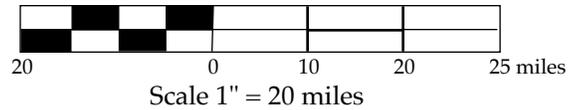




# Exploring Alaska's Prince William Sound

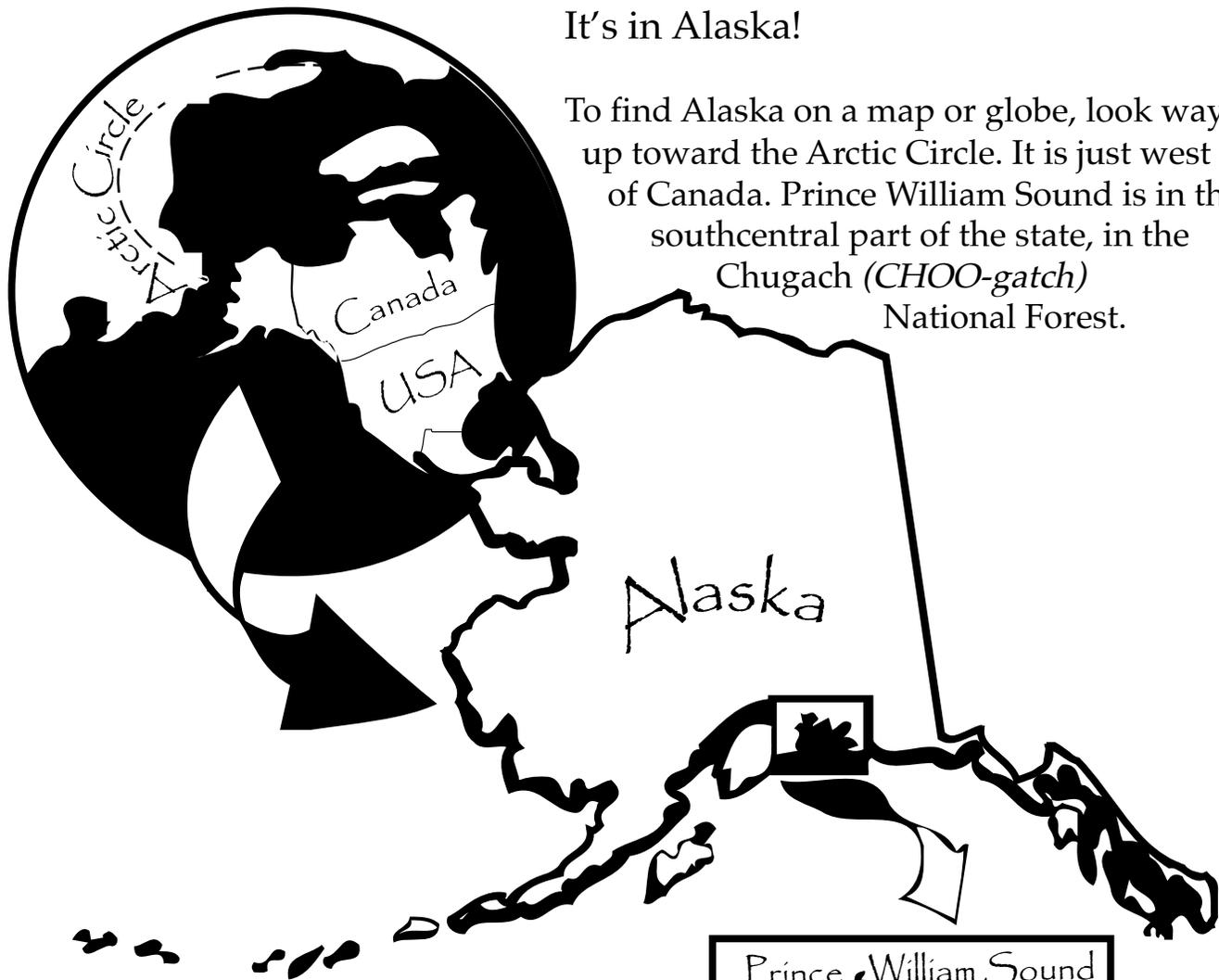


Prince William Sound is where the forests turn to sea. When we talk about Prince William Sound we mean all the land and water that make up this special place. It's filled with tall trees, beautiful scenery and amazing creatures. To explore this magical place, just turn the page!

# Where in the World is Prince William Sound?

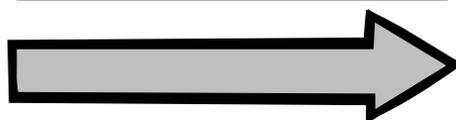
It's in Alaska!

To find Alaska on a map or globe, look way up toward the Arctic Circle. It is just west of Canada. Prince William Sound is in the southcentral part of the state, in the Chugach (CHOO-gatch) National Forest.



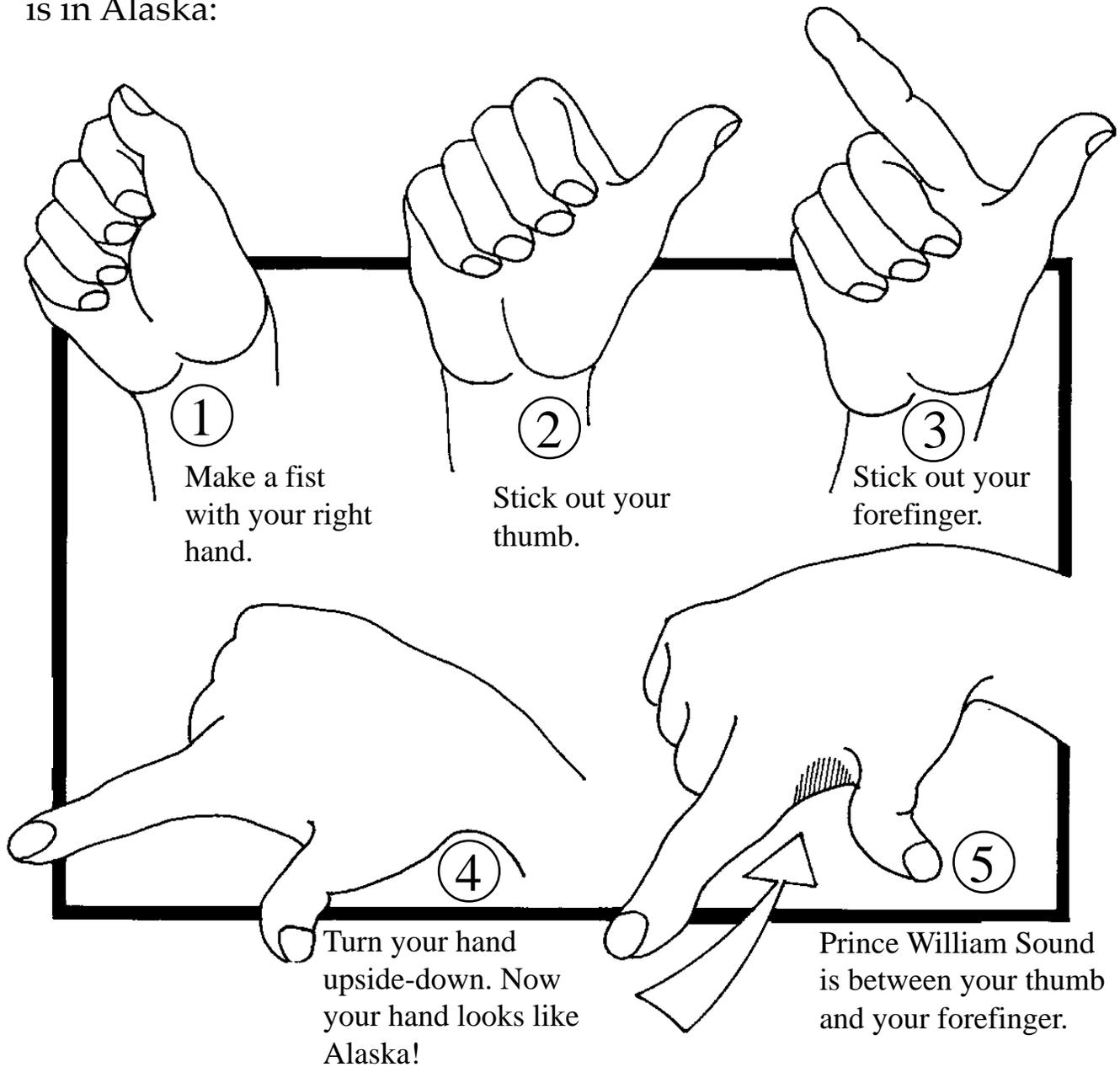
## How Big Is It?

Prince William Sound is over 2 million acres! That is bigger than the whole state of Vermont! In fact, if you explored 1,000 acres of the Sound every day, it would take you more than five years to see it all!

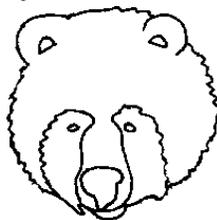


# Your Own Map of Alaska

Here's an easy way to remember where Prince William Sound is in Alaska:



Now you have a map of Alaska you can carry with you wherever you go!



# The Forest World

All around the Sound you'll find thick, wet forests and lots of plants and animals living here. Together they make up an *ecosystem*. An ecosystem is where everything depends on each other to survive. Prince William Sound has a cool, wet ecosystem called a *temperate rain forest*. Only special plants and animals can live in this wet climate.

## Green Giants

They're big. They're green. They're the mighty trees of Prince William Sound! Some are so big that your parents can't even reach around the trunk!

Trees that stay green all year long are called *coniferous* or *evergreen* trees. The most common conifers in Prince William Sound are white spruce, Sitka spruce, mountain hemlock and western hemlock.

## Color the Critters!

Many animals depend on plants and trees for food and shelter. Little critters, like red squirrels  and small birds, eat spruce cones and nest in tree branches. Mighty eagles  perch high up on the treetops.  Big brown bears munch on blueberries and scratch their backs on tree trunks!

**Can you spot all the forest friends?**

Bald Eagle

Red Squirrel

Mountain Goat

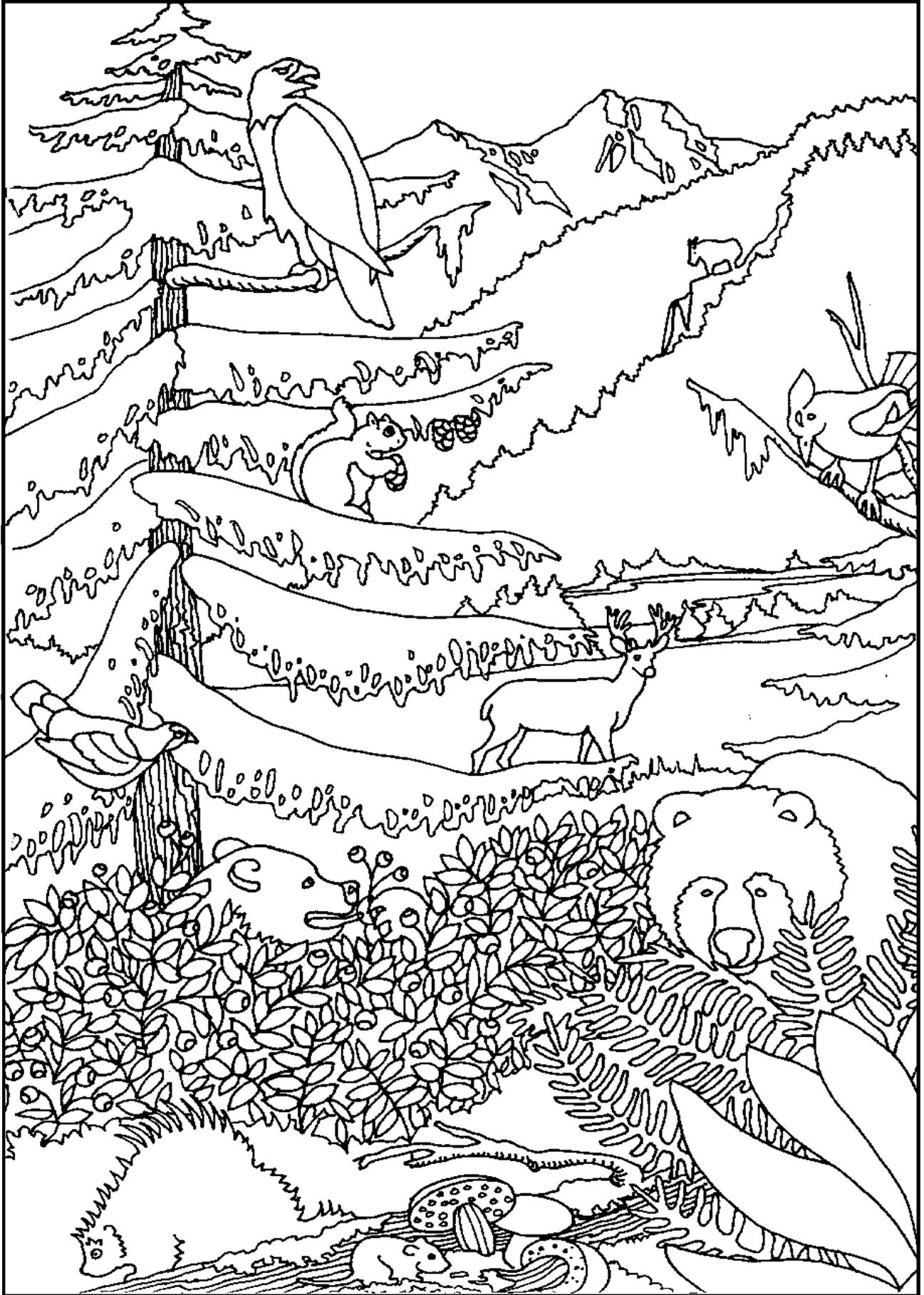
Sitka Spruce

Old Man's Beard

Spruce Grouse

Blueberry

Porcupine



Steller's Jay

Sitka Black-tailed Deer

Brown Bear

Montague Island Vole

# Be A Wildlife Detective!

Connect the tracks with the Prince William Sound animals who made them.

