

# Unit Seven

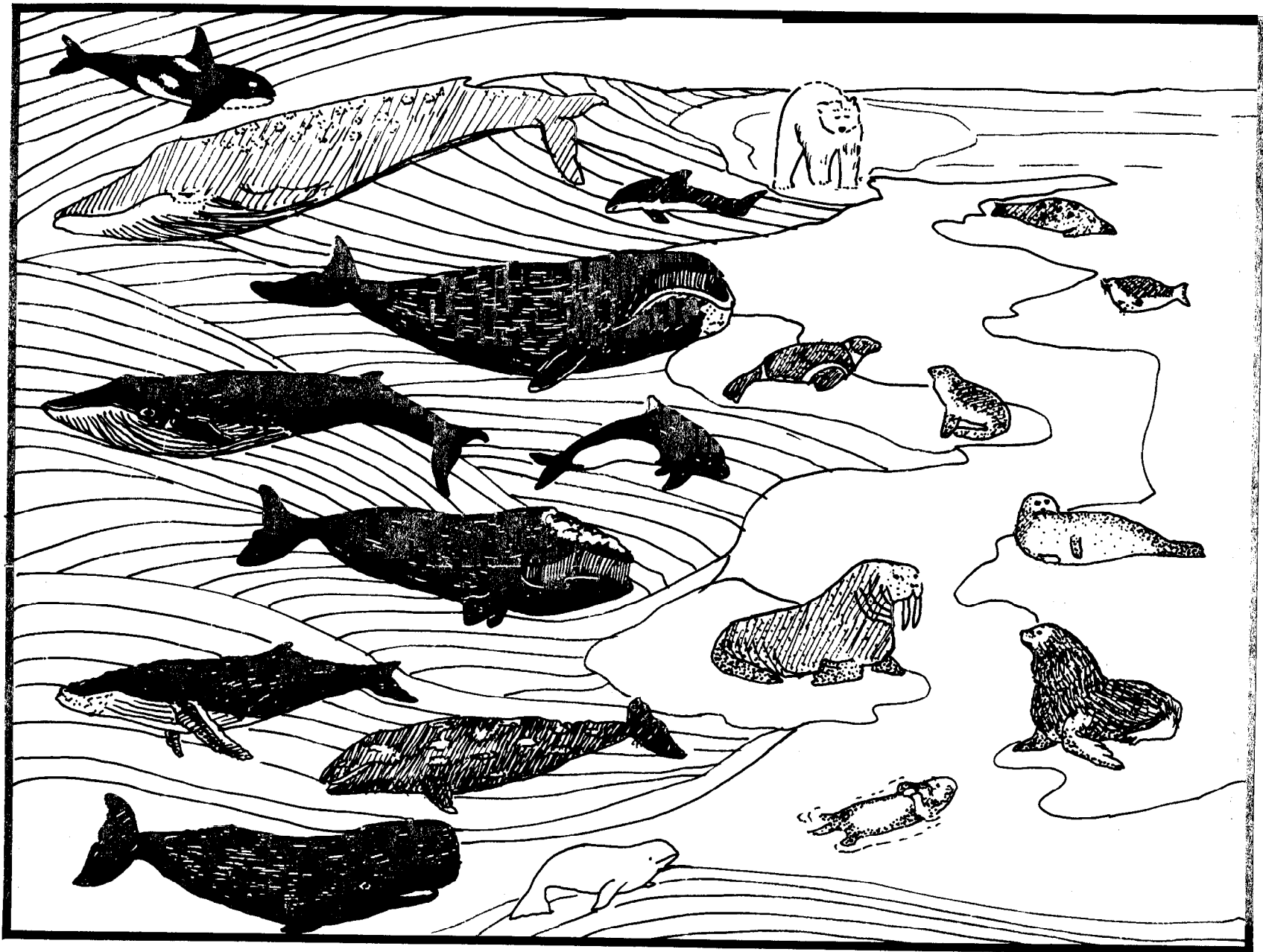
## Marine Mammals

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### Objectives:

To help the students:

- Develop a better awareness of marine mammals and their habitats (Activity 1).
- Select one marine mammal and learn its traits: size, color, special features, history, eating habits (Activity 1).
- Draw a life-size outline of that mammal for the hallway (Activity 1).
- Record daily sightings of marine mammals (Activity 1).
- Make walrus, seal or sea otter puppets (Activity 2).
- Listen to a marine mammal story (Activity 3).
- Illustrate the poem, "The Walrus and the Carpenter" (Activity 3).
- Sing the song, "A Whale of a Tale" (Activity 3).
- Listen to a whale record (Activity 3).
- Make up a whale dance (Activity 3).
- Create marine mammals out of clay or dough (Activity 3).
- Interview local residents about their experiences with marine mammals (Activity 3).
- Write, illustrate, and print a booklet about local marine mammal stories (Activity 3).
- Contribute to a community Whale Fair (Activity 3).



