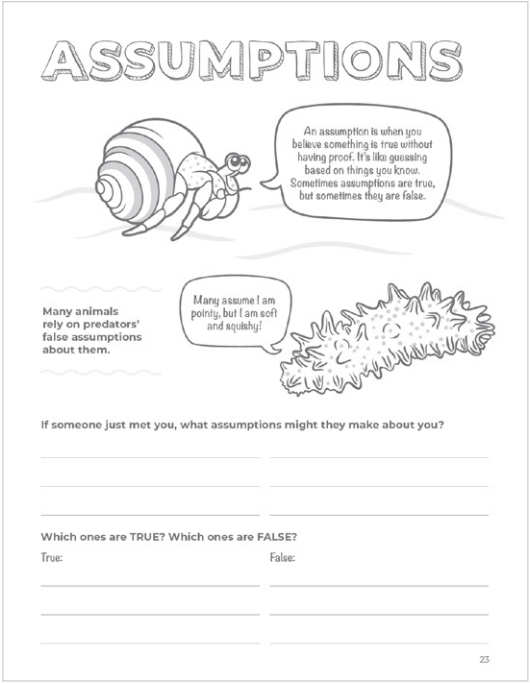
ACTIVITY 10: PAGE 23

❶ SUGGESTED SCRIPT

What is an assumption? An assumption is when you believe something is true without having proof. It is like guessing based on things you know. Sometimes assumptions are true, but sometimes they are false.

If you saw a sea cucumber, what is an assumption you might make? You might notice that it is spiky and it might hurt to touch it. If you have touched a sea cucumber, you will know that their spikes are soft and squishy. Fish do not have fingers to touch a sea cucumber first though. By using other senses, a fish may assume that a sea cucumber will not be a yummy meal but a sharp one instead.

I want you to think about what someone who just met you might assume about you. What assumptions will they make? Some may be true while others will be false.



Assumptions

ACTIVITY 10: PAGE 23

❷ ACTIVITY OBJECTIVES

Students will reflect on assumptions that may be made about them, both false and true.

❸ SEL STANDARDS

- Standard 1: Self Awareness 1B

❹ SCIENCE BACKGROUND

There are many ways animals use assumptions in their favor. Camouflage does this well. The mimic octopus takes this to the extreme by making its body imitate the shapes of other animals, such as lionfish, flatfish and sea snakes. Other animals will assume they are what they seem to be rather than investigating.

❺ SEL BACKGROUND

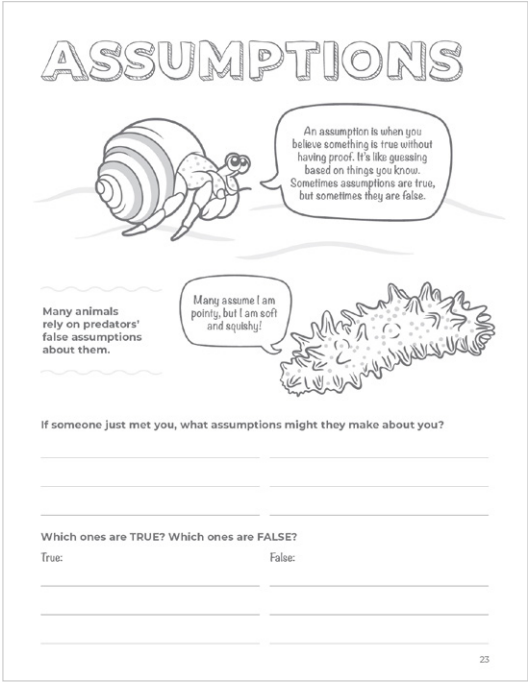
In this activity, students are asked to take the role of someone who has just met them. They will be holding a mirror to themselves. This activity can encourage students to think more about how they present themselves in the world and how to be prepared for those who will make false assumptions about them.

❻ FACILITATION TIPS

Give examples of assumptions from your own personal life or interactions you have seen in your classroom. Students may quickly go to assumptions based on physical appearance, but also remind students that actions can influence assumptions as well.

❼ TOPIC EXTENSIONS

You can use animal pictures as a visual tool with this activity. Ask the students what their assumptions are about an animal before finding out what is true and false about the animal.



How Animals Communicate

ACTIVITY 11: PAGE 24-25

❶ SUGGESTED SCRIPT

Lobsters, shrimp, barnacles and shrimp belong to a group called Crustaceans. They have hard exoskeletons, which must be molted whenever they need to grow. You may have seen crab molts on the beach and wondered what happened to the animal. After molting, crabs are soft for a while and are vulnerable to predators. Some crabs can go onto land or spend part of their time in water. They communicate with other crabs by rubbing ridges on their claws or arms.

Fiddler crabs have one large claw and one small claw. They wave the large claw in the air to attract a female who may chose the male with the biggest claw. Males with bigger claws can make a sturdy burrow where the female can lay eggs.

For this activity, you will trace the crab claws on to another sheet of paper. Next, pick a partner and wave your claw in the air. Your partner will try to figure out what you are saying. Remember, you cannot talk because crabs do not communicate with words. Was it hard or easy to figure out what your partner was trying to communicate?

Other animals communicate in other ways. Another one that also can communicate without words is the cuttlefish. Cuttlefish are a member of a group called cephalopods, which also includes octopus and squid. Many cephalopods can change color using special cells in their mantle (a word for their skin) called chromatophores.

Dwarf cuttlefish at Seattle Aquarium are very social and are constantly changing color to let other cuttlefish know how they feel. If you were a cuttlefish, what color would you change right now to let everyone know what you are feeling?

How Animals Communicate

ACTIVITY 11: PAGE 24-25

❷ ACTIVITY OBJECTIVES

Students will understand that different animals use different ways to communicate and explore communication without the use of speech.

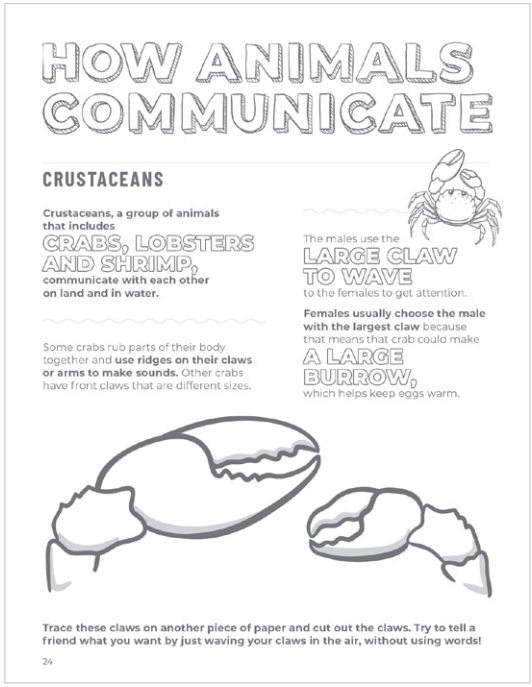
❸ SEL STANDARDS

- Standard 1: Self Awareness 1B
- Standard 3: Self-Efficacy 3B, 3C
- Standard 4: Social Awareness 4A, 4B
- Standard 5: Social Management 5A, 5B

❹ SCIENCE BACKGROUND

Some crabs like fiddler crabs wave their large claw in the air to attract a mate. They also use this big claw for combat! Scientists believe that female fiddler crabs choose the mate with the biggest claw. You can help on your local shoreline by being careful to not disturb the creatures and habitats you find there while exploring. You can also help by keeping pollutants, such as single-use plastics (straws, wrappers, cups, etc.), out of the ocean by purchasing sustainable, environmentally friendly products.

Cuttlefish are found worldwide in temperate and tropical waters. They are nicknamed the “chameleons of the sea” because they can change their color, pattern and texture in the blink of an eye. Their color change occurs by expanding or contracting their chromatophores. They do this to communicate with other cuttlefishes, camouflage themselves and warn off potential predators. They rely on their camouflage to sneak up on their prey. And, like all cephalopods, cuttlefishes can squirt ink to warn off approaching predators.


HOW ANIMALS COMMUNICATE

CRUSTACEANS

Crustaceans, a group of animals that includes CRABS, LOBSTERS AND SHRIMP, communicate with each other on land and in water.

