

Olympic

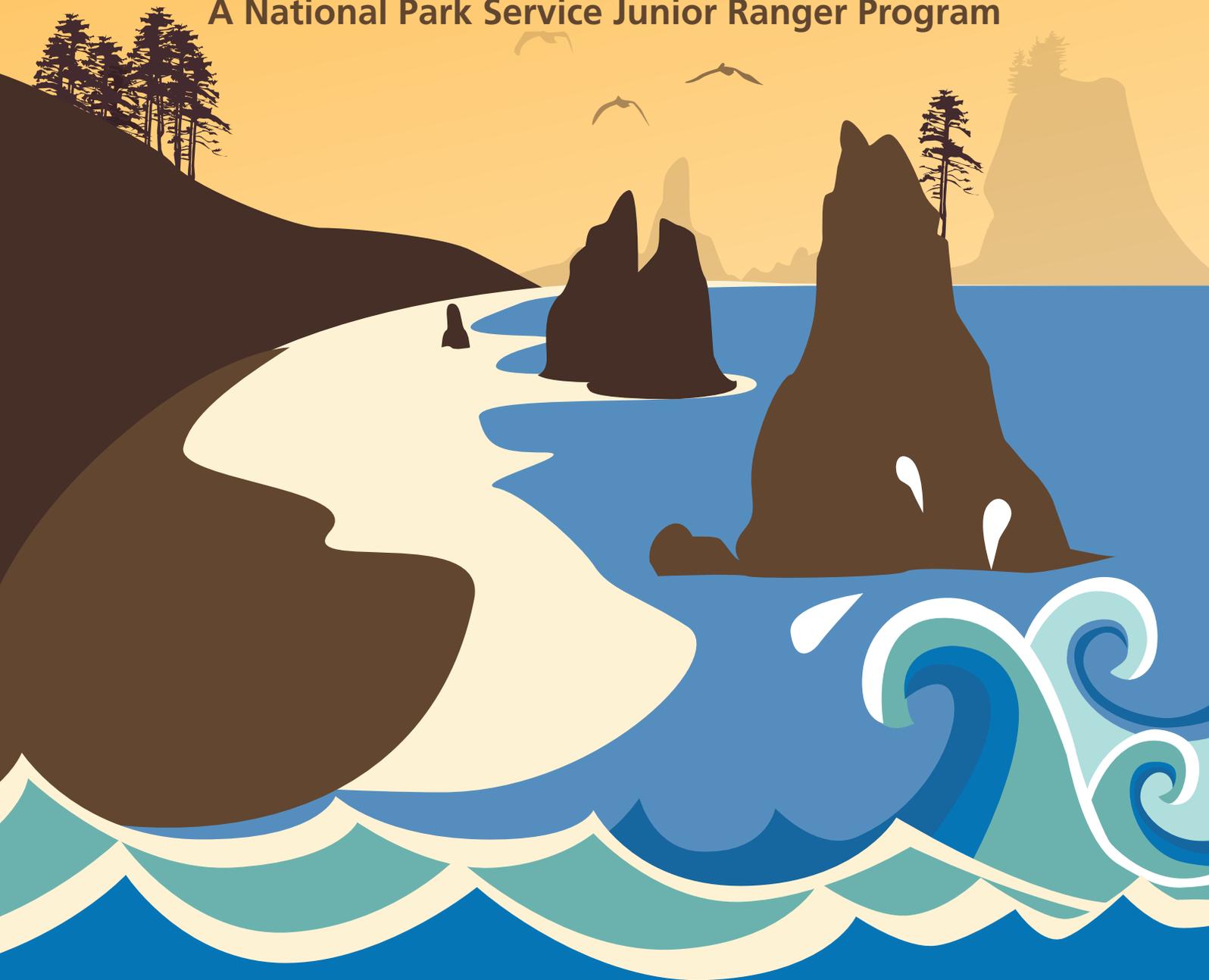
National Park Service
U.S. Department of the Interior

Olympic National Park



Ocean Stewards

A National Park Service Junior Ranger Program



name _____

Welcome Ocean Steward!

Become an Olympic National Park Ocean Steward!