*Bald Eagle*

*Mountain Goat*

*Brown Bear*

*Lynx*

*River Otter*

*Answer on back cover*

Prince William Sound's forests are home to many different kinds of animals. Sometimes a lucky wildlife watcher will catch a glimpse of a brown bear or a mountain goat. Often though, a track or a feather is the only clue that an animal has passed through.

**Did You Know?**

You can fit both your feet into the track of a big brown bear's hind foot!

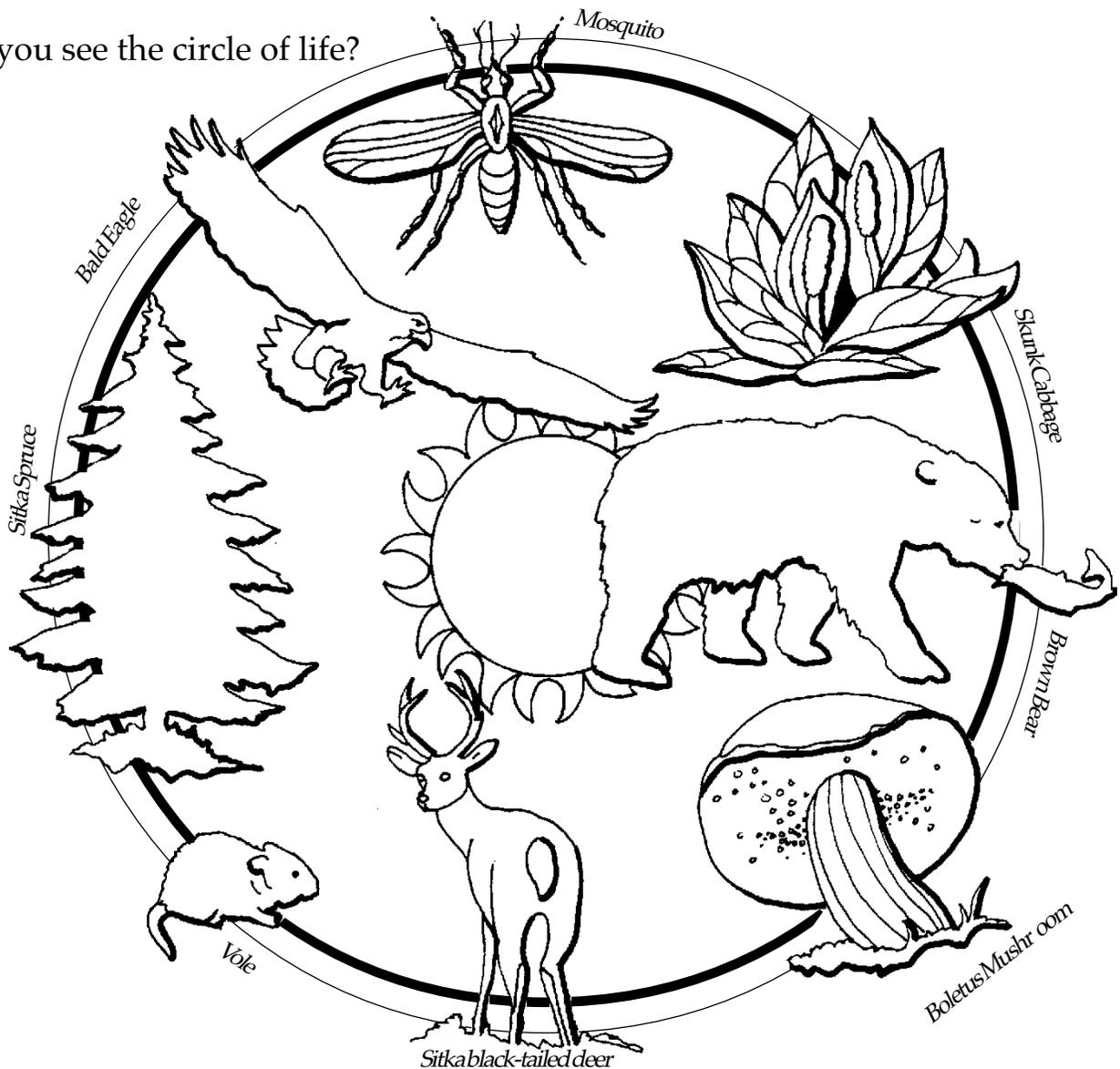
# The Circle of Life

**Every plant and animal in the forest has an important job.**

Plants grow in the soil and make their own food. Animals eat the plants. And insects and fungi (like mushrooms) absorb food from dead animals and plants. This makes the soil rich in nutrients, helping plants grow so they can feed more animals!

It's a circle. If any part of the circle were broken, the whole forest community would be in trouble.

Can you see the circle of life?



**After you color this picture, try drawing a line between each plant, animal or fungus, and the things it eats.**

*Answers on back cover .*

# The Lively Low Life

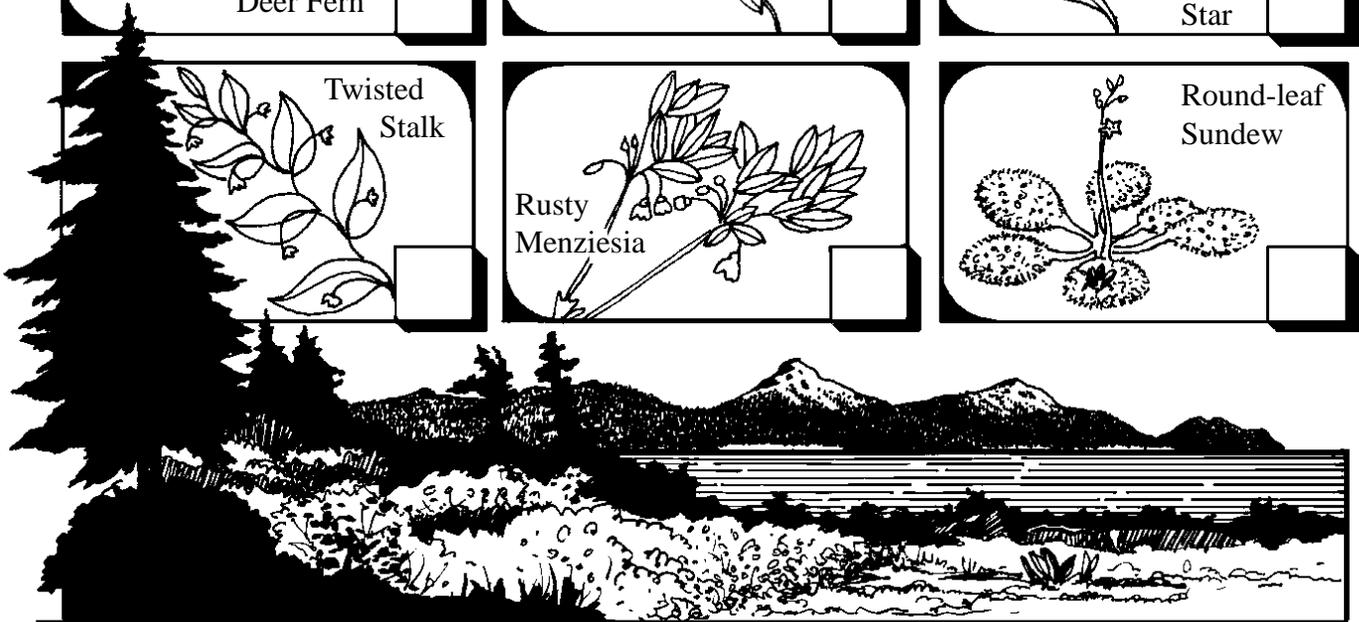
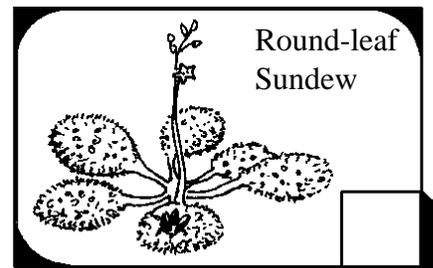
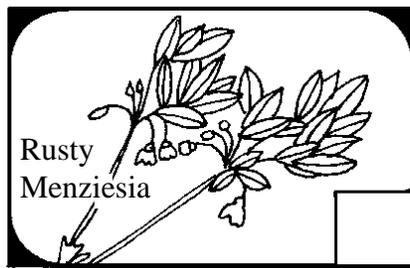
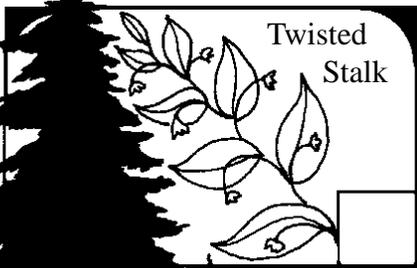
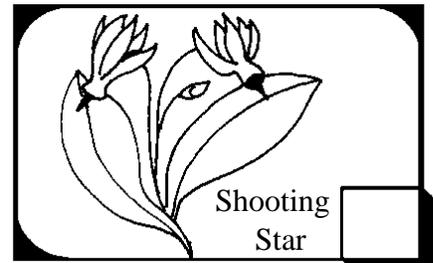
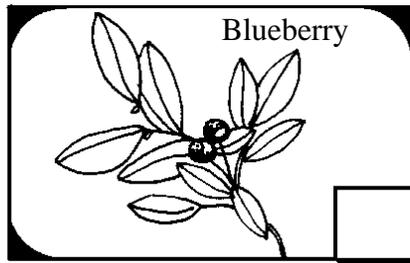
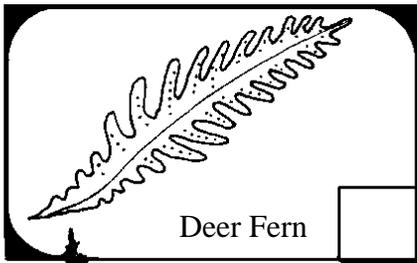
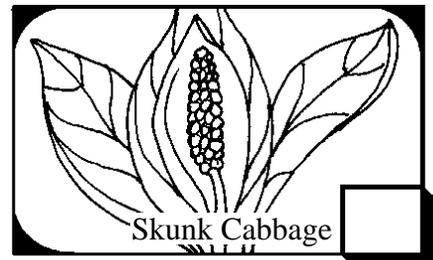
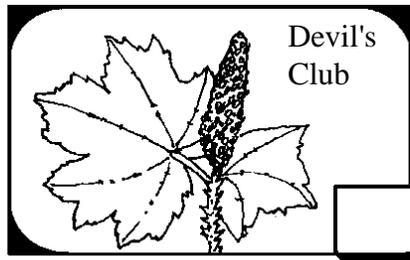
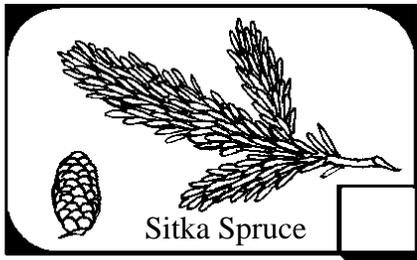
Beneath all the big trees are lots of interesting plants. They live low to the ground and come in all shapes and sizes. Some grow well in the shade of coniferous trees, while others need direct sunlight found in open meadows.

Large marshy, open areas are often found in the Sound's forests. These are called *muskegs*. The soil of a muskeg is wet and cold, making it hard for most plants to grow. Some plants, like the sundew, have special ways to survive. The sundew captures small insects in its sticky tentacles! It slowly dissolves the insect and uses it as fertilizer to grow.