The males use the LARGE CLAW TO WAVE to the females to get attention.

Females usually choose the male with the largest claw because that means that crab could make A LARGE BURROW, which helps keep eggs warm.

Some crabs rub parts of their body together and use ridges on their claws or arms to make sounds. Other crabs have front claws that are different sizes.

Trace these claws on another piece of paper and cut out the claws. Try to tell a friend what you want by just waving your claws in the air, without using words!

24


CEPHALOPODS

Cuttlefish are a type of cephalopod in the same group as octopuses.

Dwarf cuttlefish can grow up to 4 INCHES, about the size of a large strawberry!

Cuttlefish have special cells along their bodies called chromatophores that can quickly flash in color patterns. This helps them to sneak up on prey or communicate with other cuttlefish. Male and female cuttlefish might even display different color patterns.

When they hatch from their eggs, they're only the size of A PEA! This means they need to be able to hide quickly and tell other cuttlefish what is going on.

It's hard to find a mate if you are a smaller male cuttlefish, so sometimes these cuttlefish will flash colors pretending they are a female to sneak past their larger competition!

Color a pattern on the cuttlefish that you feel represents your mood right now! Cuttlefish communicate with these colors, so what is your cuttlefish trying to say to the other cuttlefish?

25

How Animals Communicate

ACTIVITY 11: PAGE 24-25

5 SEL BACKGROUND

Humans communicate mostly through spoken or written words. But there are also other ways to express yourself, such as through body language, visual arts, dance or music.

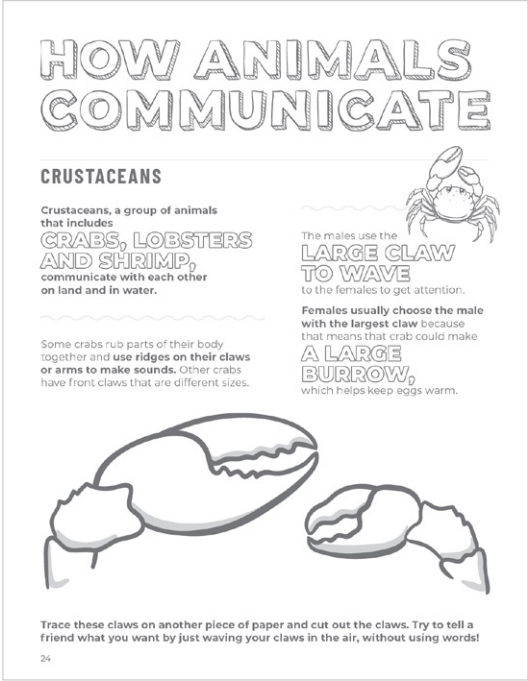
Animals use different communication mechanisms depending on the species. Animal communication may also include methods that humans cannot see or hear. Communication is different for different kinds of animals, like how people use different languages depending on culture and location.

How could you communicate with someone if you did not speak their language?

6 TOPIC EXTENSIONS

Have you ever seen scuba diver signals? How do dive buddies communicate? Can you create a unique non-spoken language? What kind of animals might use it? How would you teach it to new members of your species?

Research a different animal's communication. Does where they live make it easier or harder to communicate? Is it harder to communicate underwater?


HOW ANIMALS COMMUNICATE

CRUSTACEANS

Crustaceans, a group of animals that includes CRABS, LOBSTERS AND SHRIMP, communicate with each other on land and in water.

The males use the LARGE CLAW TO WAVE to the females to get attention.

Females usually choose the male with the largest claw because that means that crab could make A LARGE BURROW, which helps keep eggs warm.

Some crabs rub parts of their body together and use ridges on their claws or arms to make sounds. Other crabs have front claws that are different sizes.

Trace these claws on another piece of paper and cut out the claws. Try to tell a friend what you want by just waving your claws in the air, without using words!

24


CEPHALOPODS

Cuttlefish are a type of cephalopod in the same group as octopuses.

Dwarf cuttlefish can grow up to 4 INCHES, about the size of a large strawberry!

Cuttlefish have special cells along their bodies called chromatophores that can quickly flash in color patterns. This helps them to sneak up on prey or communicate with other cuttlefish. Male and female cuttlefish might even display different color patterns.

When they hatch from their eggs, they're only the size of A PEA! This means they need to be able to hide quickly and tell other cuttlefish what is going on.

It's hard to find a mate if you are a smaller male cuttlefish, so sometimes these cuttlefish will flash colors pretending they are a female to sneak past their larger competition!

Color a pattern on the cuttlefish that you feel represents your mood right now! Cuttlefish communicate with these colors, so what is your cuttlefish trying to say to the other cuttlefish?

25

Emotional Toolbox

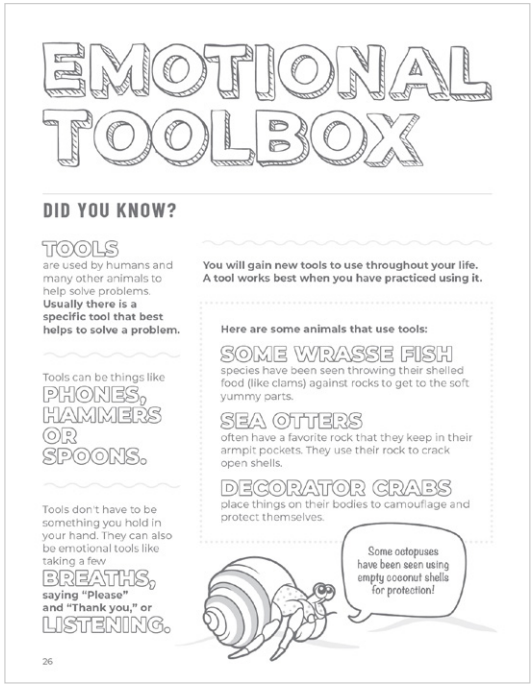
ACTIVITY 12: PAGE 26-27

❶ SUGGESTED SCRIPT

What is a tool? It is something used to accomplish a task. A tool could be a physical tool like a hammer or flashlight. It could also be a strategy or emotional tool like taking a deep breath or apologizing.

Nudibranchs are sea slugs that come in so many different colors and shapes. Some nudibranchs eat things that then go on their back, becoming part of their bodies. For example, they might eat part of an animal with stinging cells. The stinging cells do not hurt them. Their body moves them onto their back where the nudibranch can then use the eaten stinging cells as protection.

What are some tools you use? Draw or write them on the back of this nudibranch.


EMOTIONAL TOOLBOX

DID YOU KNOW?

TOOLS are used by humans and many other animals to help solve problems. **Usually there is a specific tool that best helps to solve a problem.**

Tools can be things like PHONES, HAMMERS OR SPOONS.

Tools don't have to be something you hold in your hand. They can also be emotional tools like taking a few BREATHS, **saying "Please" and "Thank you," or** LISTENING.

You will gain new tools to use throughout your life. A tool works best when you have practiced using it.

Here are some animals that use tools:

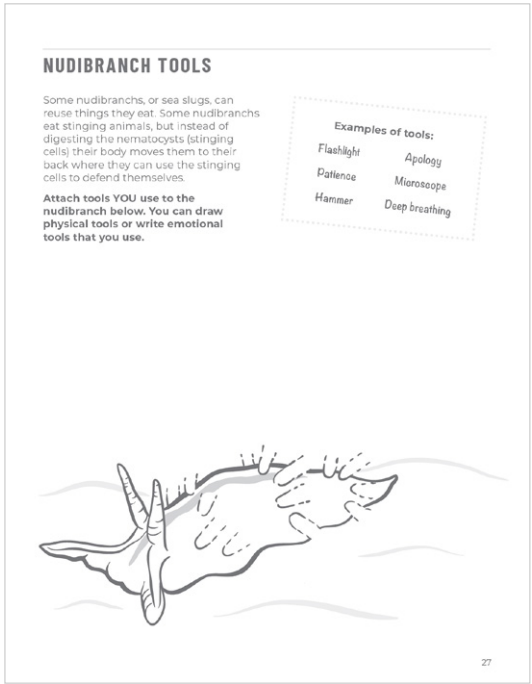
SOME WRASSE FISH species have been seen throwing their shelled food (like clams) against rocks to get to the soft yummy parts.