Learn how important YOU are to the biggest body of water on our planet, the OCEAN!

Explore rocky, sandy and boulder-covered beaches or cliffs rising from the sea. You'll find an amazing world of life, beauty and wonder.

Help protect the ocean and coastal habitats. National parks protect America's greatest natural and historic treasures. They provide areas for exploration, challenge and solitude.

When you visit the coast of Olympic National Park, you are also visiting a marine sanctuary! The National Park Service and Olympic Coast National Marine Sanctuary work together to protect a wide array of local and migratory wildlife—from residents like sea otters and bald eagles to seasonal visitors like brown pelicans and gray whales.

Stewardship

actively caring for what is important to you

Instructions

To earn your Olympic National Park Ocean Steward patch, do the same number of activities as your age. If you are 11 or older, please complete all of the activities.

How many activities will you do? _____

To take the pledge and receive a patch, return to an Olympic National Park visitor center or ranger station and present your booklet to a ranger.

Challenge Level Indicators

Look for the following activity level icons for the suggested difficulty. Challenge yourself by attempting all activities and work your way out of the intertidal zone and into the sky!



SEA STAR

Ages 4-6



SEA OTTER

Ages 7-10



PELICAN

Ages 11+

Activity 1

Chart Your Adventure



Olympic National Park protects over 70 miles of rugged coast. Your adventure will take you to fabulous places! Use the map to the right to plan your exploration. Remember, no two locations are the same. Each section of coast provides a diversity of wonders to discover.

Ready to explore?
List three things you would like to see during your exploration of the coast.

1. _____
2. _____
3. _____

Shi Shi Beach

Cape Alava

Rialto Beach

Ruby Beach

Kalaloch

Forks

Circle the areas you visited!

CANADA

UNITED STATES

Victoria

Port Angeles

Forks

OLYMPIC NATIONAL PARK

SEATTLE

TACOMA

Olympia

Olympic Coast National Marine Sanctuary

detail map

North



Activity 2

Field Journal

Scientists and naturalists take good notes. Use your senses to explore the coast and record your observations below.

The place I am exploring is:

I can hear:

I can see:

I can feel:

I can smell:



Activity 3

Leave No Trace



Millions of people visit Olympic National Park's wilderness coast every year. They enjoy hiking, picnicking, camping, surfing and many more activities. Imagine what would happen if each person took a sea star home or left their garbage sitting out. Would the coast be the same?



Leave No Trace helps visitors protect the park. The seven **Leave No Trace** principles were scrambled by a crashing wave. Unscramble the phrases to learn how you can help protect the coast.

Trash Trash Your

Wildlife Respect

Find Leave You What

With Careful Be Fire

Be Other To Kind Visitors

Path Right Choose The

Go Before You Know

Take a picture! In the box below draw your favorite scene from your time exploring the coast. Practice **Leave No Trace** by taking only photos during your visit and leaving only footprints in the sand.



Did you know?

• Much of the world's population lives near the ocean. Look around.
• What would this coast look like if it were not protected in Olympic National Park and Olympic Coast National Marine Sanctuary?



Activity 4

one ocean

This map illustrates one of the Pacific Ocean's currents. It also shows that the Pacific, Arctic, Atlantic, Indian and Southern ocean basins are connected as one big ocean. How does that affect marine debris?

Can you figure out where marine debris comes from and where it might go? Draw lines from the bottle and the glass float to the place or places they may have originated.

Plastic bottles are manufactured all over the world. Plastic breaks down into smaller pieces, but never goes away. Plastic litter may wash into streams and travel to the ocean.



Glass fishing net floats, made by Japanese craftsmen before the 1940s, are still found on the coast.



• Olympic National Park
Olympic Coast National
Marine Sanctuary,
Washington, USA

Marine Debris

manufactured things in the ocean or on the shore that people have lost, forgotten or thrown away

Marine debris can cause problems for many animals. During your visit to the beach, count the debris you find and answer the questions based on the animal's behavior.

_____ name of beach

Marine Debris and Animal Behavior

Cargo box bands are used for packaging and **rope** is used for fishing nets.

Curious sea mammals, such as the Steller's sea lion, often play with things they find floating in the water.