Forest

Edge

Muskeg



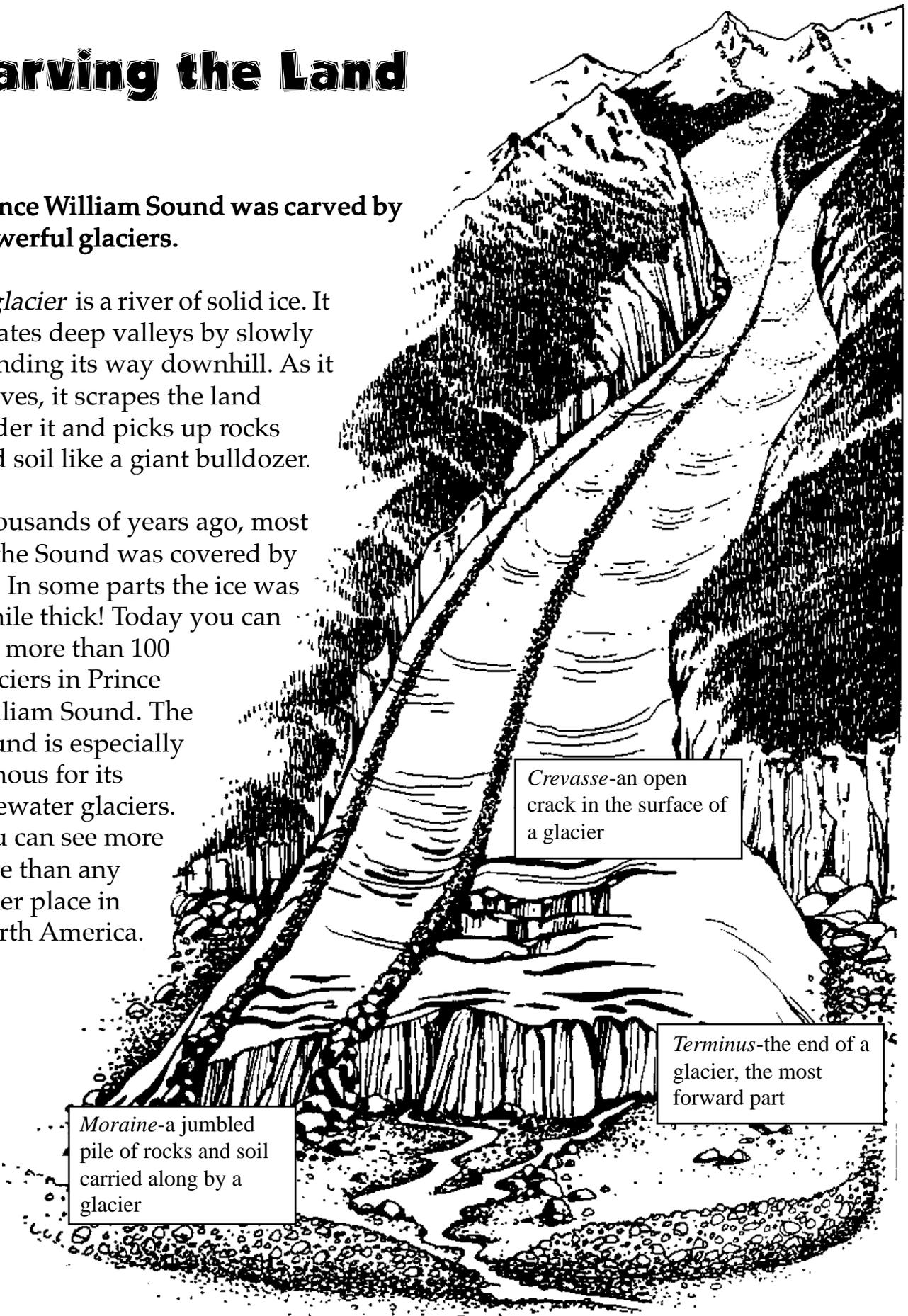
Place a check mark in the box when you find the plant.

# Carving the Land

Prince William Sound was carved by powerful glaciers.

A *glacier* is a river of solid ice. It creates deep valleys by slowly grinding its way downhill. As it moves, it scrapes the land under it and picks up rocks and soil like a giant bulldozer.

Thousands of years ago, most of the Sound was covered by ice. In some parts the ice was a mile thick! Today you can see more than 100 glaciers in Prince William Sound. The Sound is especially famous for its tidewater glaciers. You can see more here than any other place in North America.



*Crevasse*-an open crack in the surface of a glacier

*Terminus*-the end of a glacier, the most forward part

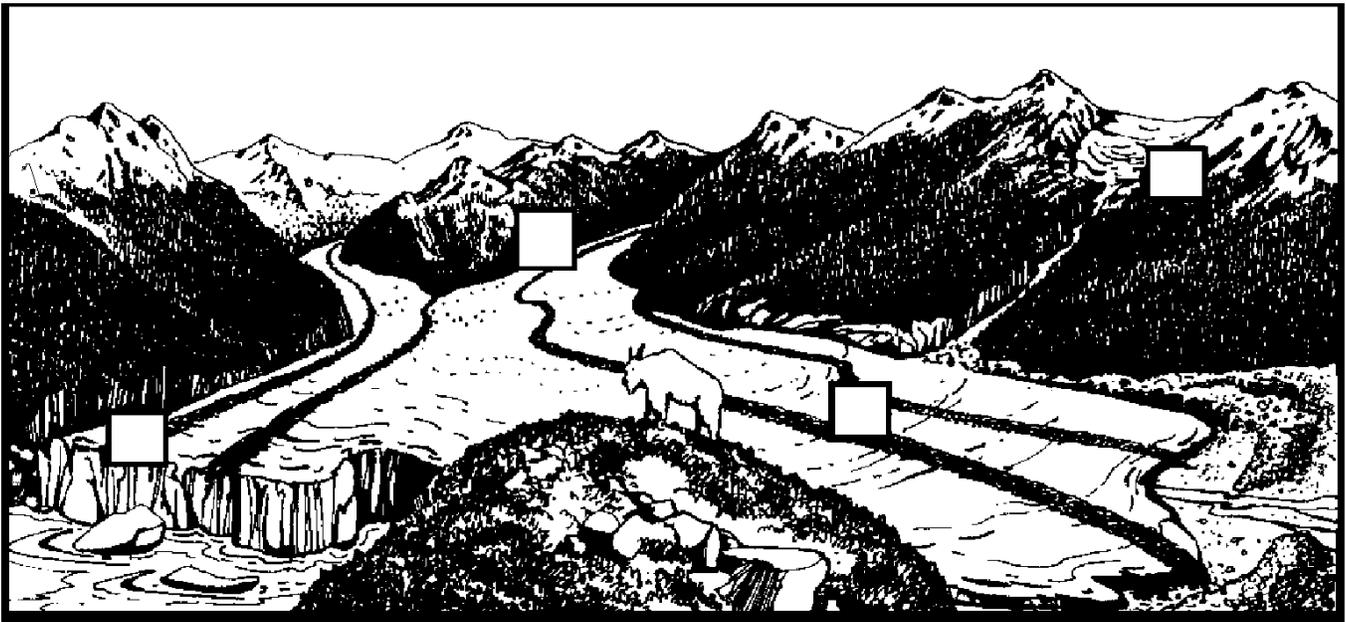
*Moraine*-a jumbled pile of rocks and soil carried along by a glacier

# The Glacier Game

Glaciers come in all shapes and sizes. You can identify a type of glacier by where it starts and where it ends. **Read the clues below, then match each glacier type with the picture below.**

- \* *Valley glaciers* flow down mountains and end between valley walls.
- \* A *piedmont glacier* (pronounced "PEED-mont") flows down a valley and spreads over a flat area.
- \* A *cirque glacier* (pronounced "SERK") is a small glacier found high in the mountains, nestled in a round valley called a "cirque".
- \* A *tidewater glacier* ends in the ocean. When big chunks of ice fall off into the water it's called "calving".

A. Valley Glacier      B. Piedmont Glacier      C. Cirque Glacier      D. Tidewater Glacier



Answers on back cover .

\*      \* **Did You Know?** \*      \*

\*      \*      Glaciers are made when more snow falls than melts. Over time, new snowflakes are crushed and compacted by more and more snow. They eventually turn into solid glacier ice that looks like crystals instead of snowflakes.      \*

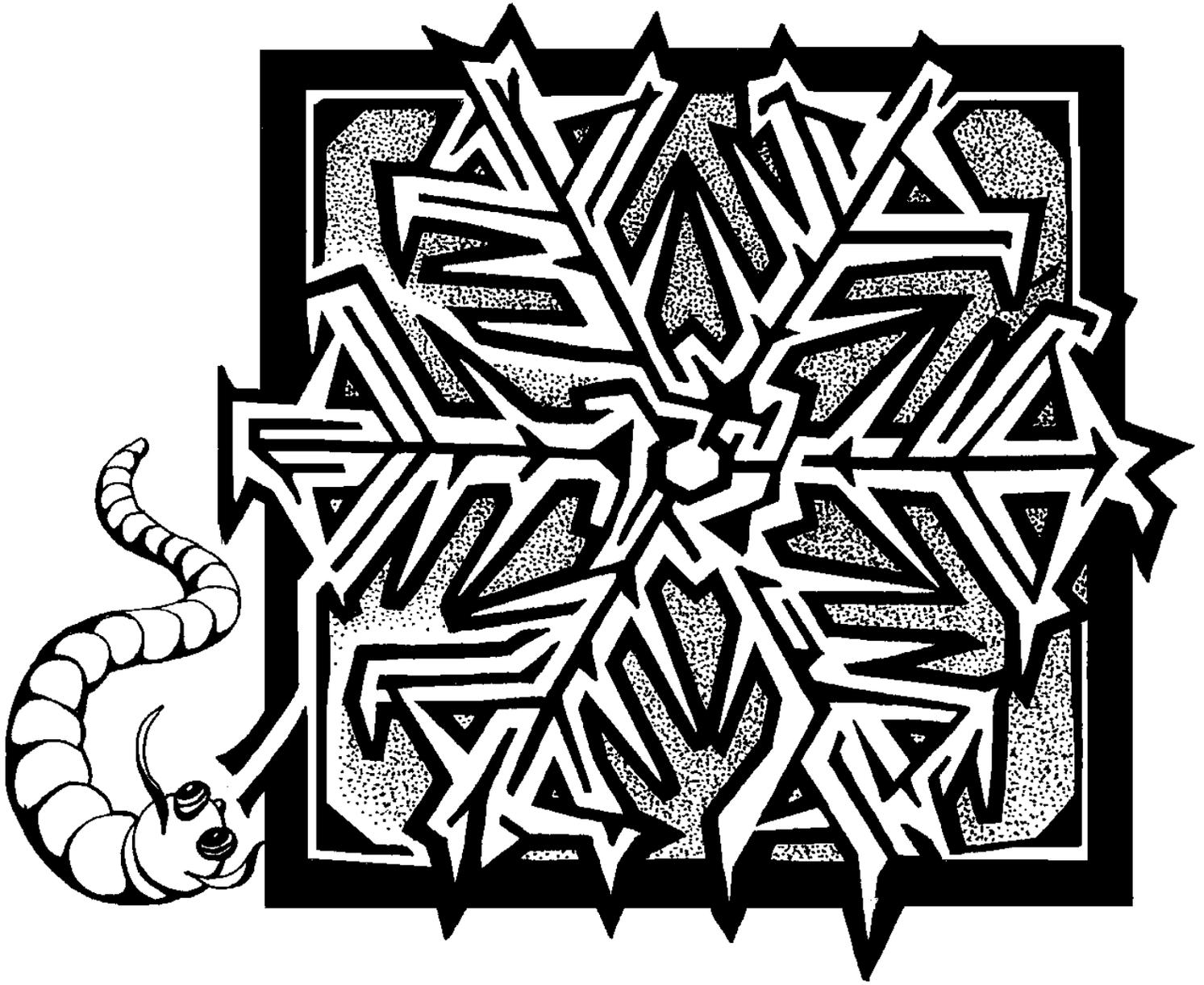
\*      \*      Narrow bays and inlets created by glaciers are *fjords* (pronounced "FEE-yords").      \*

# Want to Live in an Icecube?

Iceworms do!

These little animals are so small you can hardly see them. They eat the soil and other nutrients trapped inside glaciers.

Help this friendly iceworm find its way through the snowflake maze to the center of the ice.



# The Ocean World



The ocean is alive! Many plants and animals live secret lives in the waters of Prince William Sound. You can't always see them, but they are there.



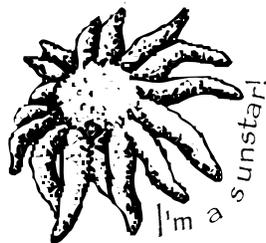
Just like in the forest, each plant and animal, from the tiny intertidal critters to the creatures of the deep, plays a special role in keeping this unique ecosystem alive and healthy.



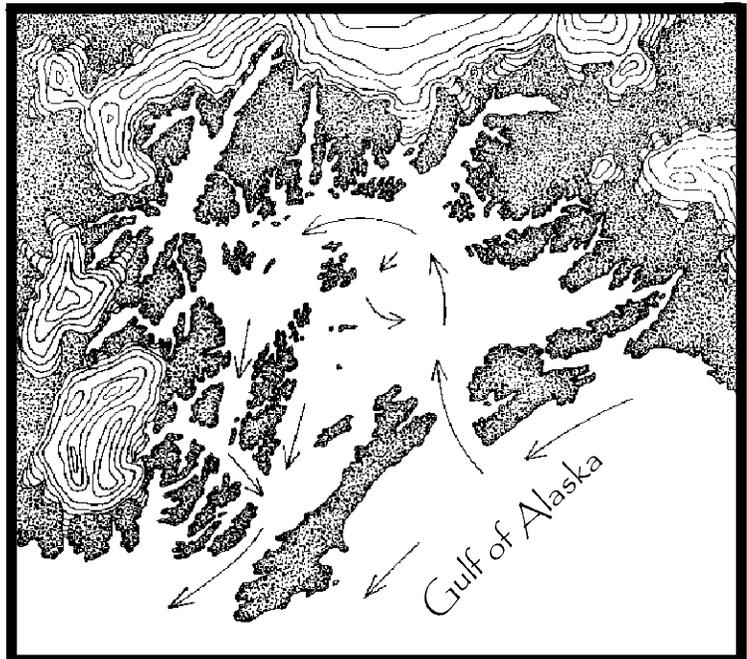
Razor Clams

## Sound Science

A sound is where ocean water comes into a big, protected cove. In Prince William Sound, the salty water comes in from the Gulf of Alaska and circulates counter-clockwise. It is diluted with fresh water from glaciers, snow melt and rain. This makes the water less salty and colder than the ocean. So don't go swimming! You would need a lot of feathers or a ton of blubber to keep you warm!