UNIT SEVEN: Marine Mammals. Left, top to 'bottom: killer whale (orca) blue whale, bowhead, fin whale, right whale, humpback, grey whale, sperm whale, beluka. Right, top to bottom: polar bear, ringed seal, harbor seal, ribbon seal, fur seal Pacific bearded seal, walrus, sea lion, sea otter.

Marine mammals, from the playful sea otter to the giant, square-snouted sperm whale immortalized in Herman Melville's Moby Dick, are endlessly fascinating to us land-bound humans. The following is a brief survey of some of the marine mammals living in the waters off Alaska's shores. They are divided into two main groups: the cetacea (whales), and the carnivora (seals, sea lions, walrus, otters and polar bears. )

1. Cetacea

Like all other mammals, the warm-blooded whale breathes air through its lungs and bears live young that nurse. Unlike other mammals, it never leaves the water, breathes through a blowhole on top of its head, has a tail spreading horizontally into flukes and has forelimbs modified into flippers. Its hind limbs are reduced to non-functional remnants or are absent.

Cetaceans are divided into two groups: animals with teeth and animals that have horny plates called "baleen" in their mouths instead of teeth. The fringed edges of the baleen are used to strain out the small fish and crustaceans on which the animal feeds.

The BALEEN WHALES most commonly seen in Alaska waters are the fin, minke, gray, bowhead and humpback whales. The smallest of these, the minke, is about 25 feet long and is found along the Alaska coast as far north as the Chukchi Sea. World-wide, it is the most heavily harvested baleen whale.

The blue whale, giant cousin to the minke, can grow to 100 feet long and weigh 200 tons--undoubtedly the largest animal that has ever lived. During the summer, it needs to eat four tons of krill a day just to keep going! The blue whale is very rare and is on the endangered species list.

The fin whale is probably the fastest of the large whales. It cruises at five to six knots (nautical miles per hour; one nautical mile is 15 percent longer than a standard mile) and can sustain a speed of 20 knots when alarmed.

Humpback and gray whales measure up to 50 feet. The humpbacks are noted for their acrobatics. They often jump out of the water (breach), slap the water with their flukes (lobtail), and wave their flippers in the air. Gray whales winter in Baja California and migrate north along the coast to spend their summers in the Bering and Chukchi Seas, then travel back south again in the fall: a 6,000-mile round trip!

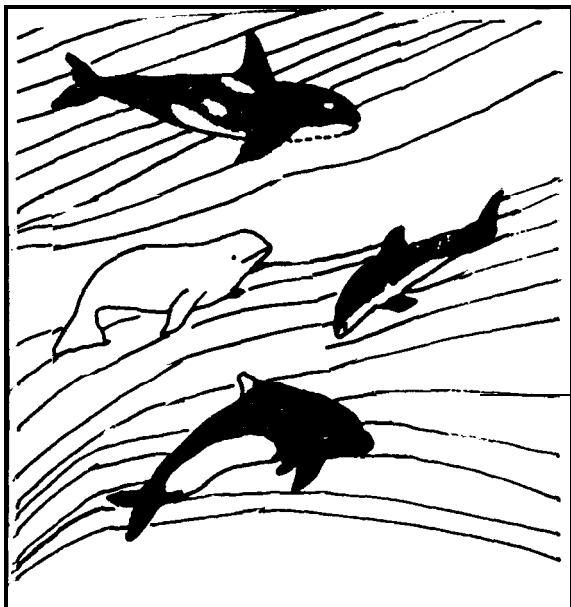
The bowhead up to 60 feet long, is the only large whale that spends its entire life in far northern waters. The bowhead's baleen is sometimes over 15 feet long--the longest of any whale's.

The common TOOTHED WHALES of Alaska include the sperm, belukha, and killer whales, and da11 and harbor porpoises. Narwhals are occasionally seen off northern Alaska, although they are uncommon there.

The largest of these toothed cetaceans, the 50-foot, square-snouted sperm whale, dives to the ocean depths to capture squid, cuttlefish and octopus.

Sometimes called the "sea canary" because of its noisy calls, the belukha is a 16-foot-long whale found in Arctic waters. Adults are white, but the young are black. Its name is often spelled "beluga," but "belukha" is a closer transliteration of the Russian name and that spelling serves to distinguish it from the beluga fish, which is a white sturgeon. In Canada, it is known as the white whale.

Closely related to the belukha, the narwhal is a truly northern species which is found only as far south as the southern Bering Sea and is most abundant in Canada's eastern Arctic. It has one tooth, elongated to a tusk, and it may be the original model for the unicorn legend.



The killer whale, or orca, may grow up to 30 feet long. A formidable predator that eats other marine mammals as well as sea birds and fish, it has not been known to threaten humans. Its white-on-black patterns give it a dramatic appearance.