SEA OTTERS often have a favorite rock that they keep in their armpit pockets. They use their rock to crack open shells.

DECORATOR CRABS place things on their bodies to camouflage and protect themselves.

Some octopuses have been seen using empty coconut shells for protection!

26


NUDIBRANCH TOOLS

Some nudibranchs, or sea slugs, can reuse things they eat. Some nudibranchs eat stinging animals, but instead of digesting the nematocysts (stinging cells) their body moves them to their back where they can use the stinging cells to defend themselves.

Attach tools YOU use to the nudibranch below. You can draw physical tools or write emotional tools that you use.

Examples of tools:
Flashlight, Apology, Patience, Microscope, Hammer, Deep breathing

27

Emotional Toolbox

ACTIVITY 12: PAGE 26-27

❷ ACTIVITY OBJECTIVES

Students will think about strategies they use for different emotional situations. Students will understand that they can borrow strategies and tools from others.

❸ SEL STANDARDS

- Standard 2: Self-Management 2A, 2B
- Standard 3: Self-Efficacy 3B

❹ SCIENCE BACKGROUND

Some nudibranchs, or sea slugs, can integrate things they eat into their body. Some nudibranchs eat animals with stinging cells, but instead of digesting the nematocysts (stinging cells) their body moves them to their back where they can use the stinging cells to defend themselves. Some other nudibranchs will do this with symbiotic algae or pigments also.

❺ SEL BACKGROUND

Using different strategies and tools for different emotional situations is an important skill to develop. When overwhelmed, being able to recognize it and advocate for your own needs can lead to better self-regulation.

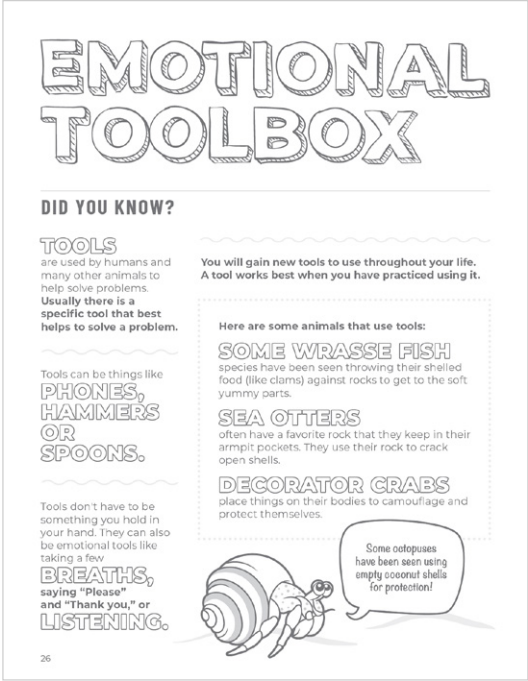
❻ FACILITATION TIPS

Use examples of tools your students use in the classroom, both physical and emotional. Having a few on hand before this activity might be helpful with the analogy.

❼ TOPIC EXTENSIONS

There are so many types of nudibranchs. Your students will love seeing the many bright colors and patterns of these beautiful sea slugs. They come in every conceivable color and countless patterns, so it might be a great way to integrate the concept of color theory via an art activity.

Have your students share with each other what tools they use so they can learn from each other. Create the space for peer learning and sharing of experiences in which certain tools have been most helpful.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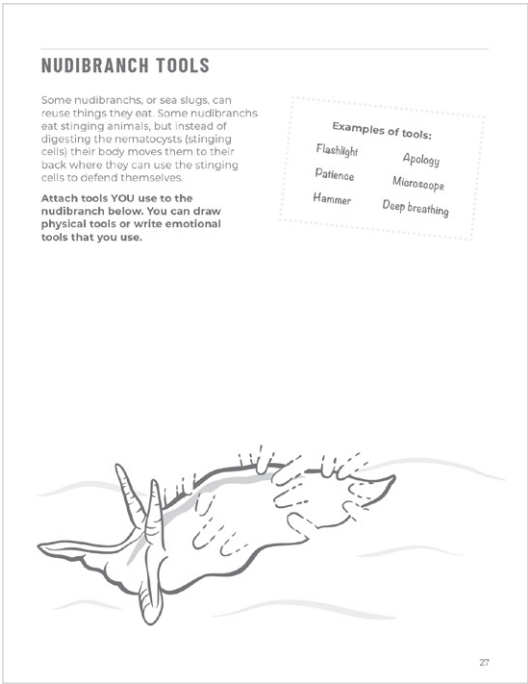
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Examples of tools:
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27

Bias

ACTIVITY 13: PAGE 30-31

❶ SUGGESTED SCRIPT

Sometimes we make opinions after first meeting someone. This is called bias. This changes when you receive more information and understand more about how something really is. Your opinion of them might change after you get to know them.

You can have bias against animals. Wolf eels may look scary, but they have some of the same concerns that we humans have. Wolf eels want to find food and protect their babies. The male and female wolf eel wrap their bodies around the eggs for protection.

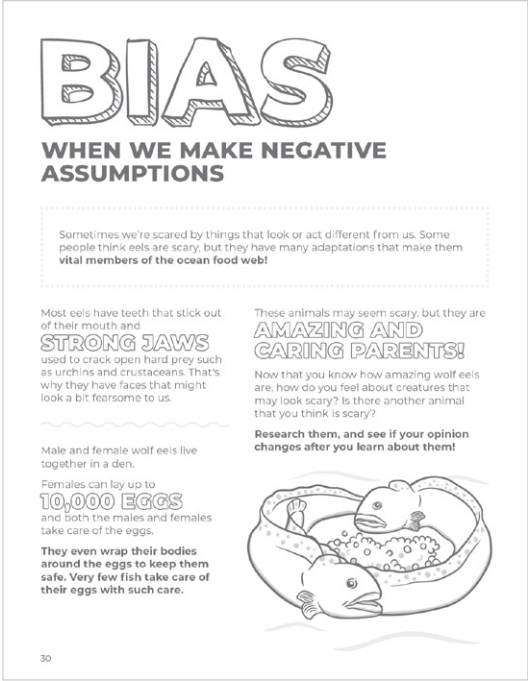
Think about something that you would like to protect. How would you make sure your precious item does not get harmed?

❷ ACTIVITY OBJECTIVES

Students will understand different perspectives and misconceptions about an animal and explore how opinions can change based on gaining more information.

❸ SEL STANDARDS

- Standard 1: Self Awareness 1B
- Standard 2: Self Management 2B
- Standard 3: Self-Efficacy 3C
- Standard 4: Social Awareness 4A


BIAS

WHEN WE MAKE NEGATIVE ASSUMPTIONS

Sometimes we're scared by things that look or act different from us. Some people think eels are scary, but they have many adaptations that make them **vital members of the ocean food web!**

Most eels have teeth that stick out of their mouth and **STRONG JAWS** used to crack open hard prey such as urchins and crustaceans. That's why they have faces that might look a bit fearsome to us.

Male and female wolf eels live together in a den.

Females can lay up to **10,000 EGGS** and both the males and females take care of the eggs.

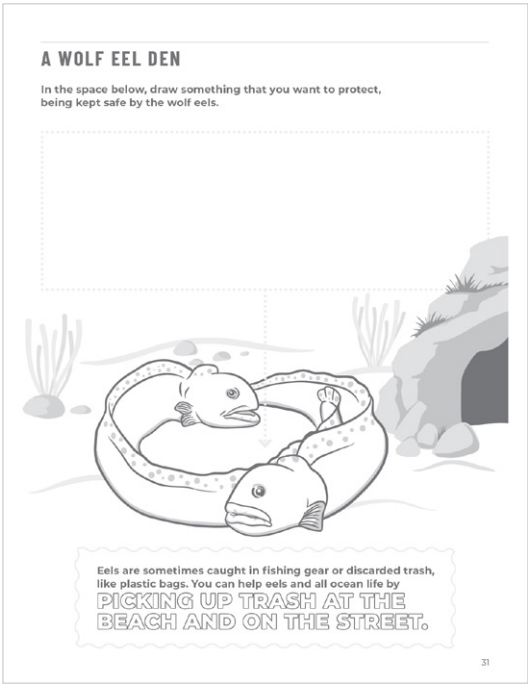
They even wrap their bodies around the eggs to keep them safe. Very few fish take care of their eggs with such care.