Prince William Sound Currents



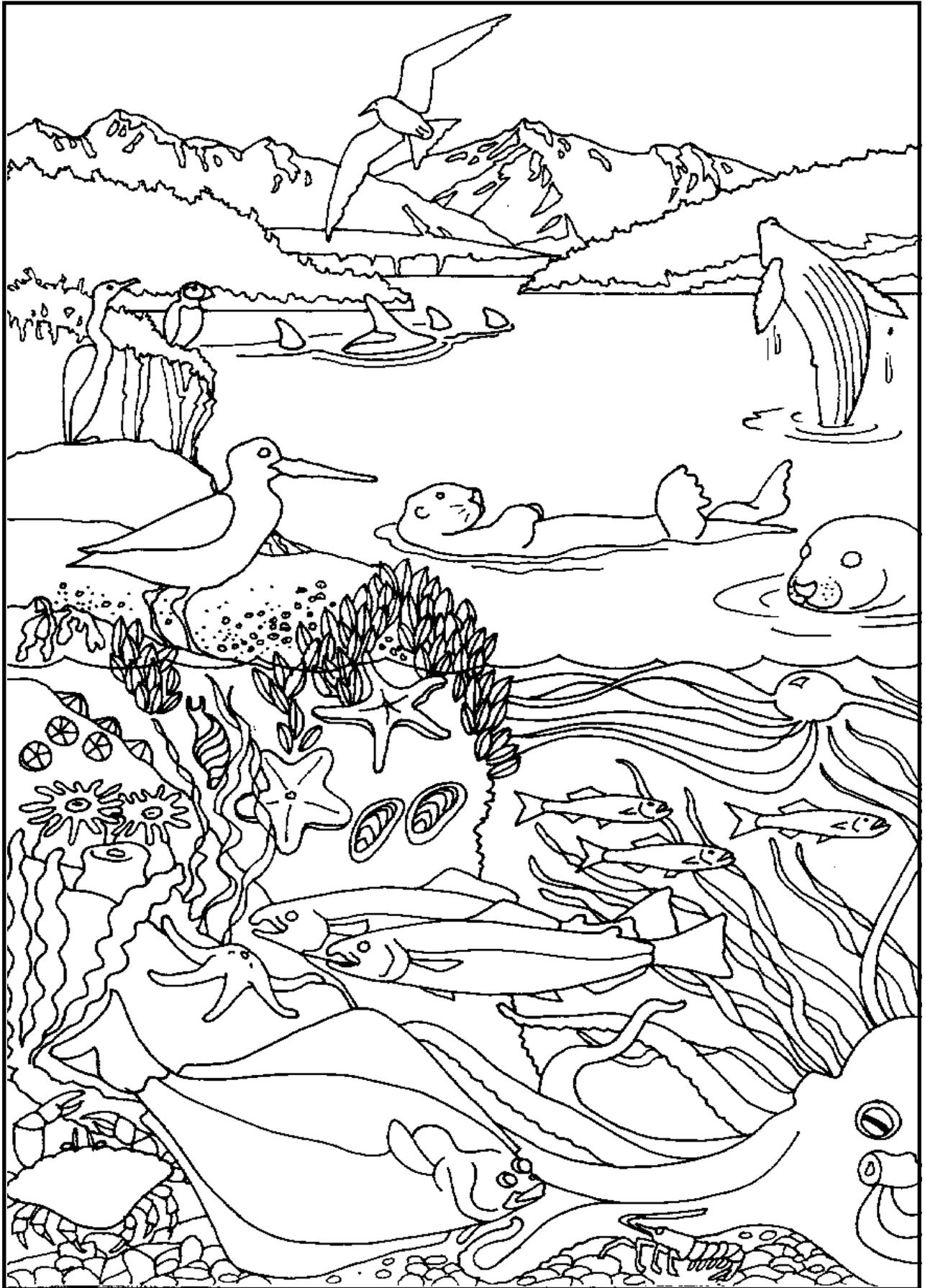
Color the saltwater blue and the freshwater red; see how the colors mix in the middle!

Glaucous-winged gull

Orca

Sea Otter

Dungeness Crab Seastar Anemone Blue Mussel Black Oystercatcher Cormorant Horned Puffin



Humpback Whale

Harbor Seal

Bull Kelp

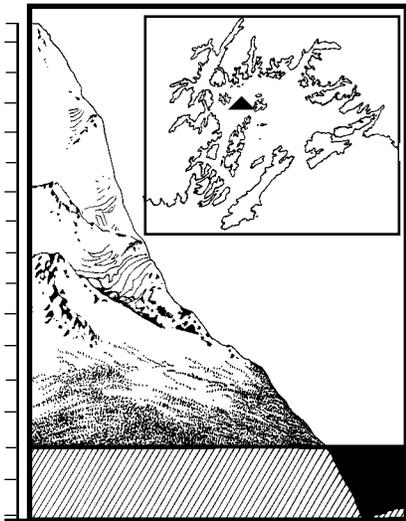
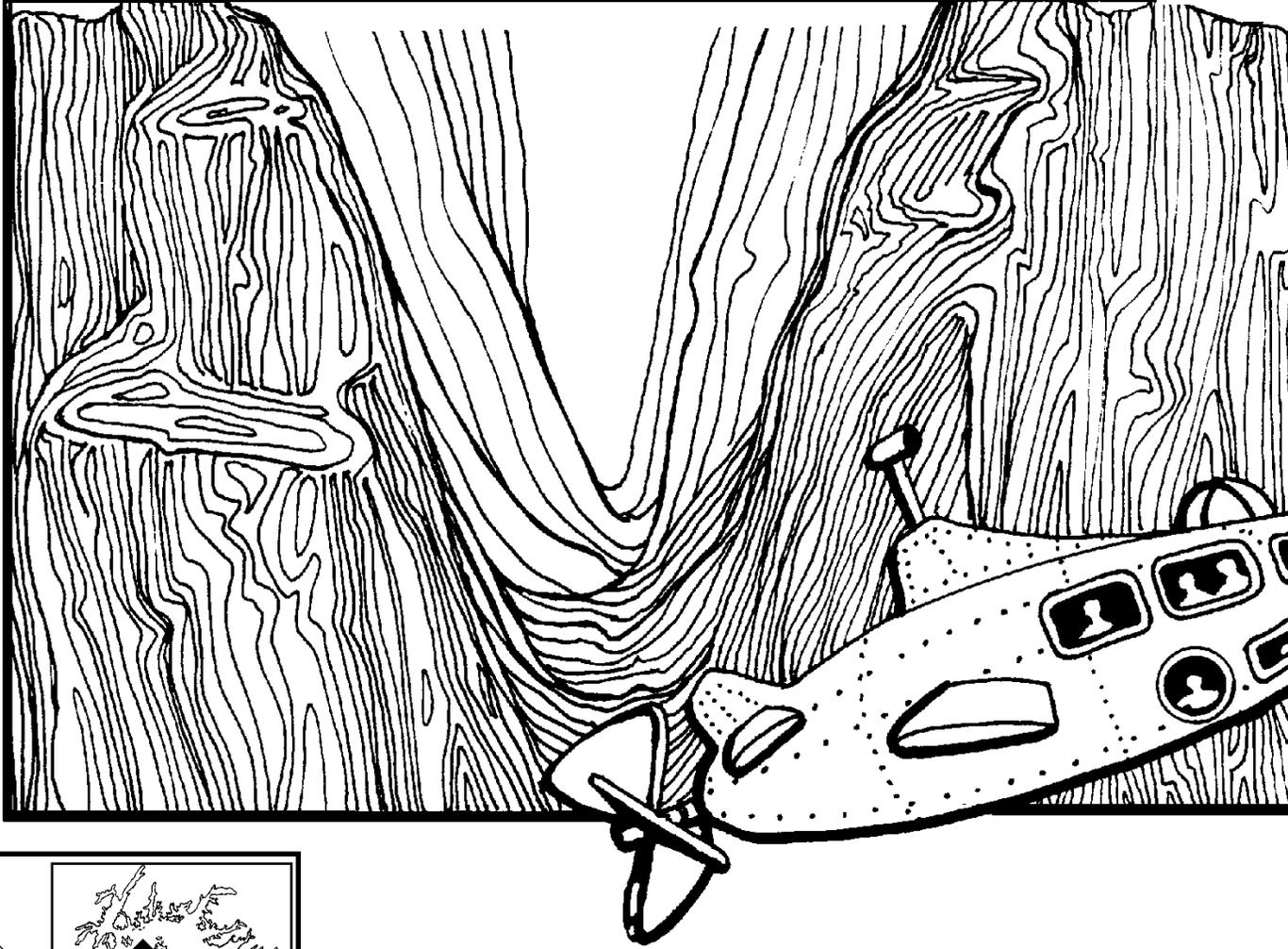
Herring

Octopus

Halibut

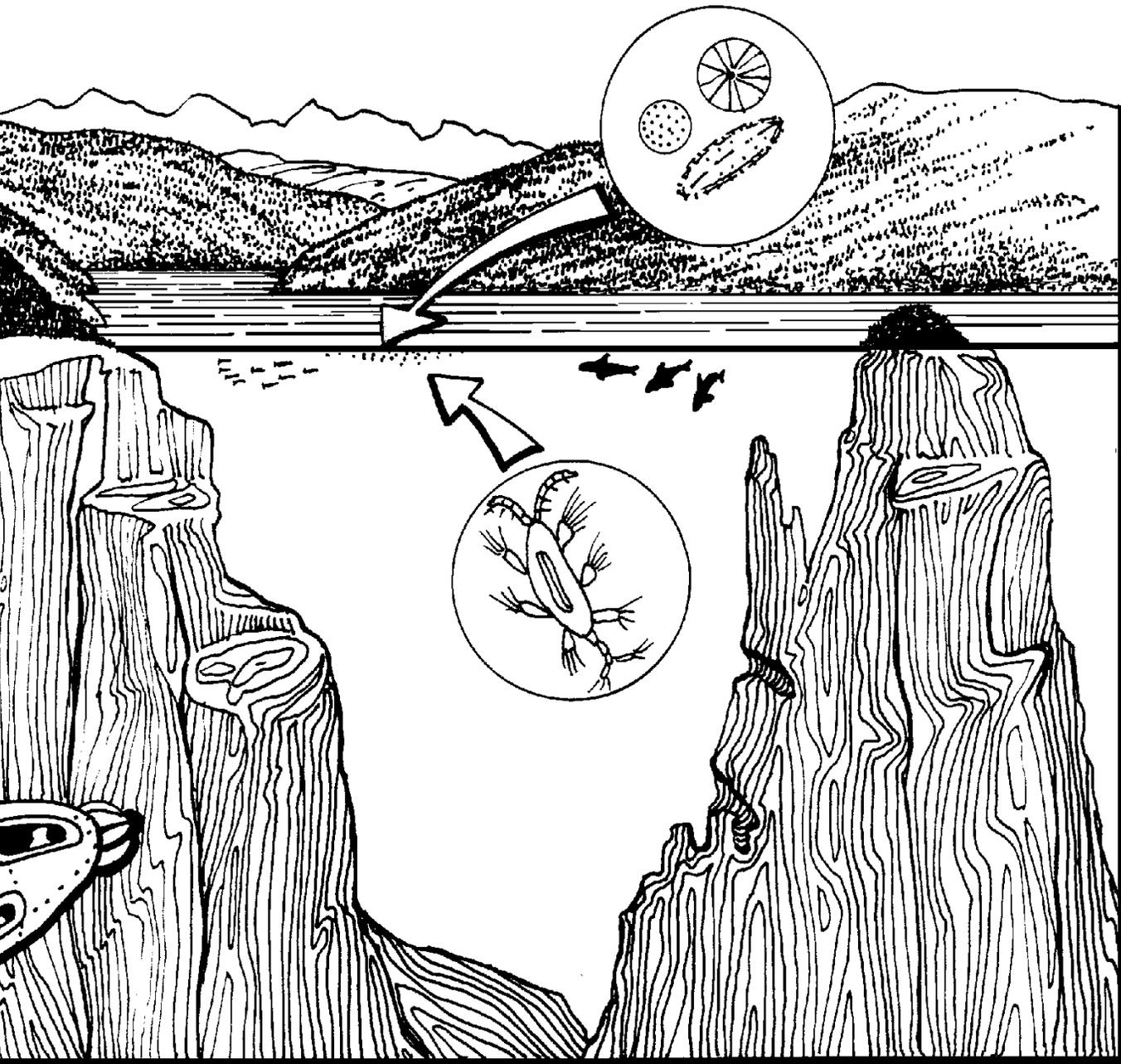
Silver Salmon

Spot Shrimp



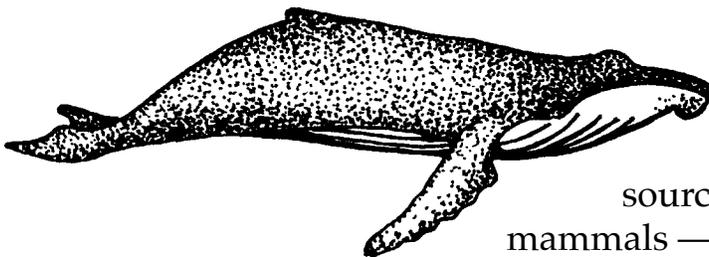
## The Submarine Scene

Imagine yourself in a submarine, exploring the bottom of Prince William Sound. You could see a magical world of canyons, trenches, mountains and sea vents. The sea floor is not flat! There are lots of cool places for plants and animals to swim.



## Little Plankton for Big Appetites

Some plants and animals in Prince William Sound are so small you can only see them with a microscope. These tiny organisms are called *plankton*. They come in a variety of unusual shapes.