The two porpoises can best be distinguished from each other by their habits and behavior. Dall porpoises are found in deep waters and run in groups, conspicuously casting up spray. They often jump and swim ahead of a ship's bow. Harbor porpoises are found in shallow inshore waters. Generally they are seen singly; sometimes just a dorsal fin is spotted jutting out of the water as the porpoise completes a slow roll.

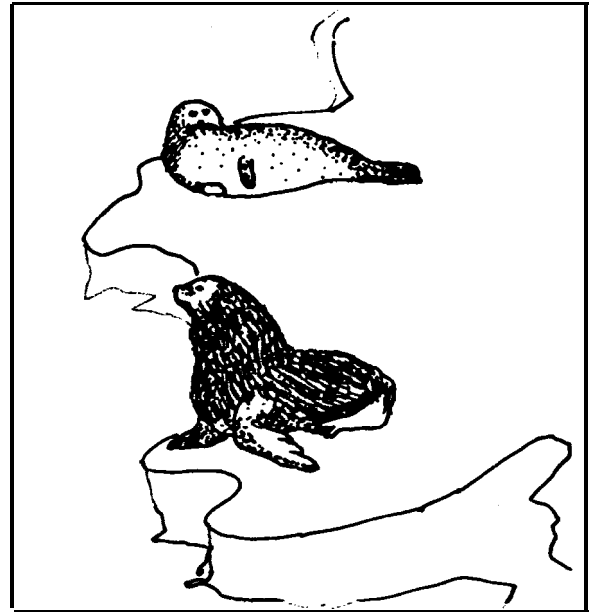
## 2. Carnivora

Seals, sea lions and walrus were formerly classified in a separate order called Pinnipedia. However, they are not all as closely related as was formerly believed, and now are included within Carnivora. This is a large order of flesh-eating animals that also includes many non-marine species such as dogs, cats and wolves.

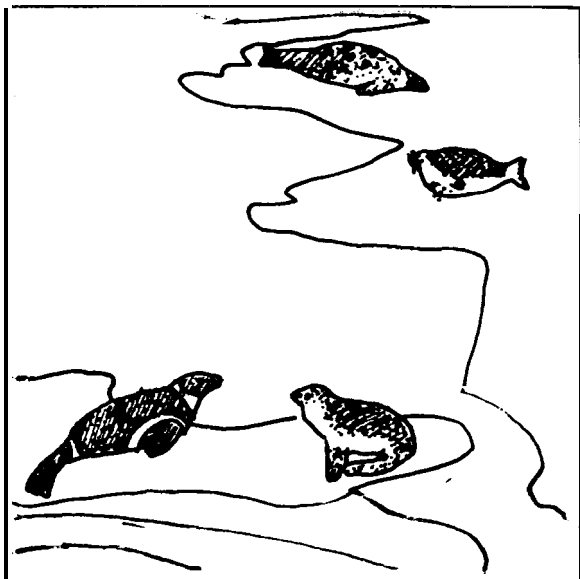
The pinnipeds are animals with both fore and hind limbs modified into flippers and with tails almost or completely nonexistent. They are split into three groups: true seals, eared seals and walrus.

TRUE SEALS are unable to rotate their hind flippers forward. They walk on land by sliding or inchworming along on their bellies with the help of their fore-flippers. All flippers on true seals are covered with hair; the fore-flippers are small, and the animals have no visible external ears.

The true seals in Alaska include the bearded, ribbon, ringed, spotted and harbor seals. Harbor seals are the most common species of seal along the southern Alaskan coast. Their coloring is variable, but they usually are covered with irregular dark spots and blotches. Often found concentrated in bays or glacial fiords, they "haul out" on sand beaches, sandbars, rocky areas or ice floes. They usually can be spotted poking their heads above the water's surface. Bearded, ringed, spotted and ribbon seals follow the ice pack out in the Bering and Chukchi Seas.

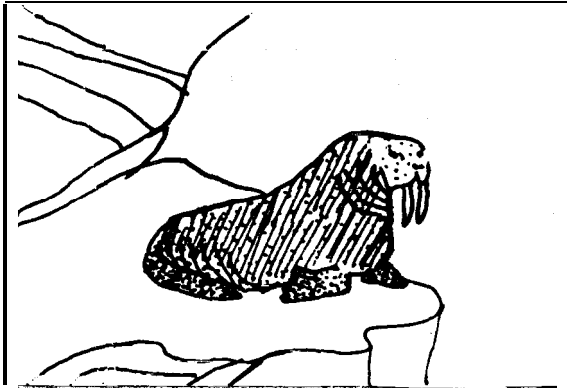


EARED SEALS include the seals that perform in circuses. They have easily visible ear flaps, or "pinnae." They are able to walk on land on all fours because they can rotate their hind flippers forward. The two types of eared seals in Alaska are the fur seal and the Steller sea lion. Fur seals travel north from their winter homes in a broad area of the North Pacific Ocean and may follow boats and play in their wakes.