How many bands and rope pieces did you find? Why are they harmful?



Nurdles are tiny pieces of plastic used to make toys and other products. **Styrofoam** floats to shore in small and large colorful pieces.

Cormorant and other sea birds eat small, colorful fish.

How many plastic and Styrofoam pieces did you find? Why are they harmful?



How do you think marine debris gets into the ocean?

As an ocean steward, what can you do to help?





Activity 5

Tidal Zones

To care for our ocean, we need to understand how plants and animals interact with their environment. As the tides change, water covers intertidal zones or leaves them exposed to the sun and air. Animals adapt to survive these dramatic environmental changes. Can you guess where these animals usually live based on their adaptations?

Draw a line from each animal photo to the zone where that animal lives.
Hint: Read their descriptions and use the shadows for help!

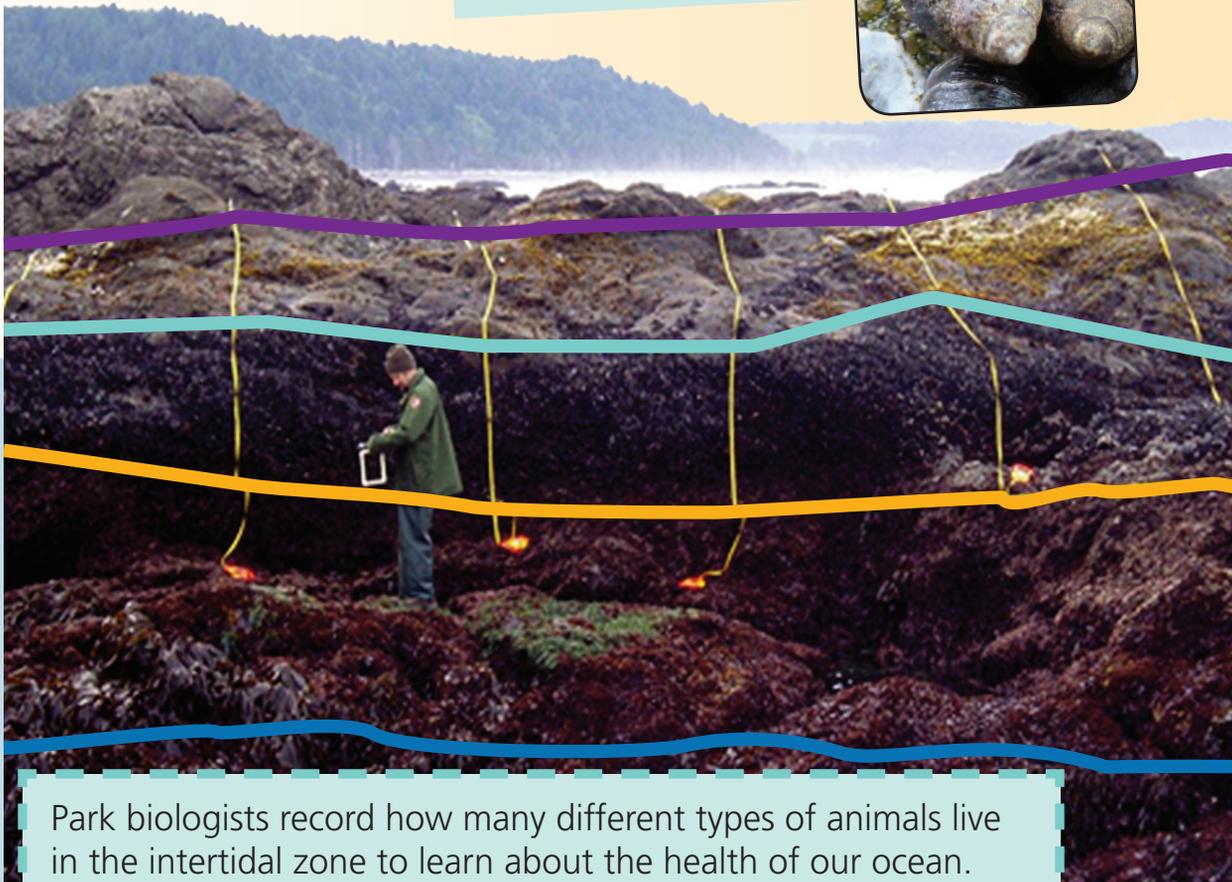


Ribbed limpets never travel far. They eat algae that they scrape off moist rocks and can live for weeks without water.