In spring, plankton “blooms” like flowers and floats to the surface. Plankton is a very important food source for many different fish and marine mammals — including giant humpback whales.

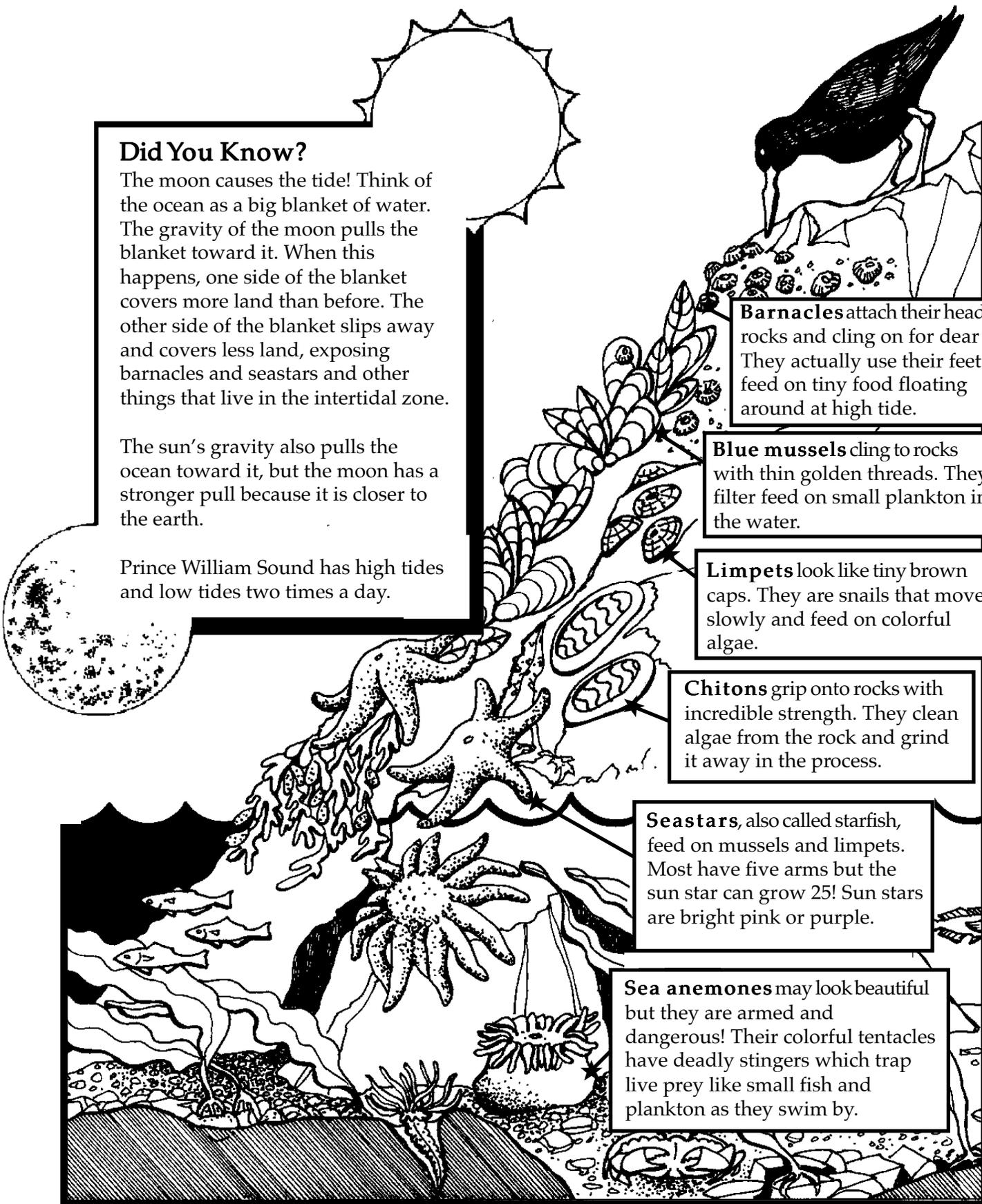
# Life in the Intertidal Zone

## Did You Know?

The moon causes the tide! Think of the ocean as a big blanket of water. The gravity of the moon pulls the blanket toward it. When this happens, one side of the blanket covers more land than before. The other side of the blanket slips away and covers less land, exposing barnacles and seastars and other things that live in the intertidal zone.

The sun's gravity also pulls the ocean toward it, but the moon has a stronger pull because it is closer to the earth.

Prince William Sound has high tides and low tides two times a day.



**Barnacles** attach their heads to rocks and cling on for dear life! They actually use their feet to feed on tiny food floating around at high tide.

**Blue mussels** cling to rocks with thin golden threads. They filter feed on small plankton in the water.

**Limpets** look like tiny brown caps. They are snails that move slowly and feed on colorful algae.

**Chitons** grip onto rocks with incredible strength. They clean algae from the rock and grind it away in the process.

**Seastars**, also called starfish, feed on mussels and limpets. Most have five arms but the sun star can grow 25! Sun stars are bright pink or purple.

**Sea anemones** may look beautiful but they are armed and dangerous! Their colorful tentacles have deadly stingers which trap live prey like small fish and plankton as they swim by.

# Feathered Friends



**Glaucous-winged gulls** are the garbage men in the ocean ecosystem. They can digest anything they can fit down their throat! Watch for gulls close to shore.

**Puffins** are really colorful and easy to spot. Their beaks are bright orange and yellow. Some have tufts of feathers on their heads. Most of them hang out in the western part of the Sound, where they nest on the rocky shorelines.

Just outside the town of Whittier, you can see the largest **black-legged kittiwake** rookery in Prince William Sound. There are thousands! They have unique black legs and nest high up on the cliffs during the summer.

Glossy-black, with a long snakey neck, **cormorants** nest in large groups called rookeries. They dive deep into the ocean to catch the small fish they eat.

**Arctic terns** are champions of long-distance migration! Each spring they fly to Prince William Sound from their wintering grounds in South America and Antarctica – a round trip of over 11,000 miles!

Some sea birds, like the **marbled murrelet**, depend on both the sea and the forest to survive. They nest and raise their young in the trees. When the young ones grow up, they go live in the ocean. Marbled murrelets are the most common sea bird in Prince William Sound.

*Black Oyster catcher*

*Harlequin Duck*

# Blubber and Baleen

Spotting a whale from shore or on a boat is an exciting event. Did you know that whales are not fish? They are marine mammals. All mammals, including humans, have lungs for breathing air, they birth live young (not eggs) and have hair. Marine mammals also have special features to help keep them alive in the cold ocean water.

You might spot several different kinds of marine mammals in Prince William Sound. Watch for seals, sea otters, orcas (killer whales), and humpback whales.

**Can you match the marine mammal with its special survival feature?**  
(See clues below).

A. Harbor Seal

B. Orca or killer whale

C. Sea Otter

D. Humpback Whale

Baleen

Fur

Blubber

Echolocation

Answers on back cover

## Did You Know?

Harbor Seals have no external ears



A group of sea otters is called a raft. A group of whales is called a pod.

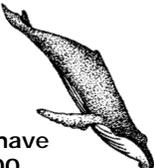


Orcas can hear each other from 5 miles away. They make an echoing sound and listen for other whales to call back. This is called echolocation



All marine mammals, except sea otters, have a thick layer of blubber and oil to keep them warm.

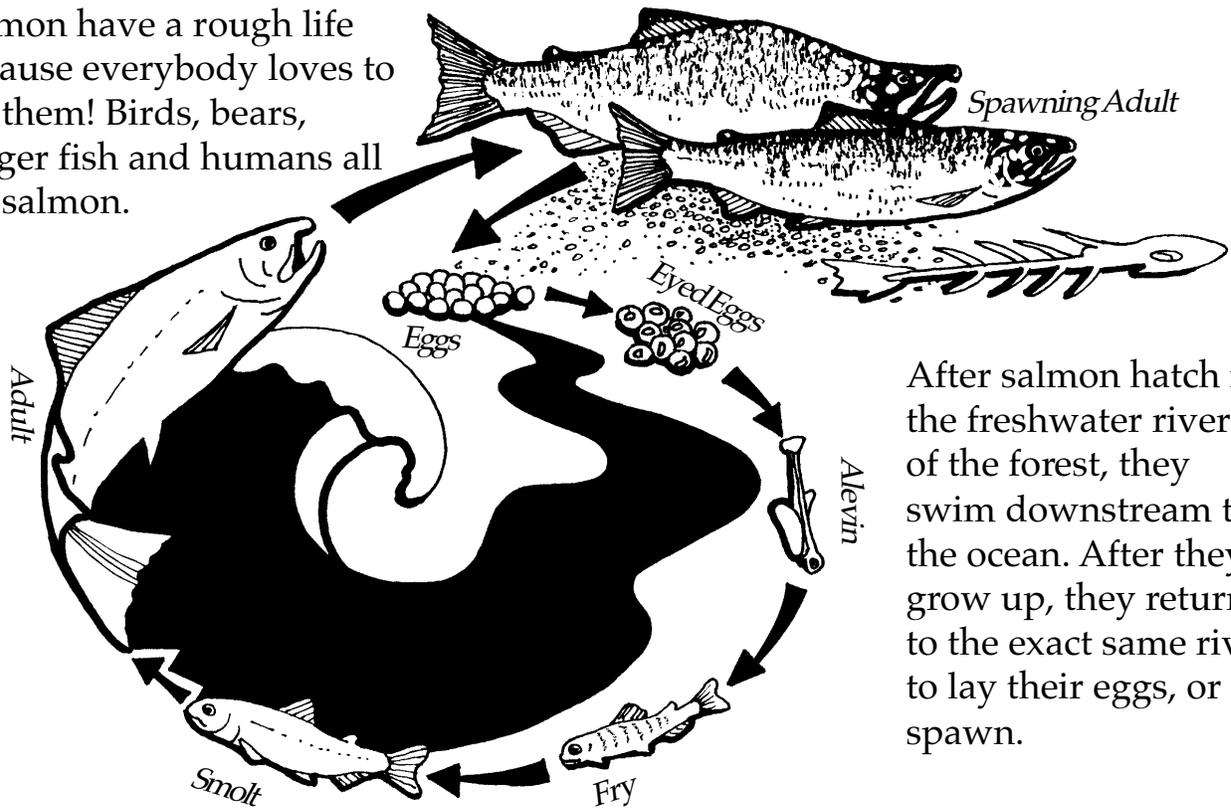
Huge humpback whales feed on tiny plankton filtered through special hair-like plates in their mouth, called baleen.

Sea Otters have over 600,000 hairs per square inch. That's more hairs than on your entire head!

# Salmon Survival

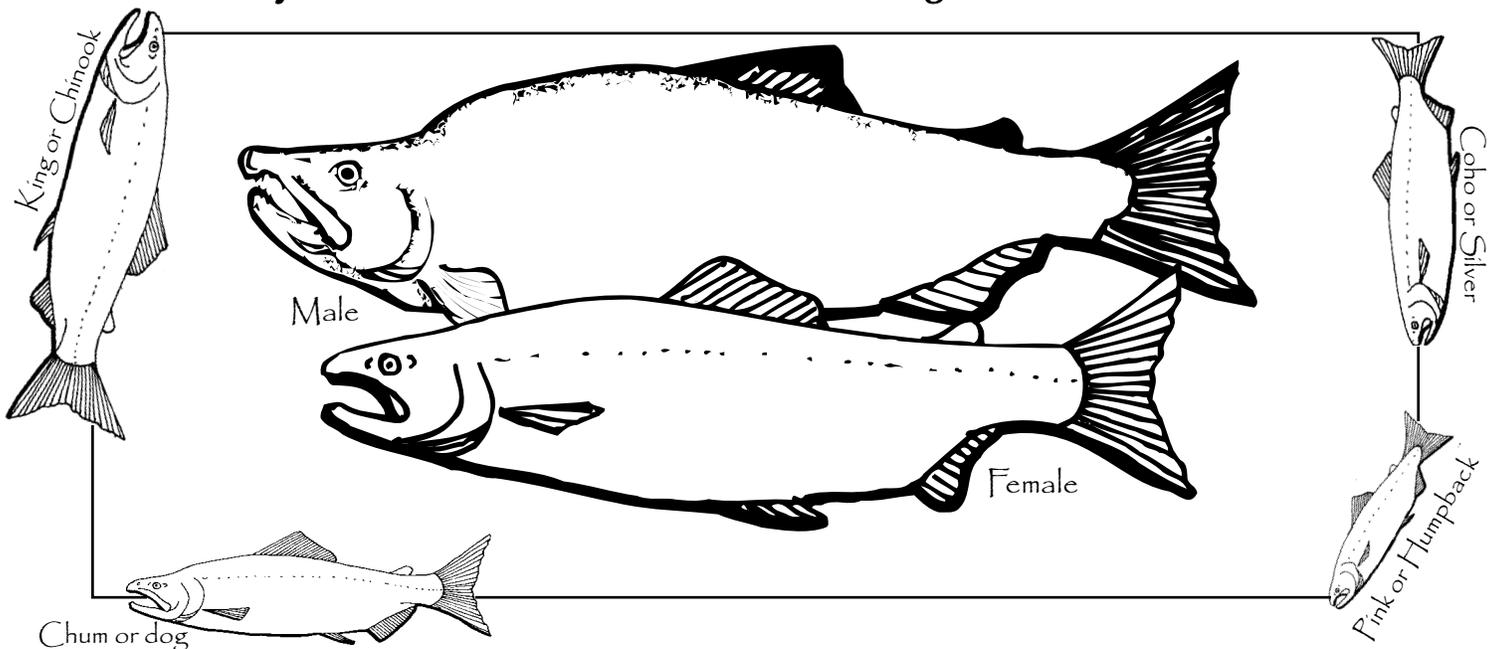
Salmon have a rough life because everybody loves to eat them! Birds, bears, bigger fish and humans all eat salmon.