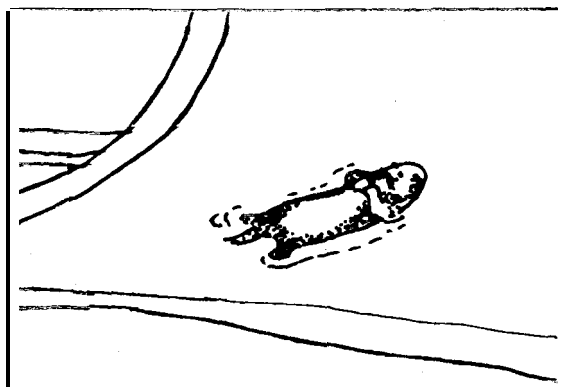


Steller sea lions congregate at "haul-out s" and breeding areas on rocky shores. Their lusty roars may be heard in bays or wherever herring and other food is available. They may be seen in small groups, rolling at the surface with their backs out of the water, or upright with a fore-flipper extended and head raised well above the surface. Sometimes large groups of 20 or 30 can be observed, surfing and cavorting.

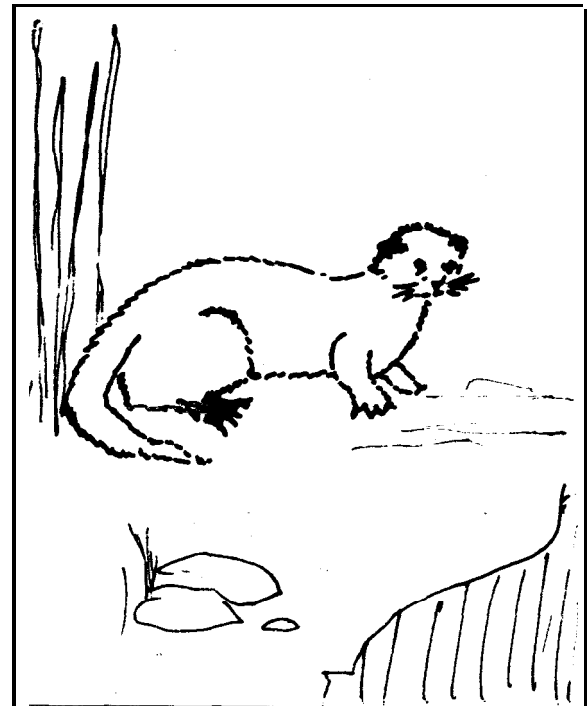
The large, wrinkled, tusked WALRUS looks even at birth like the grandparent of the sea. This 12-foot mammal follows the seasonal movement of the ice pack from the Bering Sea to north of Point Barrow, although some bulls remain in Bristol Bay throughout the summer.



Sea otters. are found in shallow coastal waters mostly from Southeast Alaska to the Aleutian Islands; a few also live near the Pribilof Islands. They may often be seen swimming in shallow waters in or near kelp beds. The otters dive to the sea floor for sea urchins, abalone, crabs or clams, which they bring back to the water's surface to eat. Sea otters are tool-using animals, sometimes using a rock to crack open their food.



Once hunted extensively for their dark brown fur, sea otters, like all other marine animals, are now protected by federal law, which prohibits non-Natives from taking them except for special purposes. As of 1985, the state of Alaska is polling the population, asking whether or not it should apply to the federal government for return of jurisdiction over certain species (seals, sea lions, fur seals, walrus, polar bear) on which the Native population depends for subsistence.

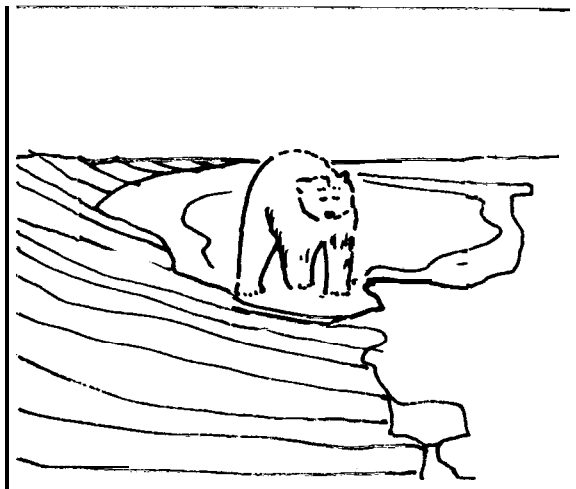


RIVER OTTERS (see also Unit Eight) may be seen near shore in some coastal waters. They are much smaller than sea otters, and do not float or swim on their backs as do their larger cousins. They spend much of their time in fresh water. To feed, river otters carry their catch (often flatfish) to shore.