Sea urchins dig their homes into rocks underwater. They eat kelp in the deep waters.



Periwinkles can survive almost a month without getting wet.



Park biologists record how many different types of animals live in the intertidal zone to learn about the health of our ocean.



Acorn barnacles use their feet, called cilia, to reach for food. They close up when the tide is out.

Blue mussels hold on to rocks with byssal threads. Their shells protect their soft bodies from the sun.



Nudibranchs have feather-like gills on their backs. They stay underwater as long as possible.



Ochre sea stars clear the way for other creatures by eating mussels in higher zones. But, they move from place to place underwater.



Giant green anemones close up, covering their green prey-stunning stingers, in order to stay moist when the tide is out.



A Tale of Two Fossils

At Kalaloch's Beach 4, a visitor found a **fossil sea star** that is 5 to 24 million years old. It shows us that many creatures have lived on Earth much longer than we have!



The sea star and other marine animals adapt to slow, natural, environmental changes. When we burn **fossil fuels**, like coal and oil, we release carbon dioxide into the air. Ocean chemistry changes when water absorbs too much carbon dioxide. This process, called ocean acidification, makes water more acidic, which breaks down the shells and body structures of sea life. Scientists are discovering that ocean acidification may be happening too fast for some animals to adapt.

What are the two kinds of fossils in the tale?
How can you decrease your use of fossil fuels?



Splash Zone

splashed by waves during high tides



High Tide Zone

exposed during **all** mid and low tides



Mid Tide Zone

exposed during **some** mid and low tides



Low Tide Zone

exposed only during the lowest tides (full or new moon)

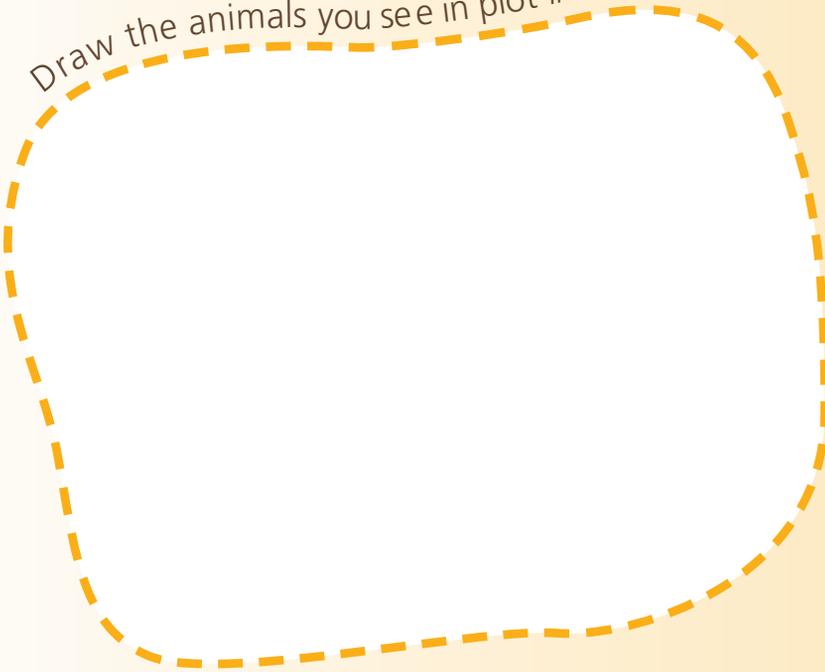


Activity 6

Coastal Study Plots

It is easy to be excited by the waves, sea stacks and rugged beauty of the coast's beaches and tide pools. Let's slow down and take a closer look by using a plot to focus our attention.

Draw the animals you see in plot #1 below.



Create plot #1 by drawing an imaginary circle around a small area on the coast. You can also use a shoe lace or piece of rope. Take five minutes to look only at what is inside the plot boundary. Report your findings.