After salmon hatch in the freshwater rivers of the forest, they swim downstream to the ocean. After they grow up, they return to the exact same river to lay their eggs, or spawn.

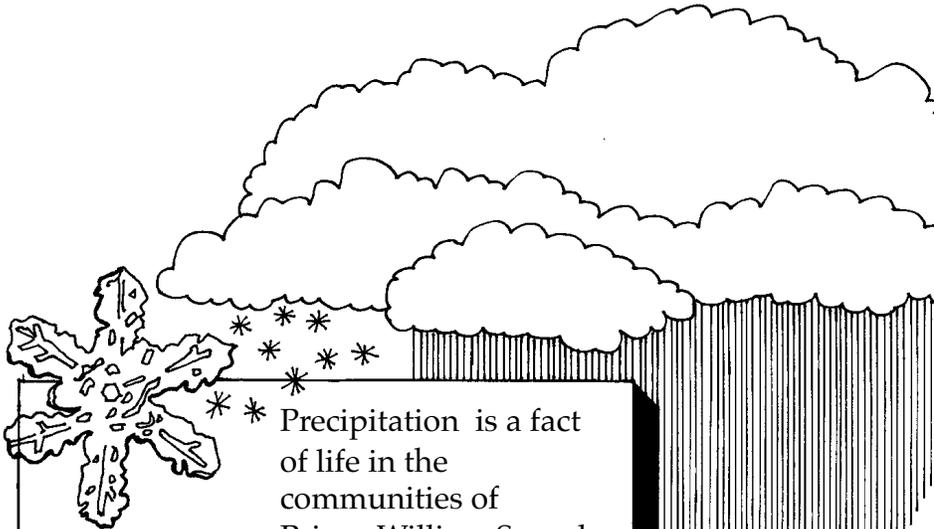
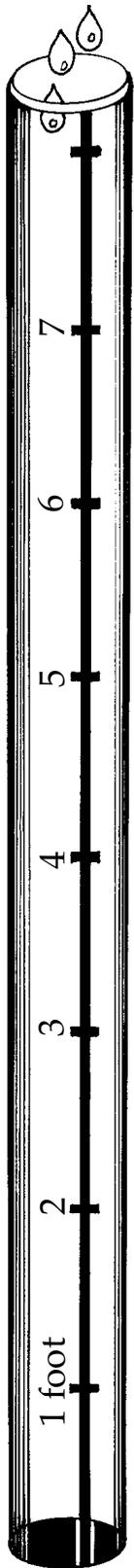
## Name That Salmon!

There are five types of salmon in Prince William Sound. Each has a unique life cycle. They also change different colors when they spawn. **Color the bodies of these sockeye (or red) salmon red, and their heads green.**



# People of Prince William Sound

People have lived in Prince William Sound for thousands of years. Just like the plants and animals, people depend on the forest and the sea.



Precipitation is a fact of life in the communities of Prince William Sound.

In Cordova, nearly 200 inches of precipitation falls every year – that's over 16 feet of water! One winter, over 970 inches (over 80 feet!) of snow fell near Valdez. That's so much snow it could bury an 8-story building!

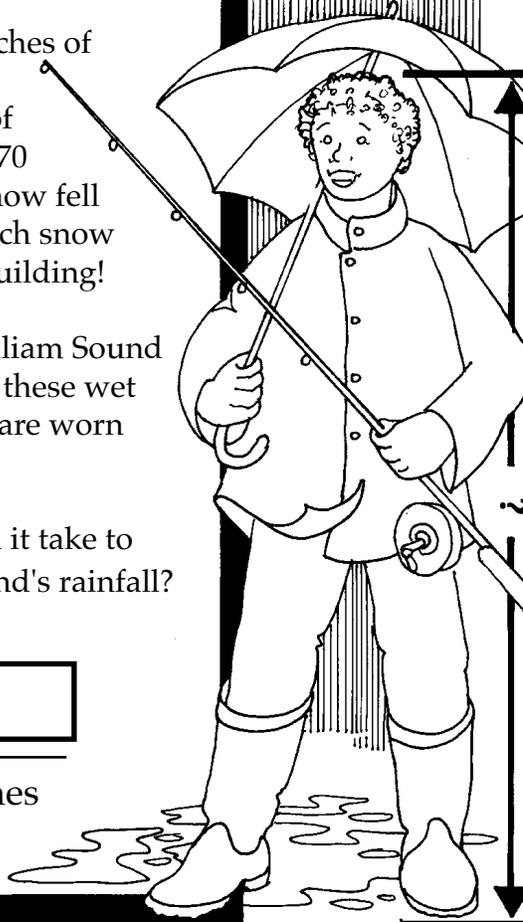
Most people in Prince William Sound learn to work and play in these wet conditions. Rubber boots are worn more often than sneakers!

How many "you's" would it take to equal Prince William Sound's rainfall?



Your height in inches

200 inches

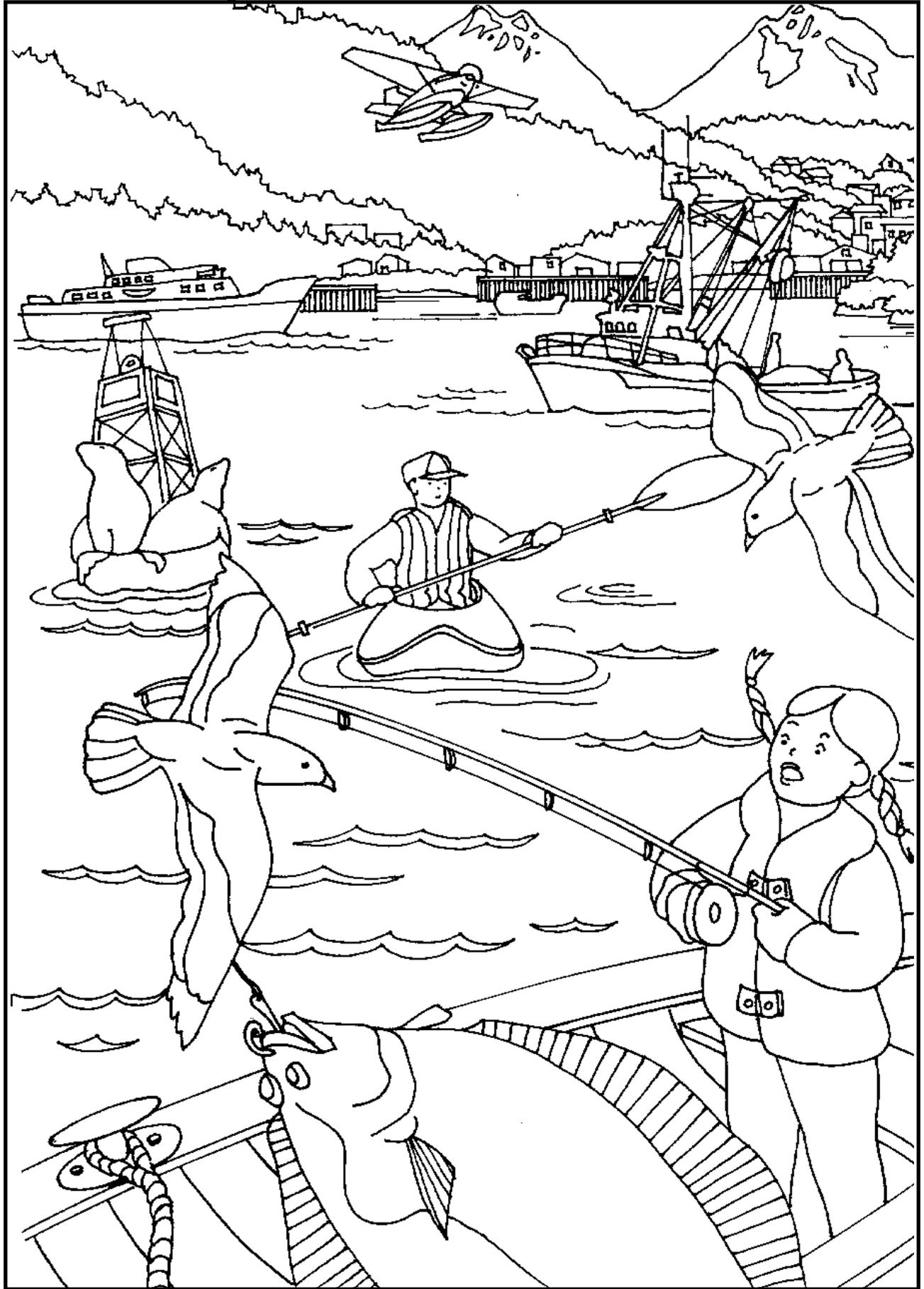


M.V. Bartlett ferry

Float Plane

Salmon Cannery

Sea Kayaker Steller's Sea Lions on Navigation Buoy



Halibut

Cordova

Seine Boat

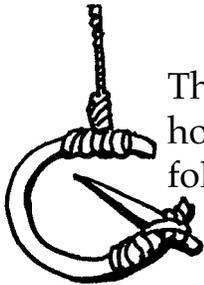
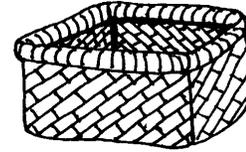
Black-legged Kittiwake

Happy Angler

# The First People



No one knows exactly when the first people came, but the Chugach-Aleut people have lived on the islands and shorelines of the Sound for at least 3,000 to 4,000 years. Eyak Indians have also lived near coastal rivers and lakes in the southeastern part of the Sound for a long time.



These early people created small villages and lived in wood plank houses. In the summer they would sometimes travel to fish camps following the migrating salmon.

The people were very resourceful and used stones, bones, wood and shells to make tools. These included adzes (stone axes), scrapers, ulus, harpoon heads, arrowheads and knives.

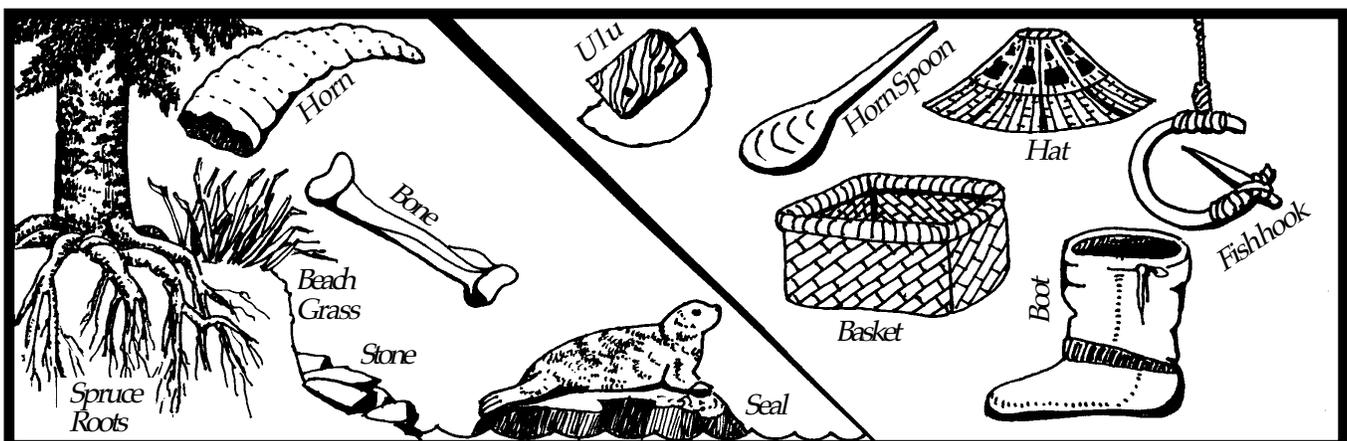


For food, the Chugach-Aleut ate seals, sea lions, whales, fish and shellfish. The Eyak Indians also ate land-based animals such as bears, mountain goats, and beavers. The salmon of Prince William Sound were the most important resource for the people.