These animals may seem scary, but they are **AMAZING AND CARING PARENTS!**

Now that you know how amazing wolf eels are, how do you feel about creatures that may look scary? Is there another animal that you think is scary?

Research them, and see if your opinion changes after you learn about them!

30


A WOLF EEL DEN

In the space below, draw something that you want to protect, being kept safe by the wolf eels.

Eels are sometimes caught in fishing gear or discarded trash, like plastic bags. You can help eels and all ocean life by **PICKING UP TRASH AT THE BEACH AND ON THE STREET.**

31

Bias

ACTIVITY 13: PAGE 30-31

4 SCIENCE BACKGROUND

At Seattle Aquarium, biologists can identify different wolf eels by their spots. They are a favorite of the divers at the Aquarium because they are quite curious. Although wolf eel populations appear to be stable, they do face threats—many of them human-caused, such as pollution or being accidentally caught in fishing gear. You can help protect wolf eels by doing your part to take care of Puget Sound and the world's one big ocean.

5 SEL BACKGROUND

Everyone has biases. The more you become aware of your biases, the less you can allow them to guide your thoughts and actions. The activity focuses on the students imagining themselves as wolf eels and deciding what is precious for them to protect. After doing this, the students may relate more to the sometimes scary wolf eels that are actually devoted caregivers to their young

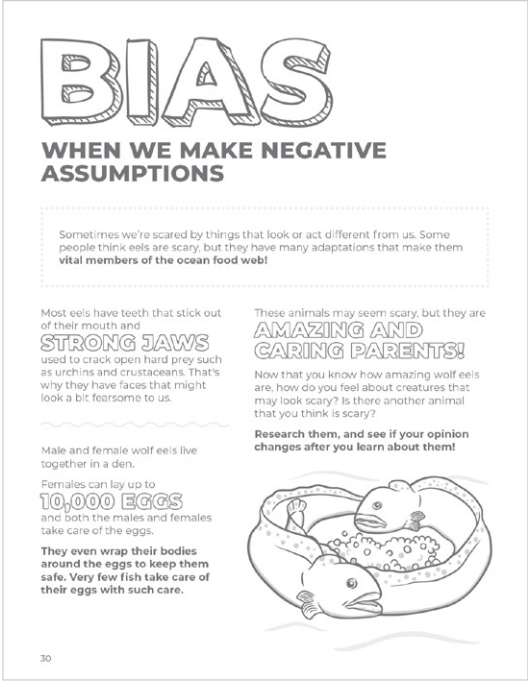
6 FACILITATION TIPS

Asking for words they might associate with eels could start the conversation about biases. You could show a picture of a wolf eel to see what the reaction is, then share the interesting facts about the care the parent wolf eels give to their eggs.

7 TOPIC EXTENSIONS

What other animals do you think your students may have biases against? Have your students research an animal they do not know much about and may not like. Encourage them to find something that makes them think of the animal differently, but let them know it is okay if some of their assumptions are founded.

Even if an animal is not our favorite, we can find ways to regard the animal with respect by understanding its important place in the world.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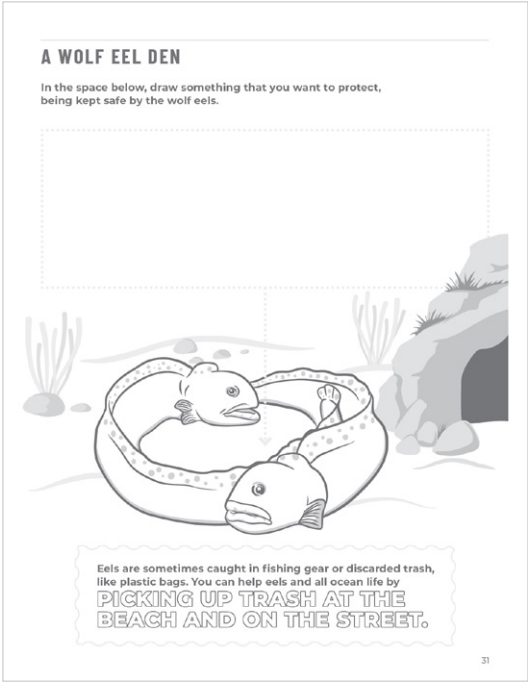
30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31

Research Your Favorite Animal

ACTIVITY 14: PAGE 32-33

1 SUGGESTED SCRIPT

Now it is time to find out more about your favorite animal. When researchers are learning about a new species, they record several characteristics about the species.

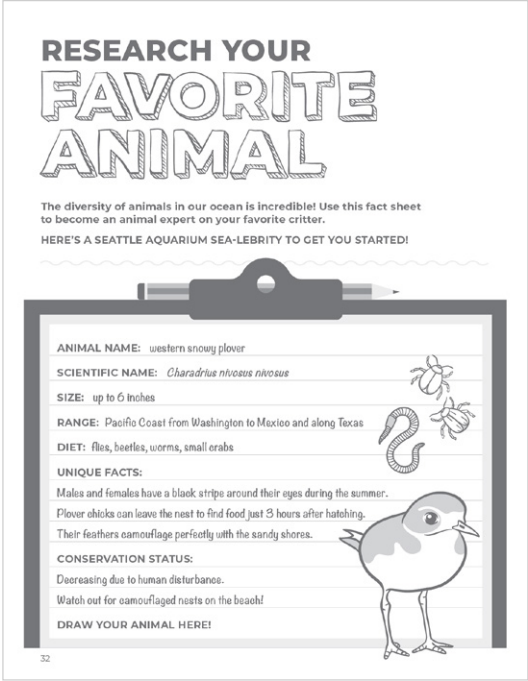
The Western snowy plover is one bird that lives at Seattle Aquarium. While we call it the Western snowy plover, people in different parts of the world may call the same bird by a different name. This is called the common name of a species.

An animal's common name is one that can differ depending on location. Because animals had different common names in different places, scientists needed a shared language to make sure they were referring to the same organism.

A scientific name is the name for an organism that is always the same. It is composed of a genus and species and is written in italics. It often uses Latin roots. A researcher gets to create the scientific name if they discover an organism that has never been seen before. Can you tell me the Western snowy plover's scientific name? (*Charadrius nivosus nivosus*)

Important facts to record about an animal are also their size, diet, conservation status and any unique information.

Imagine your favorite animal. Where does it live? What does it eat? Do you know if it is endangered? Your job is now to research your favorite animal, record some facts about it and draw a picture of it.


RESEARCH YOUR
FAVORITE ANIMAL

The diversity of animals in our ocean is incredible! Use this fact sheet to become an animal expert on your favorite critter.

HERE'S A SEATTLE AQUARIUM SEA-LEBRITY TO GET YOU STARTED!

ANIMAL NAME: western snowy plover
SCIENTIFIC NAME: *Charadrius nivosus nivosus*
SIZE: up to 6 inches
RANGE: Pacific Coast from Washington to Mexico and along Texas
DIET: flies, beetles, worms, small crabs
UNIQUE FACTS:
Males and females have a black stripe around their eyes during the summer.
Plover chicks can leave the nest to find food just 3 hours after hatching.
Their feathers camouflage perfectly with the sandy shores.
CONSERVATION STATUS:
Decreasing due to human disturbance.
Watch out for camouflaged nests on the beach!
DRAW YOUR ANIMAL HERE!

32


FILL OUT YOUR CHOSEN ANIMAL

ANIMAL NAME:
SCIENTIFIC NAME:
SIZE:
RANGE:
DIET:
UNIQUE FACTS:
CONSERVATION STATUS:
DRAW YOUR ANIMAL HERE!

33

Research Your Favorite Animal

ACTIVITY 14: PAGE 32-33

2 ACTIVITY OBJECTIVES

Students will understand the amazing traits that make every species unique, just like you!