How many different kinds of animals and plants do you see in plot #1? _____

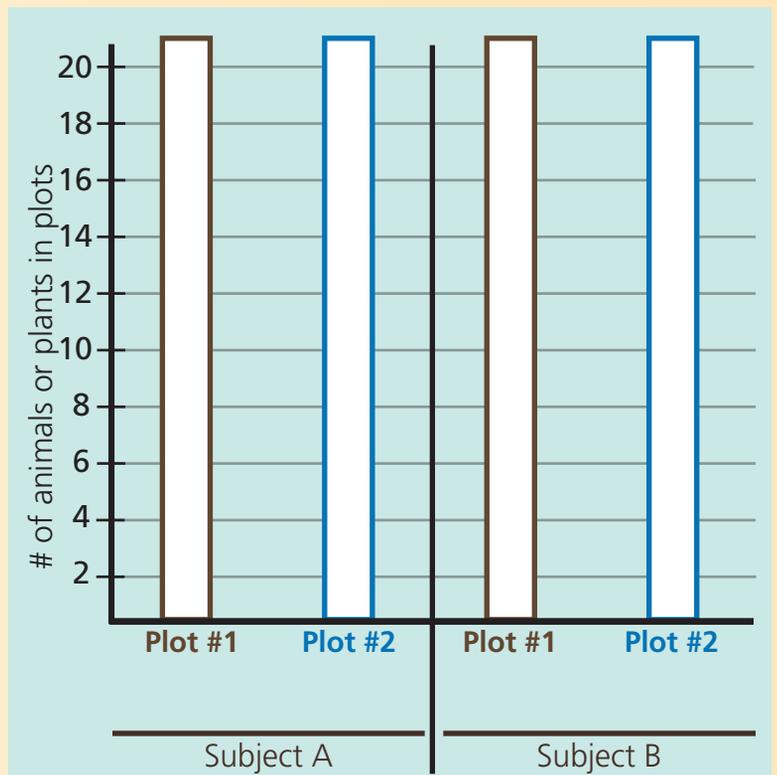
Circle the most interesting plant or animal in your drawing. What makes it so interesting to you?

Bonus Challenge!

Observe and compare plot data from two coastal areas. Select two animals or plants inside plot #1 and write their names as subjects A and B on the graph. Shade the bar graph up to the amount you found in plot #1.

Go to another location and put down plot #2. Count how many of subjects A and B are in this plot. Shade in the bar graph for plot #2.

Can you explain the differences between plot #1 and plot #2?



Activity 7

Coastal Word Search



Find the **16 BOLD** ocean words and phrases hidden frontwards, backwards and diagonally in the puzzle below. Much more is hidden in the ocean. Can you find 14 more ocean related bonus words in the word search?

At **OLYMPIC** National Park **BALD EAGLES** and **COMMON MURRES** fly above a sandy and rocky **COAST**. **WAVES** crash against cliffs and **BARNACLE** covered rocks. About every six hours, **LIMPETS**, **CHITONS** and **SEA STARS** must adapt to different **TIDAL** conditions. In Olympic Coast National Marine **SANCTUARY** waters, marine mammals, like **SEA OTTERS** and **ORCAS**, hunt their food in the **BULL KELP** forests. Have fun exploring this lively place. Help park **RANGERS** and sanctuary staff protect these communities by practicing **LEAVE NO TRACE**.

W	S	H	E	L	L	S	D	R	Q	F	C
B	Y	R	A	U	T	C	N	A	S	I	O
E	S	S	A	R	G	C	G	N	T	N	M
A	A	E	K	T	I	L	U	G	E	S	M
C	N	G	L	P	S	E	L	E	P	P	O
H	D	C	M	G	H	A	L	R	M	L	N
E	Y	Y	H	W	A	V	E	S	I	E	M
S	L	A	D	I	T	E	Y	S	L	K	U
O	R	C	A	S	T	N	D	T	S	L	R
W	X	F	A	M	W	O	R	L	L	L	R
H	T	O	A	N	Q	T	N	Z	A	U	E
A	C	L	K	V	R	R	J	S	E	B	S
L	C	R	A	B	S	A	G	M	S	F	K
E	R	O	C	K	Y	C	B	S	A	L	T
S	E	A	O	T	T	E	R	S	K	Y	N



Sea Stars

The **Ochre Sea Star** (*Pisaster ochraceus*) eats mussels by prying open their shells with its strong arms. The sea star then pushes its stomach inside the shells to digest the mussel. After the sea star is done, it pulls its stomach back inside its own body and moves on to the next meal.