## What's it Made From?

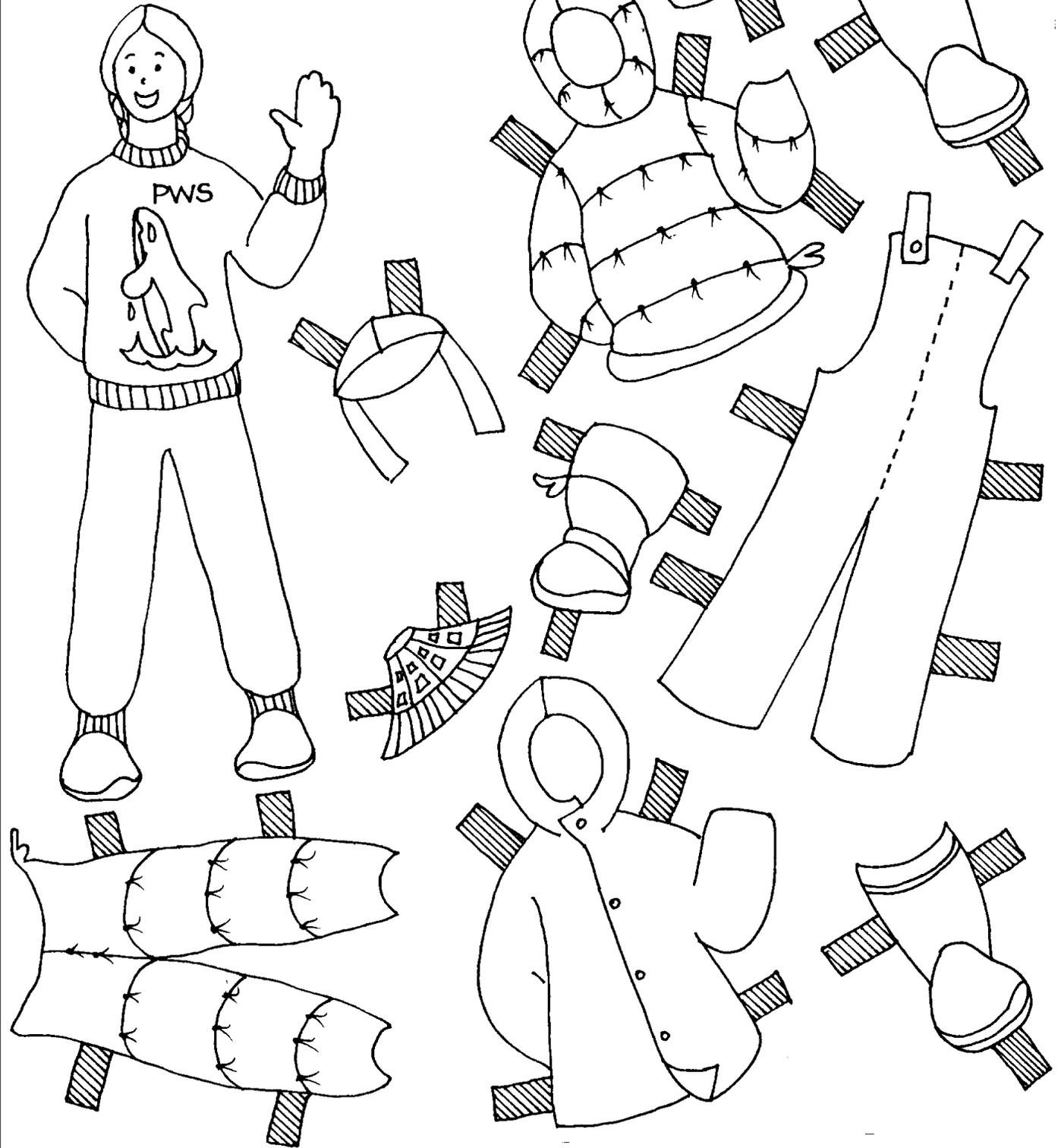
Match the natural item with the product it made.



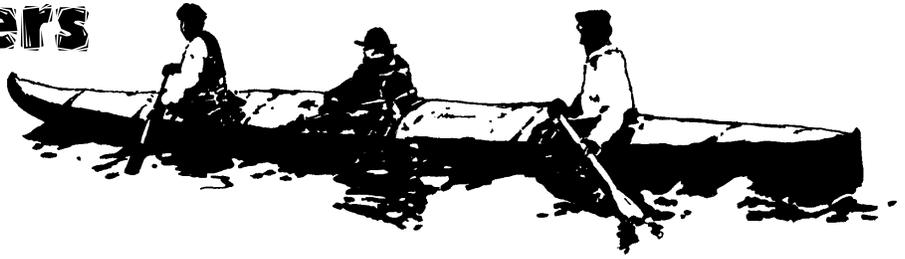
Answers on back cover

# Then & Now

Cut out your paper doll and dress it in rain gear from today AND from Prince William Sound's first people.



# The Explorers

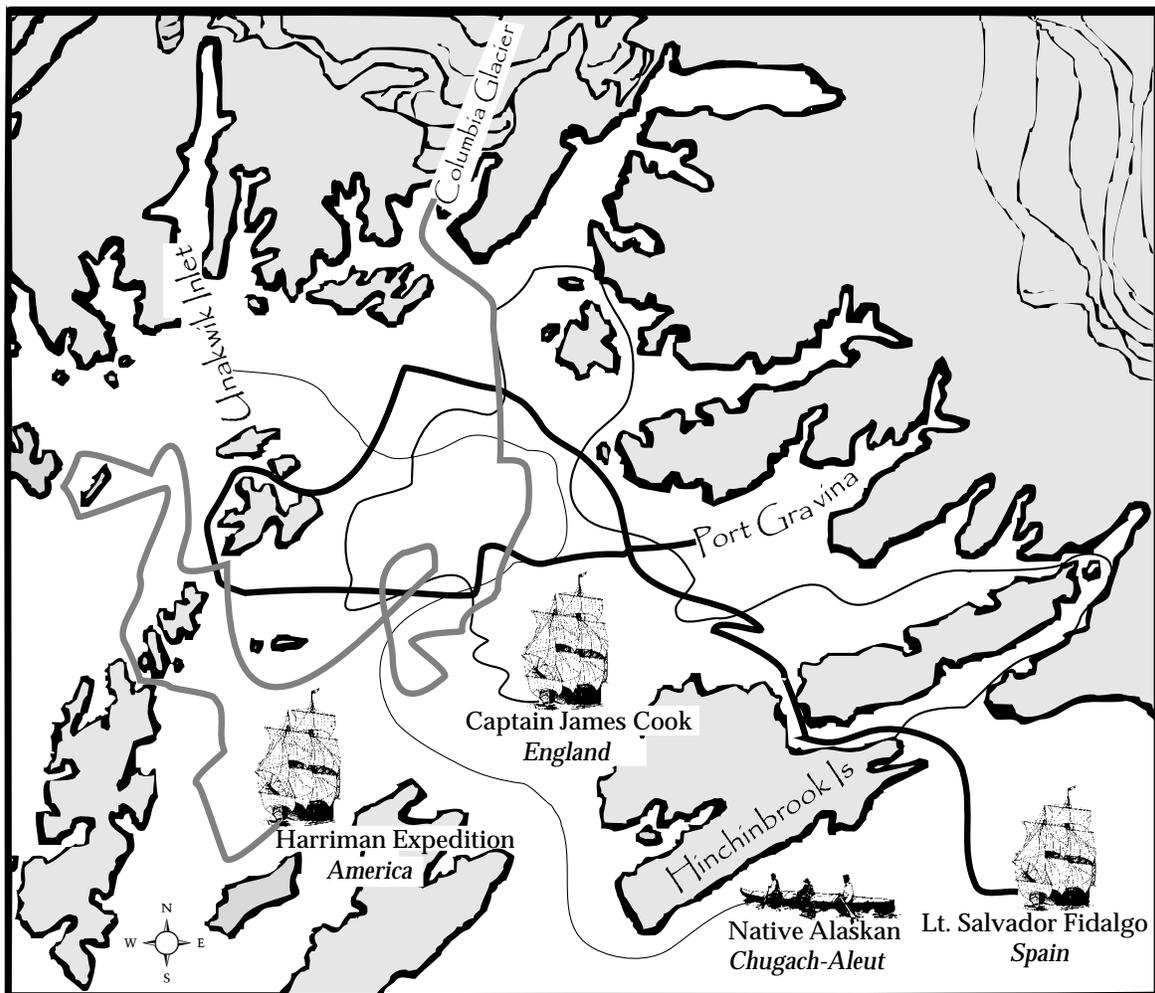


As early as the 1700's, explorers from Spain, France, America, Russia and England sailed ships through the Sound. They wanted to find riches, create new maps, and study the Natives living here.

One of these explorers was Captain James Cook. He came in 1778 and named the Sound after his sponsor, Prince William of England.

## The Name Game

Lots of places in the Sound were named by explorers. Can you figure them out? Follow the routes of the explorers and see what places they named.

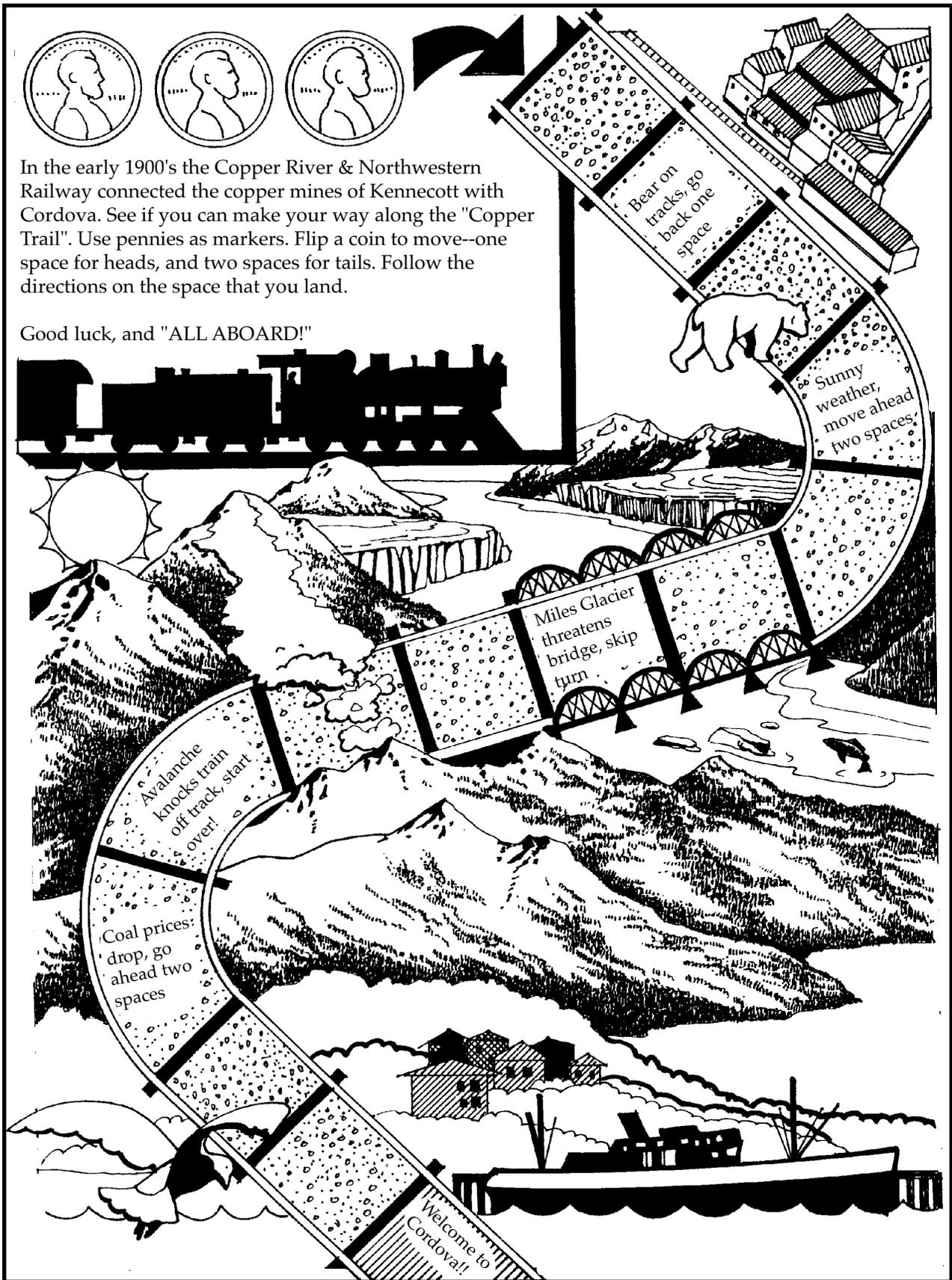


# From Steam to Sails



In the early 1900's the Copper River & Northwestern Railway connected the copper mines of Kennecott with Cordova. See if you can make your way along the "Copper Trail". Use pennies as markers. Flip a coin to move--one space for heads, and two spaces for tails. Follow the directions on the space that you land.

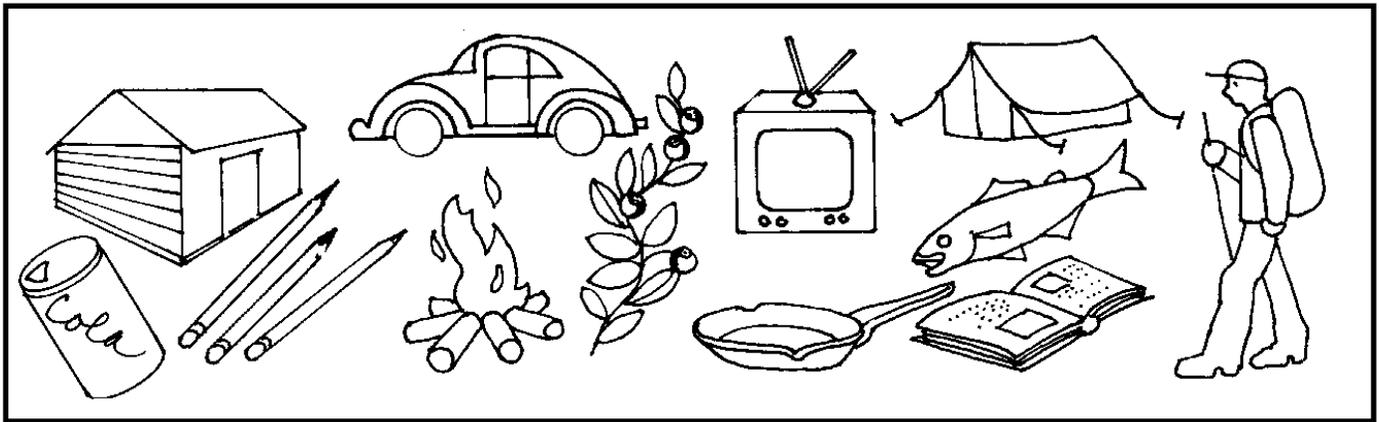
Good luck, and "ALL ABOARD!"