3 SEL STANDARDS

- Standard 1: Self-Awareness 1B
- Standard 3: Self-Efficacy 3C
- Standard 5: Social Management 5C

4 SCIENCE BACKGROUND

Western snowy plovers are found on the shores of the Pacific coast. As of 2021, their population in Washington state consisted of less than 100 adults.

This species is threatened and a recovery program was started in 2007. Western snowy plovers have many natural predators, including coyotes, raccoons, falcons and owls. Humans are primarily responsible for their population decline.

Their fragile nests are easily disturbed by people, vehicles and dogs on the beach. Their nesting sites are vulnerable to development by humans. Sharing the beach is a great first step to saving them, by walking carefully on the beaches and keeping pets leashed at all times. Small actions can make a big difference for these tiny, vulnerable birds!

Charadrius nivosus nivosus is the scientific name of the Western snowy plover. This refers to its genus, species and then subspecies. Not all animals have the subspecies. In this case, this helps differentiate between the Eastern and Western populations of this rare bird.

5 SEL BACKGROUND

Every student has individual interests, and this activity allows individuality to shine. Students can choose an animal that is well known or a microscopic organism. Students could also research animals that live in similar ecosystems and then collaborate with a partner. This would facilitate social connections.

6 FACILITATION TIPS

This activity is adaptable based on student interest. They may choose to focus on a local animal or one they are interested in from around the world.

The Western snowy plover is an iconic Seattle Aquarium species that has a larger range outside of the greater Seattle area.

Students can choose to represent their animal through drawings, words or links to verified websites.

The Salish Sea and Salmon

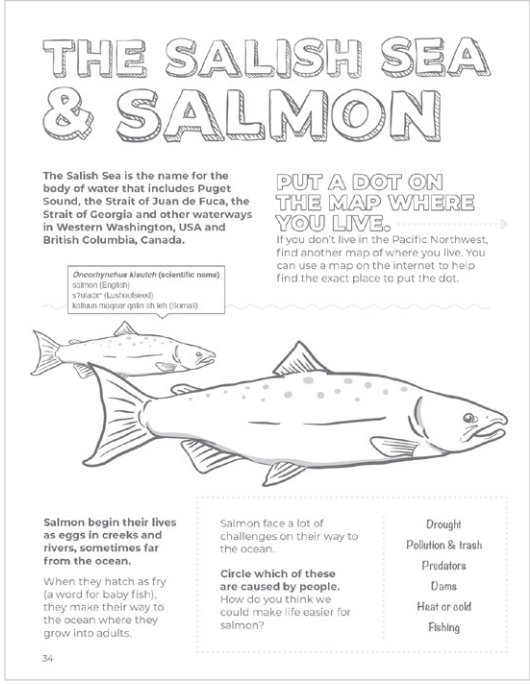
ACTIVITY 15: PAGE 34-35

1 SUGGESTED SCRIPT

What is the Salish Sea? It is the name for the body of water connecting to the ocean in the Pacific Northwest of the United States and in British Columbia, Canada.

Many animals call the Salish Sea home. The salmon is one of those. Salmon are a keystone species, which means they are very important to their ecosystem. The salmon hatch from their eggs in freshwater streams and rivers. They make their way toward the ocean as they get bigger and live out in the open ocean for a few years. Then they make the difficult journey back to the waters they hatched from to spawn.

When you look at this map, do you know where we are? If a salmon hatched from the place you call home, what path would it take to get to the ocean? It will face many challenges along the way. Some of those challenges are natural threats like predatory birds. Others are human made, like chemical run-off from cars that flows into the water.



The Salish Sea and Salmon

ACTIVITY 15: PAGE 34-35

2 ACTIVITY OBJECTIVES

Students will get a sense of place and learn about the Salish Sea, the inspiration for the activity book.

3 SEL STANDARDS

- Standard 1: Self Awareness 1C
- Standard 4: Social Awareness 4A, 4B, 4C
- Standard 6: Social Engagement 6A

4 SCIENCE BACKGROUND

The Salish Sea is the name for the body of water partially enclosed by Vancouver Island, Western Washington in the United States, and British Columbia, Canada. The Salish Sea includes the Strait of Georgia, the Strait of Juan de Fuca, Puget Sound and many other smaller waterways.

Salmon are a keystone species, which means they hold a unique and essential place in the health and functioning of an ecosystem. Salmon are a vital food source for a variety of wildlife. Salmon are anadromous, meaning they hatch in freshwater before making the arduous journey to the open ocean and then returning to spawn in freshwater. Salmon face many challenges along this journey, some human made and others natural. Salmon lay thousands of eggs and many will not make it back to their home waterways to spawn again, but they will provide sustenance and nutrients to many other animals.

5 SEL BACKGROUND

Honoring place and being aware of the areas you inhabit is important. Through this activity, students will become more familiar with the waterways of the Pacific Northwest.

It is also important to be aware of how we as humans affect our ocean relatives, such as salmon. We can negatively and positively affect salmon on their journey. This activity also provides a space for students to reflect on what challenges they have overcome.

6 FACILITATION TIPS

Depending on your students' familiarity with reading a map, you may need to provide context for how to interpret the map. Start with an unlabeled map and ask the students what they see.

Visual Thinking Strategies is a group observational technique used to make art more accessible. It could be adapted to introduce this map.

The Salish Sea and Salmon

ACTIVITY 15: PAGE 34-35

7 TOPIC EXTENSIONS

The salmon life cycle is complex. Your students can move their bodies into the different stages to enhance learning.

The Salmon Life Cycle

Egg: Salmon dig a nest with their tail in the gravel on the bottom of a river. The nest is called a redd. The eggs are laid and fertilized in the redd. The eggs are bright red or pink.

Crouch down and cover your head

Alevin: When the eggs hatch, they are called alevin. They still have their yolk sac attached. It acts as an energy source, almost like a lunch box. The alevin do not eat.

Make a loop with your arms to be the yolk sac

Parr: When the alevin have used all the energy in their yolk sac, they are called parr (or fry). They now can start eating. They leave the redd and start eating tiny insects in the water.

The parr have stripes on their body to help them hide from predators like kingfishers. They will grow more before heading downstream toward the ocean.

Use up the yolk sac by making the loop smaller and then put your hands at your shoulders facing outward

Smolt: The salmon reach the estuary and their bodies change to adjust to the saltwater of the ocean. Their bodies turn silver and they are called smolt. The smolts hide in the wetlands and eat a lot so they can grow bigger and stronger. They are eating fish eggs and small plankton. They must avoid predators like great blue herons.

Bend your elbows with your hands at your armpits to show that you have grown bigger so you have bigger fins to swim

Adult: Once they are ready, the salmon head out into the ocean and they are now known as adults. They eat and grow for a few years. They eat things like krill and small fish. Their predators include orcas, seals and people.

Completely extend your arms outward to either side to show you are at full size

Spawner: Eventually it is time for the salmon to head back to their freshwater homes. They use their senses to find the stream where they were born and head that way.

Their bodies change. Some salmon species change colors, get a hooked nose or have a big hump on their back.

As they swim upstream, they do not eat. They spend all of their energy on making it back up the river. Predators like bears and eagles try to catch them. They have to overcome many obstacles like waterfalls.

Place your arms flat against your side and jump like you are overcoming the obstacle of a waterfall

The Salish Sea and Salmon

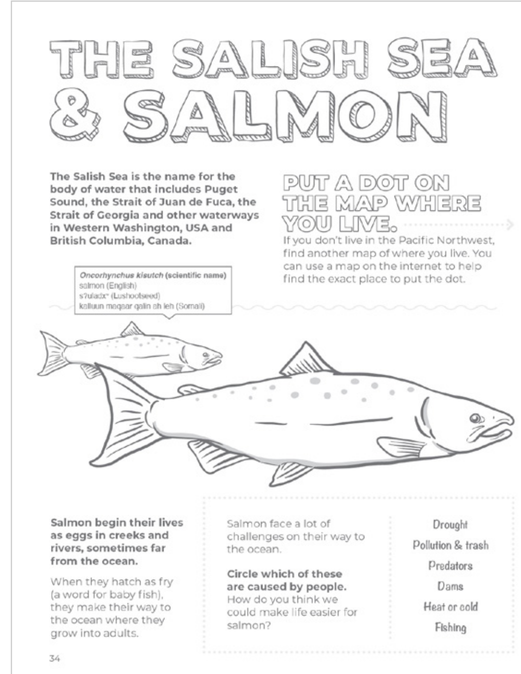
ACTIVITY 15: PAGE 34-35

Dramatic Death: Once they get upriver, they make a redd and lay or fertilize eggs. Then the salmon die.