Can you imagine eating your next meal like a sea star eats? What would people think?

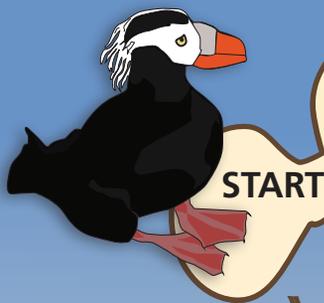


Activity 8

Sea Stack Maze

FINISH

Help the tufted puffin find the way to its perch on the sea stack.



What are sea stacks?

Millions of years ago, the shores of the Olympic Peninsula stretched many miles out to sea. Sea stacks are tall islands that were once a part of the ancient shoreline. Every day, waves and wind continue to slowly erode this ever changing shore.

Today, over 450 sea stacks along the coast of Olympic National Park are important bird refuges. Tufted puffins and other birds nest and raise their young on sea stacks and coastal cliffs.



Activity 9

At Home on the Water

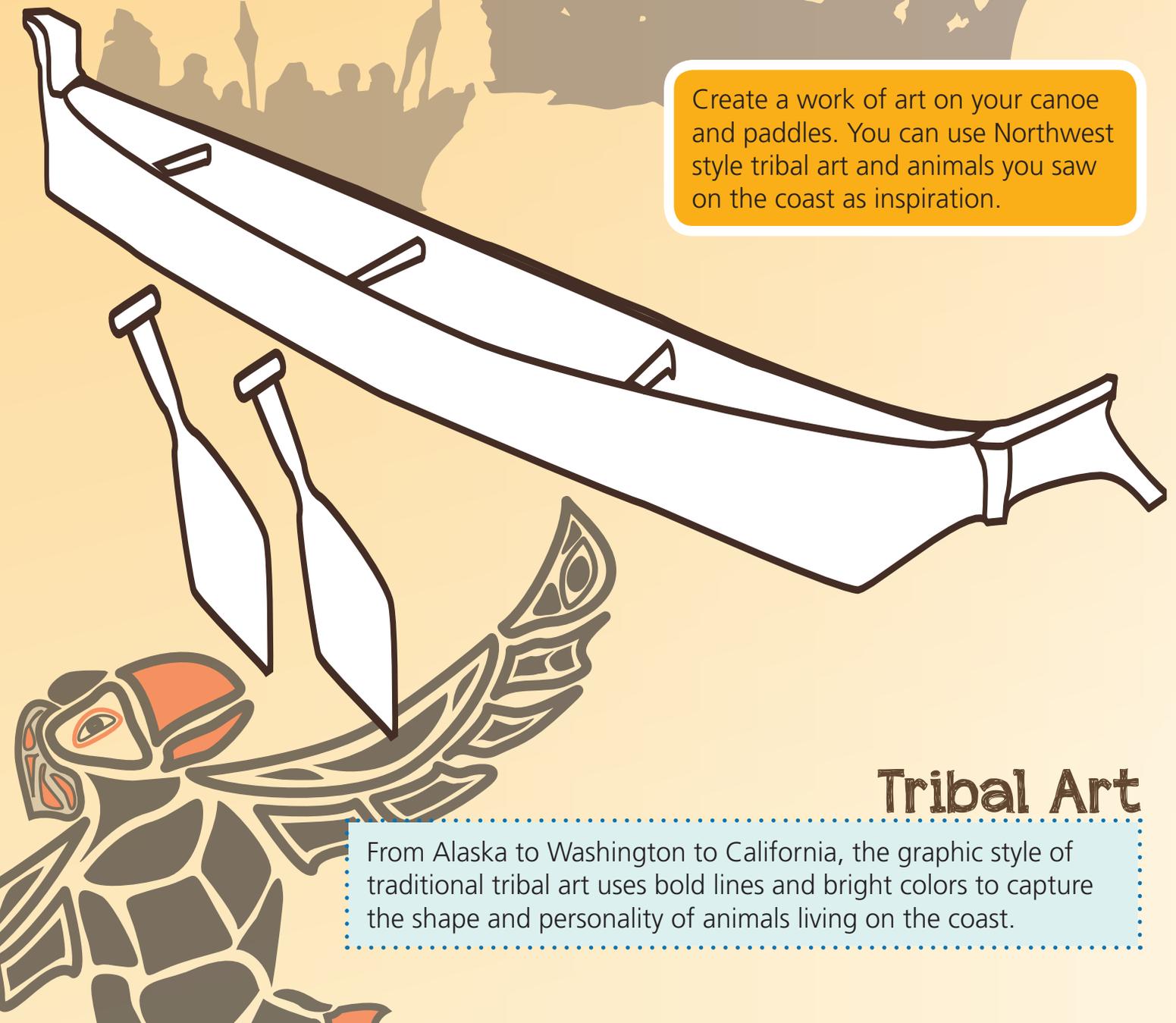
Ocean Stewards protect cultural legacies. For thousands of years, people who live along the Olympic coast have used hand-carved western red cedar canoes to travel on rivers and the ocean. Traditional artwork often adorns these canoes.