# Do People Need the Forest?

Yes! Have you ever climbed a tree or munched on a blueberry muffin or written a letter? All these things depend on healthy forests.

Forests also give us peace and solitude. A healthy forest protects our soil and helps keep our air and waters clean. Forests are home to many different kinds of plants and animals.



Answer on back cover

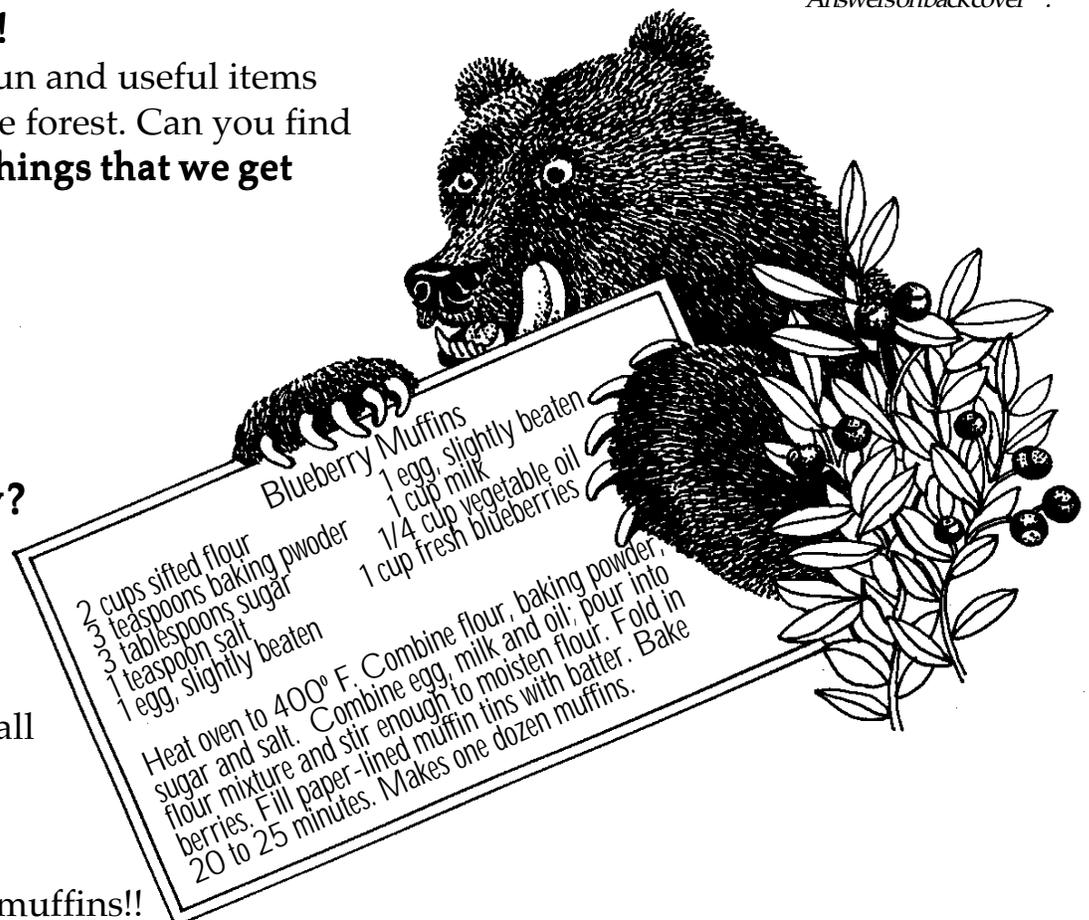
## Find the Forest!

There are lots of fun and useful items that come from the forest. Can you find them? **Circle the things that we get from forests.**

## Did You Know?

Over 1 ton of blueberries can grow in an area the size of a football field!

That's enough berries for 48,000 muffins!!



# Do People Need the Sea?

Yes! Many people depend on clean oceans and healthy salmon runs to make their livings. Today, commercial fishers harvest a wide variety of ocean creatures. Most of the fishing is for salmon, but they also catch crabs, halibut, pollock, herring and shrimp.



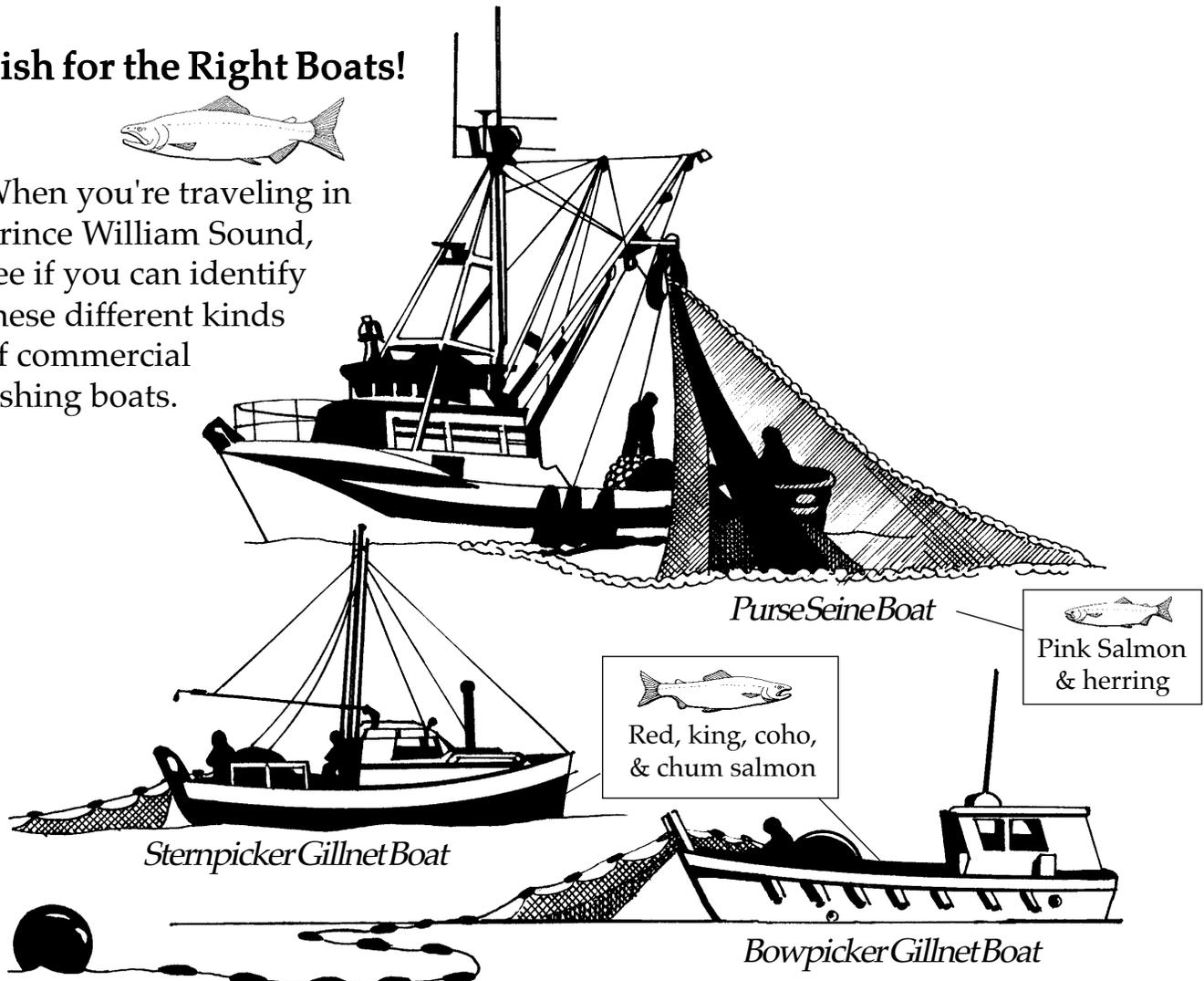
People in Cordova used to dig up a lot of clams. It used to be known as the "Razor Clam Capital of the World"! After the 1964 earthquake, however, the mudflats rose and the clams disappeared.

In 1989, an oil tanker sailing through Prince William Sound, struck a rock and spilled 11 million gallons of oil. Scientists are studying the effects of the oil spill and trying to ensure that Prince William Sound stays clean and safe.

## Fish for the Right Boats!



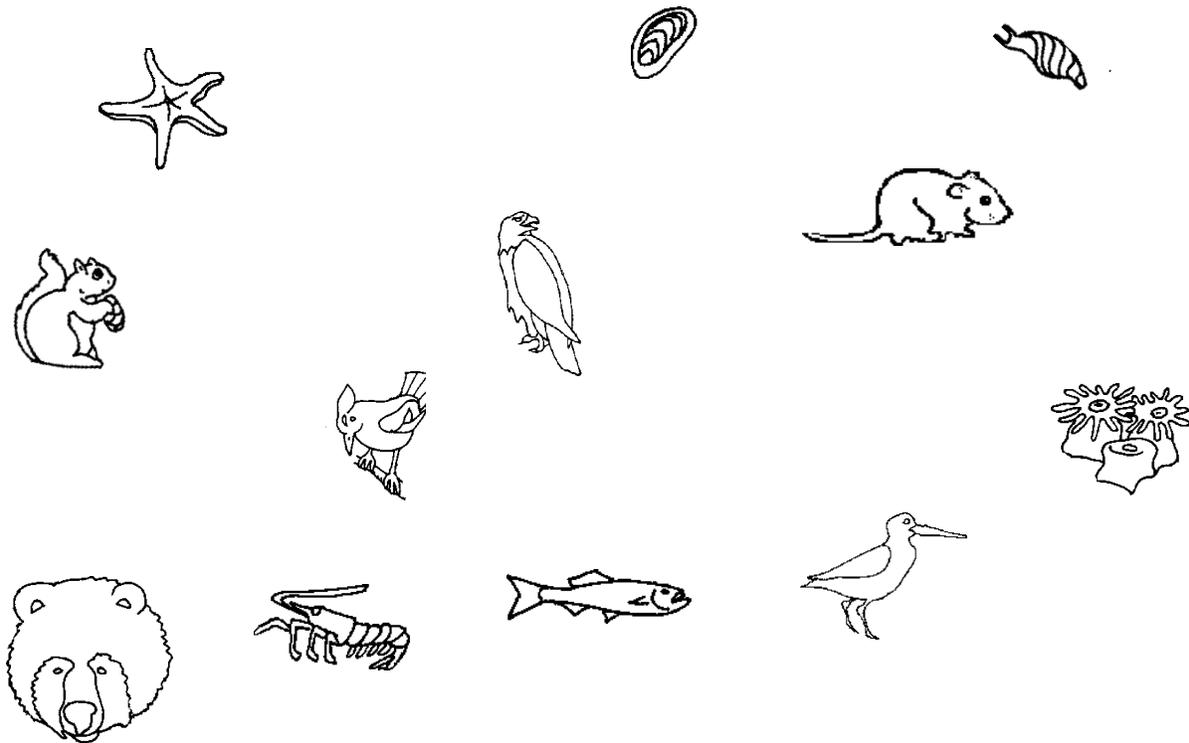
When you're traveling in Prince William Sound, see if you can identify these different kinds of commercial fishing boats.



# Your Prince William Sound

Choose these words to finish the crossword puzzle!

Eyak Otter Ocean Boots Red Intertidal Zone Seine Blueberries Crevasse Terminus  
Bald Eagle Orca Glacier Iceworm Bear Puffin Coniferous Muskeg Ecosystem Salt



## Across

1. Prince William Sound is the northern-most range of the temperate rain forest. This is a type of \_\_\_\_\_.
3. The Sound is part of a larger body of water called the Pacific \_\_\_\_\_.
5. The people who make Prince William Sound their home learn to adapt to the frequent rain. They wear \_\_\_\_\_ on their feet.
7. Sockeye, or \_\_\_\_\_ salmon are an important resource in Prince William Sound.
8. The area along the coast, created when the tide is low.
9. Some fishers use a purse \_\_\_\_\_ to catch salmon.
11. The water in the Sound contains \_\_\_\_\_.
12. The brown \_\_\_\_\_ spends his summers eating berries and catching fish.
13. An \_\_\_\_\_ is a small animal that can live in glacial ice.
14. Our national symbol is the \_\_\_\_\_.
15. Its bright yellow and orange beak makes the \_\_\_\_\_ easy to identify.

## Down

2. Native people have made Prince William Sound their home for many years. One such group of people are called \_\_\_\_\_ Indians.
3. If you take a boat ride on the Sound, you might spot a sea \_\_\_\_\_ floating on its back.
4. In the Sound's forests many trees are evergreen or \_\_\_\_\_.
6. A glacier is a solid river of ice. The very front of a glacier is called the \_\_\_\_\_.
10. Deep cracks can form in a glacier. One of these huge cracks is called a \_\_\_\_\_.
14. Late in summer, people and animals alike enjoy the sweet and yummy flavor of \_\_\_\_\_.
16. Another name for a killer whale is \_\_\_\_\_.
17. It can be difficult for plants to grow in the cold and wet soil of a \_\_\_\_\_.
18. Prince William Sound was formed thousands of years ago by a slow-moving river of ice called a \_\_\_\_\_.