In an exaggerated manner, fall to the ground

Tree: The nutrients from the salmon go into the living things that feed on the decaying body. The nutrients go into the soil and help trees to grow. The trees provide shade for the redds where the next generation of eggs are waiting to hatch. In a few months, they will hatch and start the cycle for themselves.

Slowly stand back up and stretch your arms in the air like long branches



THE SALISH SEA & SALMON

The Salish Sea is the name for the body of water that includes Puget Sound, the Strait of Juan de Fuca, the Strait of Georgia and other waterways in Western Washington, USA and British Columbia, Canada.

PUT A DOT ON THE MAP WHERE YOU LIVE.

If you don't live in the Pacific Northwest, find another map of where you live. You can use a map on the internet to help find the exact place to put the dot.

Salmon begin their lives as eggs in creeks and rivers, sometimes far from the ocean.

When they hatch as fry (a word for baby fish), they make their way to the ocean where they grow into adults.

Salmon face a lot of challenges on their way to the ocean.

Circle which of these are caused by people. How do you think we could make life easier for salmon?

Drought
Pollution & trash
Predators
Dams
Heat or cold
Fishing

34

A SALMON'S JOURNEY

Pretend that you are a salmon making your way to the ocean.

Start on the dot you made on the map at your home. Draw a line out into the ocean using your local waterways (like rivers).

35

Pledge to Help

ACTIVITY 16: PAGE 36-37

1 SUGGESTED SCRIPT

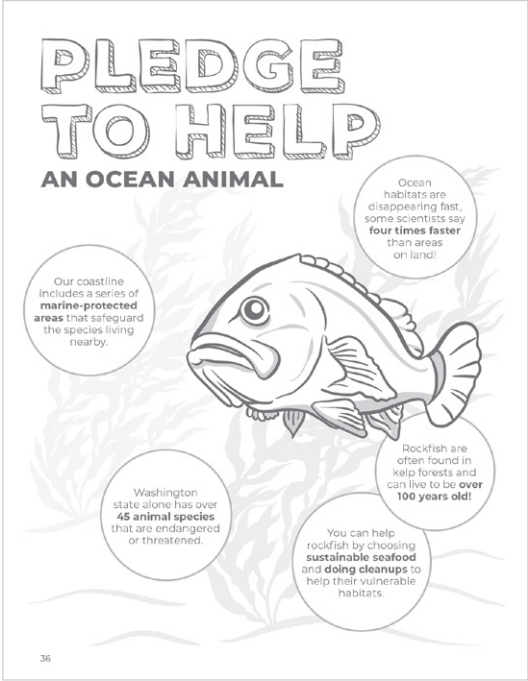
It is estimated that only between 2-3% of the world's oceans are protected. Marine Protected Areas (MPAs) in the ocean are like National Parks on land. MPAs provide guidelines for how humans can use the area and are designed to protect habitats and species for generations to come.

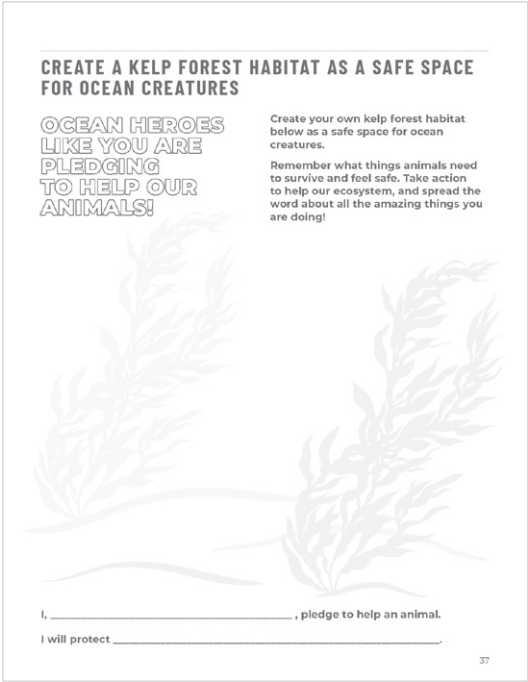
Different stakeholders, such as fisher people, legislators, indigenous tribes and environmental groups, came together to decide which areas needed special designations. Making an MPA does not always mean that humans cannot fish or use the natural space; each MPA has its own set of guidelines.

Rockfish are one of the animals that can benefit from living in an MPA. Rockfish do not reproduce until they get older, and they can live to 100 years old! Kelp forests in the Puget Sound need your help.

What does your ideal kelp forest look like? Is there a lot of one kind of animal or many kinds of organisms in the habitat?

Draw or write about what your space looks like in your mind. Then pledge to help your favorite animal!





Pledge to Help

ACTIVITY 16: PAGE 36-37

❷ ACTIVITY OBJECTIVES

Students will understand that human actions can have positive and negative effects on the ocean and its inhabitants.

❸ SEL STANDARDS

- Standard 1: Self-Awareness 1B
- Standard 2: Self Management 2B
- Standard 3: Self-Efficacy 3A, 3B, 3C
- Standard 6: Social Engagement 6A, 6B, 6C

❹ SCIENCE BACKGROUND

Rockfish have very long life spans compared to the majority of the world's fish species. While many other fish species live anywhere from two to 10 years, some rockfish species can live to be well over 100 years! Because rockfish are so long-lived, many do not begin breeding until they are nearly 20 years old. Add in the fact that rockfish are considered a desirable seafood item, and it is easy to understand why they are susceptible to overfishing.

You can help them by doing your part to protect Puget Sound and the ocean beyond, and choosing seafood from the "Best Choices" and "Good Alternatives" lists on the Seafood Watch website.

❺ SEL BACKGROUND

Some conservation problems may seem overwhelming, but you can take small steps that add up to big community actions. Becoming an ocean hero is a lifelong commitment, and inspiring your family and friends will multiply your impact! Simple steps like picking up three pieces of trash every day, turning off the tap when you brush your teeth or not using single-use plastic has a big impact on our ocean.

❻ TOPIC EXTENSIONS

Research your favorite habitat. What actions can you take now to have a positive impact on this ecosystem? What animals in your habitat need to be protected? Getting feedback from all people who rely on the area is an important step in protecting natural spaces on land and in the water.

How might humans be affected by changing guidelines in your space? For example, in the Pacific Northwest, indigenous peoples may depend on salmon for sustenance. Have you considered the views of all people when regulating fishing in the area?

Students can choose to represent their animal through drawings, words or links to verified websites.

Make This Page Messy

ACTIVITY 17: PAGE 38-41

❶ SUGGESTED SCRIPT

Make this page messy!

❷ ACTIVITY OBJECTIVES

Students will be creative and interact with the world around them.

❸ SEL STANDARDS

- Standard 2: Self Management 2A, 2B

❹ SCIENCE BACKGROUND

Often science is seen as a field in which there is not space for creativity and messiness. We hope this page provides some space for students to explore and be creative.

❺ SEL BACKGROUND

This is a space to express creativity. Encourage your students to use unconventional methods of making this page messy.