Create a work of art on your canoe and paddles. You can use Northwest style tribal art and animals you saw on the coast as inspiration.

Tribal Art

From Alaska to Washington to California, the graphic style of traditional tribal art uses bold lines and bright colors to capture the shape and personality of animals living on the coast.





Activity 10

Sea Otters Abound

Sea otters (*Enhydra lutris*) have the densest fur of all mammals—approximately one million hairs per square inch. Originally, their range was from Baja, California to Hokkaido, Japan. In the 1700s, the ocean dwelling sea otters became highly valued in the fur trade. Just 200 years later, sea otters no longer swam, grazed or played along Washington’s coast. They were extirpated, which means they were hunted to extinction in this area.



Scientists who monitor wildlife realized that sea otters once played an important role in the health of this diverse coastal habitat. They decided to relocate a group of sea otters from Alaska to several locations along the west coast. In Washington, 59 Alaskan sea otters were released in what is now Olympic Coast National Marine Sanctuary. Scientific observations and monitoring showed the population grew slowly. In the 1980s, it began to flourish. Today, more than 1,000 sea otters live in the sanctuary along the coast of Olympic National Park. It’s a real success story!

What is the benefit of reintroducing a species after it has been extirpated from an area?

Handwriting lines with a sunburst illustration on the right side.

If you were helping to reintroduce an animal back into its natural ecosystem, what steps would you take to ensure its chance of survival?

Handwriting lines with a sea otter illustration on the right side.



Otters, Urchins and Kelp

Sea otters are one of the main predators of sea urchins. Without sea otters, urchins overgraze the kelp forest of the coastal ecosystem, limiting important habitat for fish and other animals.



Activity 11

Interview a Ranger



Write three questions about your visit to Olympic National Park. After you interview a park ranger, write his or her answers below.