The POLAR BEAR, though not strictly an aquatic animal, is dependent on northern Alaska ocean waters, and is considered a marine mammal for the purposes of game management.

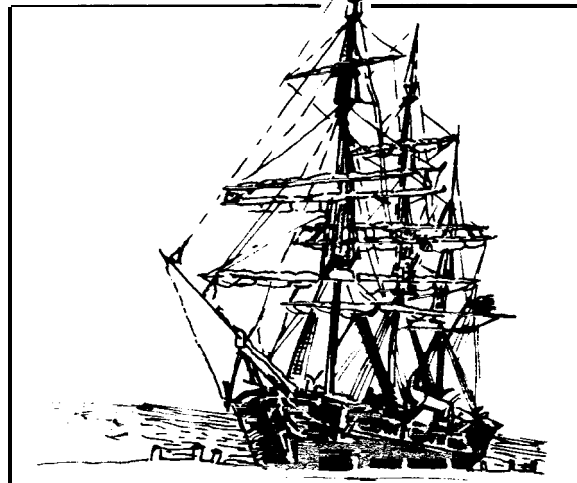
Most of Alaska's polar bears spend their lives in the Chukchi Sea, where they reside along the edge of the ice in summer and along leads and other places where the seals are during the rest of the year. The bears primarily eat ringed seals, which they catch either on the ice or when the seals surface at breathing holes in the ice. Polar bears are adapted for this life on the sea ice by their fur. The fur's white color camouflages them. The outer fur is waterproof and the underfur is dense and warm. It covers the bottoms of their paws, keeping them warm.

Polar bears sometimes leave the ice and wander inland. Pregnant females, in particular, build inland dens in the snow to serve as winter refuges for themselves and their young cubs.



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## Activity 1 Studying a Marine Mammal



### Background:

One responsibility of our schools is to help students to develop lifelong learning habits by teaching them how to find out more about subjects that interest them. The following activity emphasizes library and oral history skills.

### Vocabulary:

- . mammal
- . characteristics
- . marine
- . history
- . endangered
- . habitat
- . flukes
- . flipper
- . warm-blooded

### Materials:

- library resources (books, films, filmstrips)
- museum resources
- people within the school and community who are experts on mammals or on native use of mammals
- paper

- envelopes
- stamps
- worksheets :
  - ... What is a Marine Mammal? (7-A)
  - ... Color the Marine Mammals (7-B)
  - ... Marine Mammal Crossword (7-C)
  - ... Marine Mammal Match (7-D)
  - ... Whale Count (7-E)
  - ... Humpback Whale (7-F)

International Whaling  
Commission  
The Red House  
Station Road, Histon  
Cambridge, CB4-4NP  
England

North Slope Borough  
Barrow, AK 99723  
(for information on  
subsistence whaling)

Cousteau Society  
8150 Beverly Blvd.  
Los Angeles, CA 90048

### Procedure:

1. As a class or as groups within the class, select one or more marine mammals and learn as much as you can about them. Use the worksheets What is a Marine Mammal? and Color the Marine Mammals to introduce the concept of marine mammals. By reading, viewing films or listening to speakers, learn what the various marine mammals look like. How large is the particular mammal you're studying? What color is it? What is its habitat like? Was it, or is it, hunted? Why? Is the animal endangered?
2. Have the students write to some of the following organizations for information about whales and whaling. Discuss the pros and cons of whaling.

Alaska Dept. of Fish & Game  
Capitol Office Park  
1255 W. 8th St.  
P.O. Box 3-2000  
Juneau, AK 99802

Marine Mammal Commission  
1625 "I" Street  
Washington, D. C. 20006

Greenpeace  
2623 West 4th Avenue  
Vancouver, British Columbia  
Canada BCV 6P

American Cetacean Society  
P.O. Box 2698  
San Pedro, CA 90731

The Whale Museum  
P.O. Box 1154  
Friday Harbor, WA 98250

Project Jonah  
240 Fort Mason  
San Francisco, CA 94123

General Whale  
9616 McArthur Boulevard  
Oakland, CA 94605

Save the Dolphins  
1945 20th Avenue  
San Francisco, CA 94116

World Wildlife Fund  
1319 18th Street NW  
Washington, D. C. 20036

Whale Protection Fund  
c/o Center for Environmental  
Education  
624 9th Street NW  
Washington, D. C. 20001