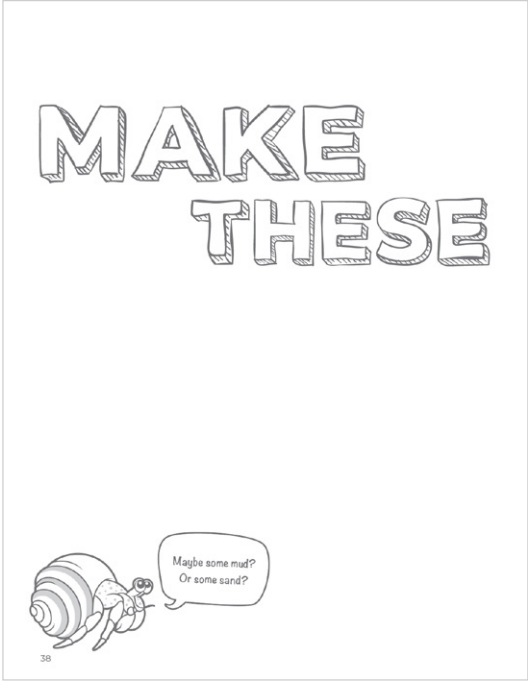
❻ FACILITATION TIPS

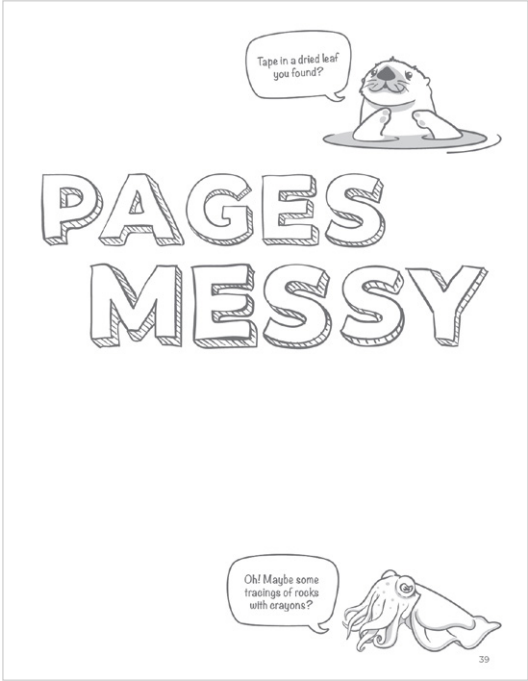
You could provide resources for your students to make this page messy or you could have them go outside and explore on their own.

If you want to repeat this activity many times over, you can make copies of the page. Students might find this a great break from more structured activities.

❼ TOPIC EXTENSIONS

You could have prompts or limitations to the ways to make this page messy. For example, find something outside of each color of the rainbow to mess up this page.





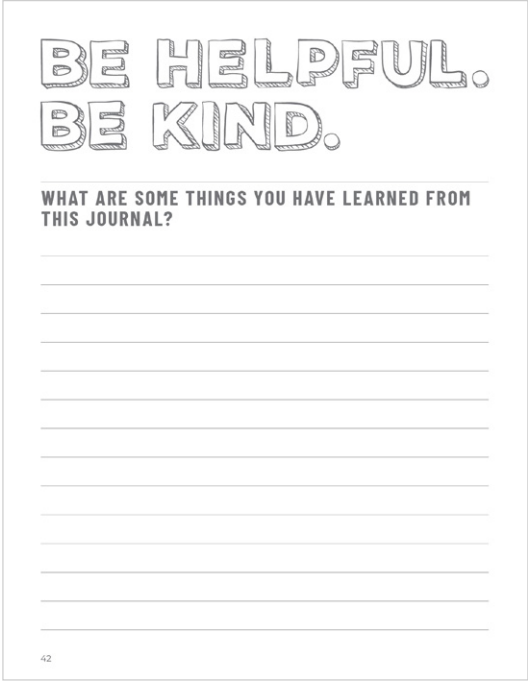
Be Helpful. Be Kind.

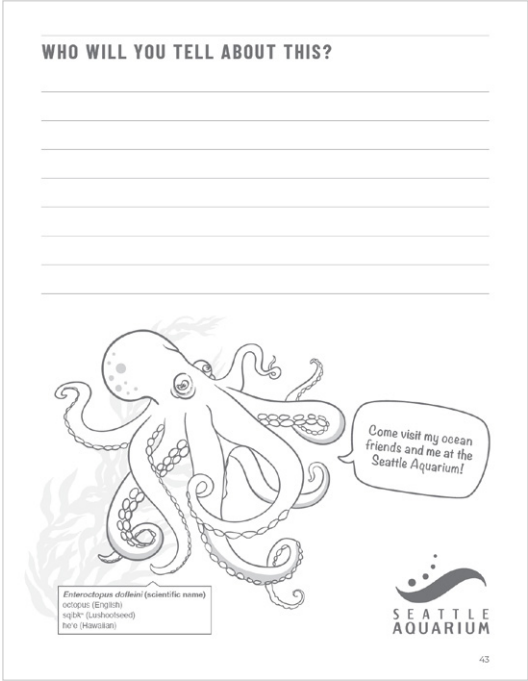
ACTIVITY 18: PAGE 42-43

❶ SUGGESTED SCRIPT

It is time to reflect. That means we are going to think back about our time with this activity book. Did you learn something new? Something about an animal? Something about yourself? A way to impact the world? Let's flip back through the pages to jog our memories.

When we have learned something new, it is always fun to share that knowledge. Who will you tell about something you learned in this activity book? Maybe a friend. Maybe a family member.





Be Helpful. Be Kind

ACTIVITY 18: PAGE 42-43

❷ ACTIVITY OBJECTIVES

Students will understand that human actions can have positive and negative effects on the ocean and its inhabitants.

❸ SEL STANDARDS

- Standard 1: Self-Awareness 1A, 1C
- Standard 2: Self Management 2A, 2B
- Standard 3: Self-Efficacy 3A, 3B, 3C
- Standard 4: Social Awareness 4A, 4B
- Standard 6: Social Engagement 6A

❹ SEL BACKGROUND

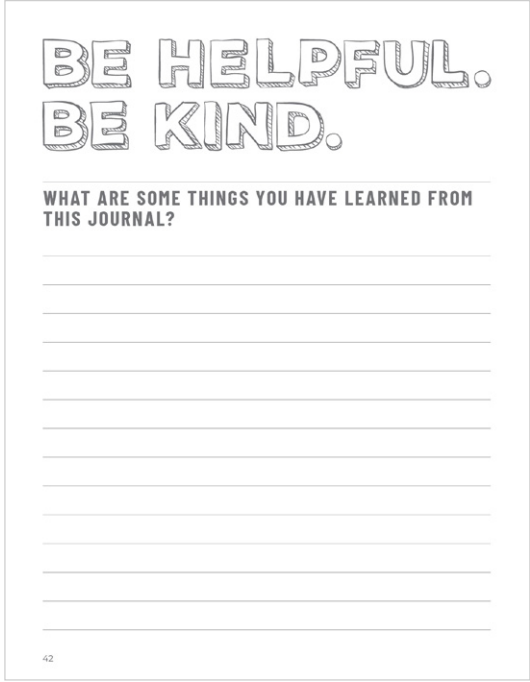
Students have completed many activities to learn about themselves, their emotions, animals and how they can interact with the natural world. This activity is a great space to summarize what was learned and make goals for future activities.

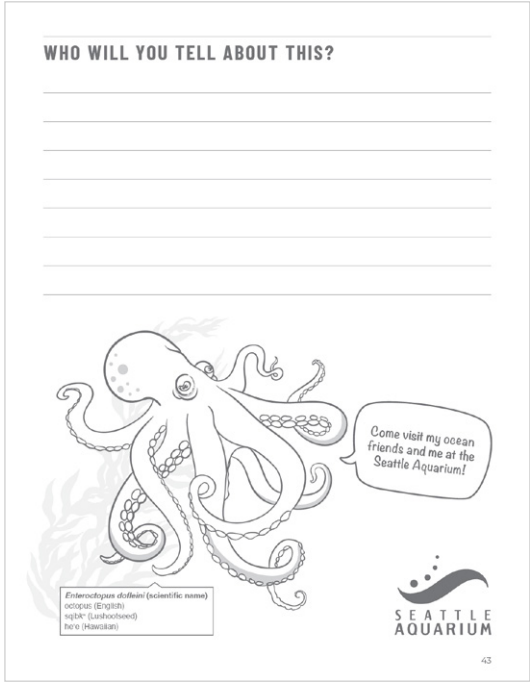
❺ FACILITATION TIPS

Students can use whatever medium they find most comfortable to express themselves and think about the journey they have gone through throughout the activity book. What have they learned about themselves and how they interact with other people? How does this extend to the natural world?