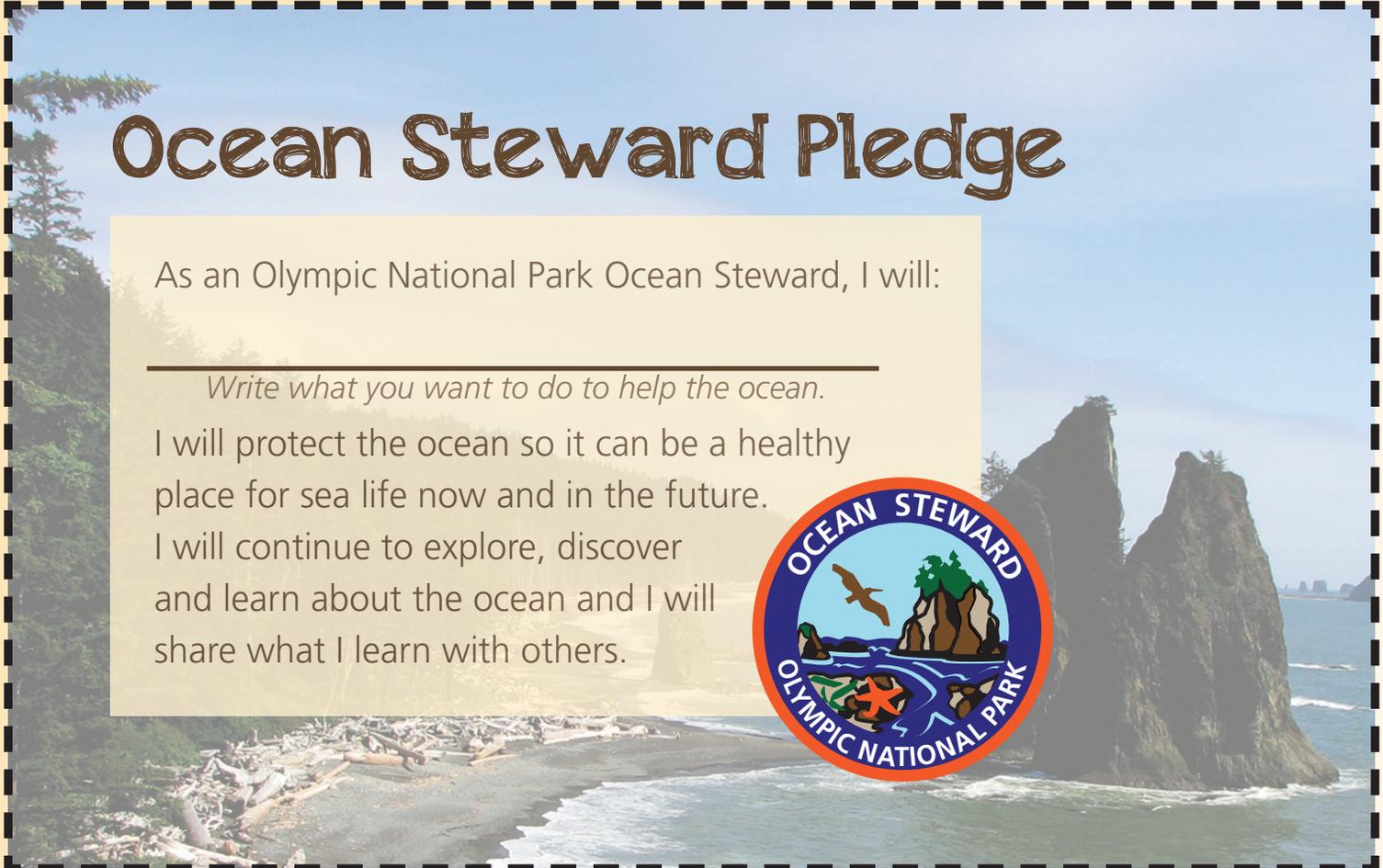
Ocean Steward Pledge

As an Olympic National Park Ocean Steward, I will:

Write what you want to do to help the ocean.

I will protect the ocean so it can be a healthy place for sea life now and in the future.

I will continue to explore, discover and learn about the ocean and I will share what I learn with others.



Wilderness Coast Safety

Olympic National Park's wilderness coast has craggy headlands, sandy beaches, boulder fields, giant drift logs, wild animals, changing tides, crashing waves and changing weather. Ask a park ranger to help plan your adventure.

Do:

- Be careful when crossing drift logs
- Watch for waves
- Walk on bare rocks or sand
- Leave animals in their natural habitat
- Store food properly

Bring:

- A snack
- A flashlight
- A first aid kit
- Layers of clothing and shoes that grip
- A cell phone—
for emergencies, dial 911

Get:

- A tide chart to plan best hike times
- A map to plan your trip
- A permit and a bear can, which are required for coast overnight camping

Created by: Division of Interpretation and Education, Olympic National Park, National Park Service, 2013
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Ocean Steward Certificate

Olympic National Park and Olympic Coast National Marine Sanctuary recognize your outstanding achievement as an Ocean Steward.

name

park ranger

date