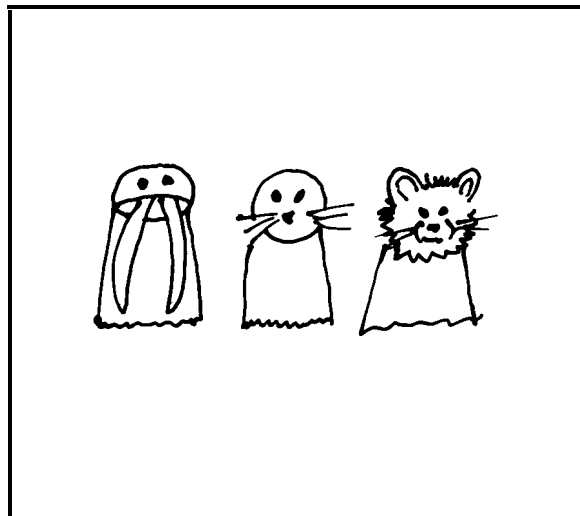
National Marine Fisheries  
Service  
Dept. of Commerce  
Washington D. C. 20235

3. Put up a bulletin board about marine mammals, with class stories and pictures. Do worksheets: Marine Mammal Crossword, Marine Mammal Match, Whale Count, and Humpback Whale.
4. Make a life-size marine mammal cutout to put up in the hallway.
5. If marine mammals are frequently seen in your area, ask students to record sightings. Keep a class record giving date, time, weather and other circumstances of each sighting.
6. Encourage students to talk with their parents, the bilingual staff, or other community members about their experiences with marine mammals in your area, and then to share what they have learned with the class.

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## Activity 2

### Making Walrus, Seal or Sea Otter Paper Bag Puppets



#### Vocabulary:

- . haul out
- . tusk
- . flipper
- . fur
- . pod

#### Materials:

- brown, gray, tan and white construction paper
- paper straws
- rice
- black felt-tip markers
- paper bags (one per student)
- white glue
- scissors

#### Procedure:

1. Have students cut out marine mammal head shapes. If you're short on time, you may want to do this ahead of class. Use tan, yellow or light brown construction

paper for the otters, dark brown for the walrus and gray or brown for the seals.

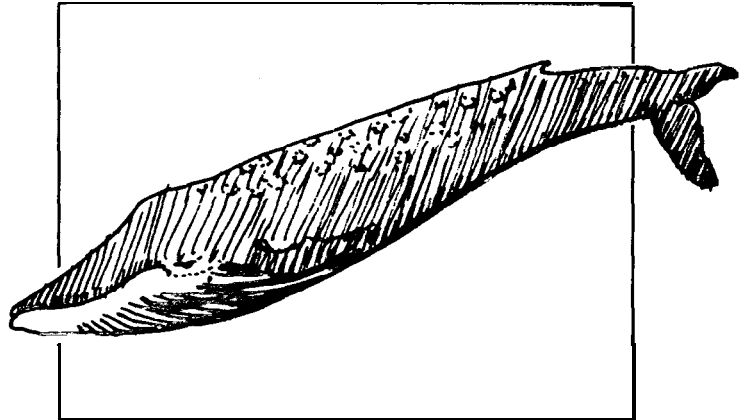
2. Glue the heads to the folded over paper bag bottoms.
3. Use black felt-tip markers to draw faces on the animals. Glue on the whiskers: rice for the walrus, straws for the otters and seals (or use black markers). Glue tusks (white construction paper) to the walrus faces.
4. Let the puppets dry for a few minutes.
5. Then have them role play the different animals. Have the walrus, seals and sea otters "haul out" on the ice or shore. Have them hold their arms tight to their bodies with their hands out like flippers. Now swim. The sea otters can dive down to the bottom and get their meals (clams, crabs and sea urchins) and bring them back to the surface. They crack clams open with a rock and they lie on their backs to eat, using their stomachs as tables.

Walrus are great clam eaters, too. They suck them out of the bottom mud with their large snouts. The tusks, used in breeding displays and in fighting, are also handy for helping walrus climb up on ice floes. Seals are fast swimmers and catch fish, crab and squid. Like walrus and sea otters, seals often travel in groups.

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### Activity 3

#### Marine Mammals in Arts, Music and Literature



#### Background:

Marine mammals have fascinated people all over the world for many centuries. Recently there has been an upsurge of artistic interest. Marine mammals have captured the imagination and concern of many people because of their high intelligence and, for some species, their dwindling numbers.

#### Materials:

- books on marine mammals (check bibliography)
- whale record (check bibliography)
- copy of the song "Whale's Tale"
- copy of the poem "The Walrus and the Carpenter"
- construction paper
- felt-tip markers
- paper streamers
- clay or dough
- crayons
- paper
- pencils
- copy machine
- whale-shaped cookies
- refreshments

## Procedure:

1. Find a book about marine mammals to read aloud to your students (check the bibliography).
2. Read the poem "The Walrus and the Carpenter." Have the students draw pictures to illustrate the different parts of the story.
3. Sing the song "Whale's Tale," written and composed by Paul Ranks of Homer, Alaska. Going around the room, have the students say one complete sentence each about what they think it would be like to ride on a whale.
4. Listen to a whale record. Ask the children what they think the whales are saying. Make up a dance to go with the recording; use paper streamers to simulate waves. (Suggested by Kathy Hanna, Auke Bay Elementary, Juneau.)
5. Make marine mammals out of clay or dough. Here's a recipe for the dough:  
1 c. flour  
1 c. salt  
1 rounded tsp. powdered alum  
Stir these ingredients and add water slowly until your mixture is the texture of clay. Store wrapped in wet cloth and plastic. Finished animals can be baked in 350° oven until hard.
6. Interview local residents about their experiences with marine mammals. Compile and illustrate these stories to make a little booklet.