❻ TOPIC EXTENSIONS

Students can create their own activity book page that teaches about animals, ecosystems or how humans interact with nature.





ACCOMMODATIONS

TRANSLATED MATERIAL OPTIONS

For species guides in other languages, visit Teacher resources | Seattle Aquarium. These are photo ID guides for animals that may be found on local beaches or in the water viewable from the beach. The languages are Amharic, Chinese, Somali, Spanish, Tagalog and Vietnamese.

If you are interested in this activity book in a different language, let us know! This is the first version of this activity book, and we hope to make more.

You know your students best. Please read through the whole activity book before giving it out to your students. You may find some activities more applicable to your particular students than others. Here are some ways you can use this activity book outside of the original intended audience of third- to fifth-grade elementary students.

Some of the animals in this activity book can be found at Seattle Aquarium, but a visit to the Aquarium does not have to happen in tandem with the activities. Students that want more information about the animals and concepts in these pages can research the local animals in nature around their home. Animals at the zoo, a local park or beaches can be used to enhance journal concepts.

FOR YOUNGER STUDENTS, THESE PAGES MAY BE MORE ACCESSIBLE TO THEM:

- Vet Care for Animals
- I'm a Baby Harbor Seal
- You Otter Know
- Decorate a Jelly
- How Animals Communicate

FOR OLDER STUDENTS, THESE PAGES MAY BE MORE RELEVANT:

- What's on the Menu
- Animal Ethogram
- Emotional Toolbox

FOR EXTRA SOCIAL INTERACTION, THESE ACTIVITIES PROVIDE OPPORTUNITIES FOR PARTNER WORK:

- Vet Care for Animals
- Animal Ethogram
- Build an Animal Habitat
- Dream Home
- Your Mind is a Tide Pool
- How Animals Communicate

BEACH ETIQUETTE

Here are some tips for having the most enriching time on the beach while still limiting your own impact on the ecosystem you are exploring.

Many organisms live in the tidepools we visit. Please strive to be a good **GUEST.**

G Gently touch organisms with one wet finger

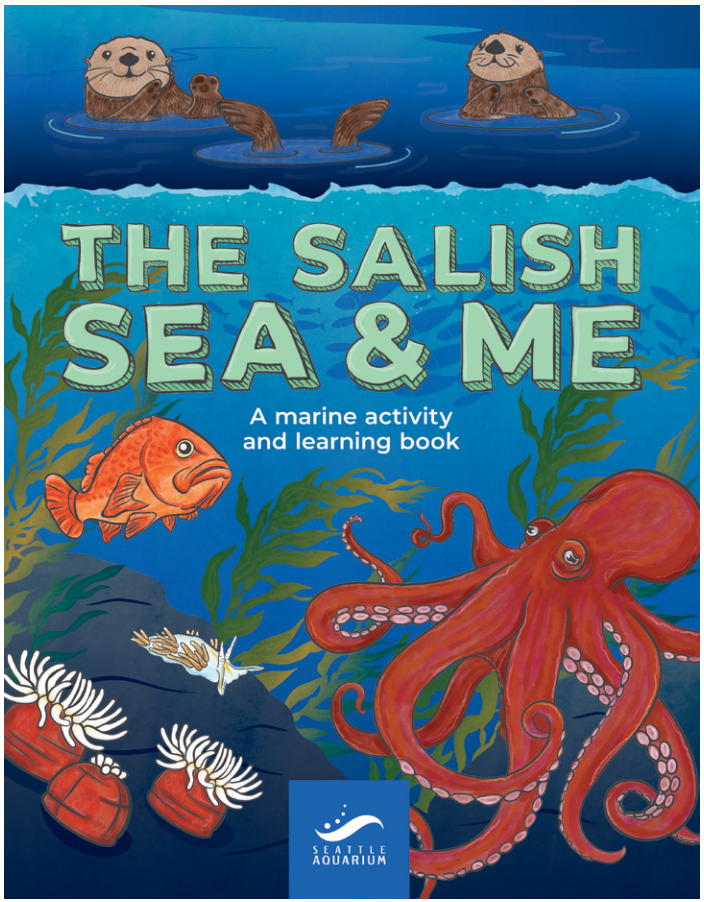
U Use only one hand to pick up rocks and put them back how you found them

E Enjoy observing the animals without picking them up

S Step carefully

T Take nothing natural off the beach, leave it for others

EVALUATION



The Salish Sea and Me: A Marine Activity Book Feedback

Seattle Aquarium is interested in how you have used the activity book and this resource. Follow this link to provide feedback on how you used the activity book with your students.

GLOSSARY

Abdomen The end section of an arthropod's body

Animal care staff People that work directly with the animals at the Aquarium

Animal trainer A person who teaches animals behaviors

Assumption A thought that you believe is true but later may change your mind about after more information is learned

Behavior The way an organism such as an animal acts

Bias A personal opinion toward something

Bioluminescence The ability of an organism to produce its own light

Burrow A home that an animal builds to protect itself

Camouflage Changing appearance to blend into the environment

Cephalopod A group of invertebrates that includes octopuses and cuttlefish

Cerata Usually brightly colored part of a nudibranch that can serve as gills or be used for attack and defense

Chromatophore A cell that can change color by expanding or contracting

Communicate The ways organisms express information to each other

Crustacean A group of animals that includes crabs, lobsters and shrimp

Den A home that an animal uses for protection, often a hole or cave

Ecosystem Complex ways in which organisms interact in an area

Endangered An organism that needs special protections to keep it from going extinct

Enrichment Anything that allows an animal to exercise natural behaviors (example: putting food into a puzzle for the octopus)

Ethogram An observation tool used to track and describe animal behavior

Exoskeleton A supportive cover on the outside of some animals

Feelings A sensation that your body and mind experience (such as happy or frustrated)

Food web The way animals and plants interact to spread energy across a community

Foraging Searching for food

Habitat The place where a plant or animal lives and grows

Indigenous Native to a specific region

Invertebrate An animal without a backbone

Kelp forest A type of ocean habitat where kelp is vital

Marine Protected Area (MPA) An area where there are restrictions on human activities to give species time to recover

Molt Part of an animal's body that is shed off, such as shedding fur for seals or shedding exoskeleton for crustaceans

Nematocyst Stinging cells

Nutrition Food or nourishment that includes a variety of nutrients that are needed to live

Nutritionist A person who specializes in nutrition, which is how a plant or animal takes in and processes food and nutrients

GLOSSARY

Observation The act of using your own senses to understand what is happening around you

Organism An individual life form that is capable of growing and reproducing, such as an animal, plant or single-celled life form

Overfishing Fishing a type of animal so much that there is not enough left to have a healthy population

Pledge A vow or promise

Predator An animal that preys on other animals for food

Prey The animal that a predator uses for food

Pup A baby animal, such as a shark or seal

Scientific name Name given to an organism so that scientists use the same name around the world

Stranded When an aquatic animal is stuck on land

Sustainable seafood Seafood that is caught or farmed in ways that consider the long-term vitality of harvested species, the wellbeing of the oceans and the livelihoods of fisheries-dependent communities

Tentacles Flexible part of an animal

Threatened An animal's population might become endangered if we do not protect the organism

Tide Rise and fall of the ocean back and forth several times daily

Tide pool Areas near the ocean where the water level varies; sometimes are underwater or exposed to the elements

Tool Something an animal uses to accomplish a task (such as a sea otter using a rock to open a clam)

Tribe A group of people with a shared ancestry and culture

Veterinarian An animal doctor who treats injuries and diseases

Veterinary clinic A place where animals get checkups

Viable An organism likely to survive

Waterway A route such as a river or creek where organisms travel

RESOURCE LINKS

Lushootseed Language website

Marine Mammal Stranding information

Marine Mammal Protection Act

Indigenous Peoples map

Seattle Aquarium

SEL State objectives

Empathy for Wildlife

Since Time Immemorial

Stories from the Salish Sea: A Three-Part Video Series

Seafood Watch

Visual Thinking Strategies