Also ask local residents about any marine mammal art objects they may have bought or made themselves.

7. Have a Whale Fair! Ask the children to gather all their marine mammal poems, stories and artwork, and prepare additional projects. Use a community gathering spot such as a grocery store, senior citizens or youth center, library, or town hall. Using construction paper and felt-tip markers, make posters inviting everyone to come. Bake and serve whale-shaped cookies. Ask members of the community for help in preparation and display.

## Additional activities:

1. Language Arts, Art: Have the children make badges that describe how they feel about whales.
2. Language Arts : Write poems and make pattern books using this pattern:  
  
If you ever, ever, ever see a (whale),  
You must never, never, never (pull his tail!)  
(Suggested by Lynn Fry, Weller Elementary, Fairbanks.)
3. Social Studies, Language Arts : Develop creative thinking and communication skills. Make up a whale learning center in one corner of the classroom and tape record the questions and/or answers, or work on the questions as a class. Here are some suggestions :

. Whales have the largest brains of any animals, including humans. Although it is hard to compare the intelligence of different kinds of animals because they use their minds for different purposes, whales are certainly among the most intelligent creatures on earth. If you were given the whale's brain for one day, what are some things you would like to do? What would you think about?

. What might happen if the sea was full of many, many whales?

. How would the world be different if there were no whales anywhere?

. Pretend that you have a pet whale. List all the things you would need to do to keep a pet like that.

. Pretend you are going on a voyage to observe whales. List everything you need to do to get ready.

. What do you think a whale would be trying to express by doing these things?

spouting \_\_\_\_\_  
 Flapping its tail \_\_\_\_\_  
 Beaching itself \_\_\_\_\_  
 Leaping \_\_\_\_\_  
 Winking \_\_\_\_\_  
 Swimming in circles \_\_\_\_\_  
 Breaching \_\_\_\_\_  
 Diving \_\_\_\_\_

. You are an Eskimo. For many generations your family has hunted whales. You have used the whale for food and oil. You learn that whales

are endangered, and that not hunting them may help save them. Will you decide to keep hunting for whales or stop hunting and take a chance your family may not have enough food? Tell what you would do and give reasons.

You fish for a living. A whale gets tangled in your fishing net. An aquarium has offered to pay you \$2000 for the whale. Will you sell it or let it go? Give reasons for your decision.

Put each of the following into the best column.

1. Dinosaurs never became extinct.
2. It rains for three days.
3. The ocean freezes.
4. The ocean gets very salty.
5. There is a big earthquake.
6. There are no more boats on the sea.
7. There is an oil spill.
8. Whales and people could talk with each other.
9. Everyone cared for whales.
10. People never got hungry or cold.
11. Whales were as small as humans.

Column 1  
Harmful to whales

Column 2  
Helpful to whales

Column 3  
No effect on whales

(Contributed by Debbie Piper, Paul Banks Elementary, Homer.)

## The Walrus and the Carpenter

*The sun was shining on the sea,  
Shining with all his might:  
He did his very best to make  
The billows smooth and bright--  
And this was odd, because it was  
The middle of the night.*

*The moon was shining sulkily,  
Because she thought the sun  
Had got no business to be there  
After the day was done--  
"It's very rude of him," she said,  
"To come and spoil the fun!"*

*The sea was wet as wet could be,  
The sands were dry as dry.  
You could not see a cloud, because  
No cloud was in the sky:  
No birds were flying overhead--  
There were no birds to fly.*

*The Walrus and the Carpenter  
Were walking close at hand:  
They wept like anything to see  
Such quantities of sand:  
"If this were only cleared away, "  
They said, "it would be grand!"*

*"If seven maids with seven mops  
Swept it for half a year,  
Do you suppose," the Walrus said,  
"That they could get it clear?"  
"I doubt it, " said the Carpenter,  
And shed a bitter tear.*

*"O Oysters, come and walk with us!"  
The Walrus did beseech.  
"A pleasant walk, a pleasant talk,  
Along the briny beach:  
We cannot do with more than four,  
To give a hand to each. "*

*The eldest Oyster looked at him,  
But never a word he said:  
The eldest Oyster winked his eye,  
And shook his heavy head--  
Meaning to say he did not choose  
To leave the oyster-bed.*

*But four young oysters hurried up,  
All eager for the treat:  
Their coats were brushed, their faces washed,  
Their shoes were clean and neat--  
And this was odd, because, you know,  
They hadn't any feet.*

*Four other Oysters followed them,  
And yet another four:  
And thick and fast they came at last,  
And more, and more, and more--  
All hopping through the frothy waves,  
And scrambling to the shore.*

*The Walrus and the Carpenter  
Walked on a mile or so,  
And then they rested on a rock  
Conveniently low:  
And all the little Oysters stood  
And waited in a row.*

*"The time has come," the Walrus said,  
"To talk of many things:  
Of shoes--and ships--and sealing-wax--  
Of cabbages--and kings--  
And why the sea is boiling hot--  
And whether pigs have wings."*

*"But wait a bit, " the Oysters cried,  
"Before we have our chat:  
For some of us are out of breath,  
And all of us are fat! "  
"No hurry. " said the Carpenter.  
They thanked him much for that.*

*"A loaf of bread, " the Walrus said,  
"Is what we chiefly need:  
Pepper and vinegar besides  
Are very good indeed--  
Now, if you're ready, Oysters dear,  
We can begin to feed."*

*"But not on us!" the Oysters cried,  
Turning a little blue.  
"After such kindness, that would be  
A dismal thing to do!"  
"The night is fine, " the Walrus said  
"Do you admire the view?"*

*"It was so kind of you to come!  
And you are very nice!"  
The Carpenter said nothing but  
"Cut us another slice.  
I wish you were not quite so deaf--  
I've had to ask you twice!"*

*"It seems a shame, " the Walrus said,  
"To play them such a trick  
After we've brought them out so far,  
And made them trot so quick! "  
The Carpenter said nothing but  
"The butter's spread too thick!"*

*"I weep for you, " the Walrus said:  
"I deeply sympathize, "  
With sobs and tears he sorted out  
Those of the largest size,  
Holding his pocket-handkerchief  
Before his streaming eyes.*

*"O Oysters, " said the Carpenter,  
"You've had a pleasant run!  
Shall we be trotting home again?"  
But answer came there none--  
And this was scarcely odd, because  
They'd eaten every one.*

*--Lewis Carroll*

THE END

# A WHALE OF A TALE

GAYLY

PAUL BANKS

1. O come and sit be-side me and I'll tell you all a tale. A  
2. So then I climbed up-on his back and off to sea we flew It  
sto-ry you might not be-lieve, it's all a-bout a whale. As  
sure-ly was the fast-est wild-est Ride I ev-er knew It  
I was walk-ing on the beach I spied a great big head.. A  
soon was time to head for home so back to shore we sped And  
whole it was. He looked at me and this is what he said:  
As I waved good-by to him I thought of what he'd said:  
Chorus:  
If you'd like to, I'll let you ride me. For you  
see now I'm on-ly a whale. You can tell folks You sat o-  
-stride me. It will sure make one whole of a  
tale.

# Unit Eight

## Freshwater Mammals

Activity 1 - Counting Animal Tracks .....	108
Activity 2 - Constructing a Beaver Dam and Lodge.. .....	111

### Objectives:

To help students:

- Compare and contrast the river otter, beaver, mink and muskrat with each other and with other animals (Activity 1).
- Count different and similar animal tracks found near a freshwater pond or stream (Activity 1).
- Find a stick cut by a beaver (Activity 2).
- Construct a miniature beaver lodge in the classroom (Activity 2).

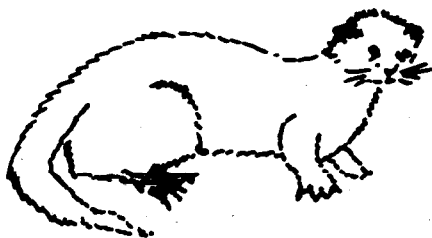


UNIT EIGHT: Freshwater Mammals. Clockwise from lower left: Two beavers, muskrat, river otter, mink.

The mammals making their homes in Alaska's freshwater environment are much like their saltwater relatives. They all breathe air, give birth to live young, which they nurse, have fur or hair and are supported by a backbone. However, freshwater mammals differ from their saltwater counterparts in that they are more amphibious (at home both in the water and on land).

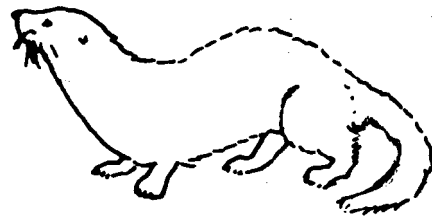
The river otter has a long, slender body, short legs, and scent glands that it uses to mark a territory or to repel enemies. The otter may travel on land between bodies of water. By running and sliding on the snow in winter it can move as fast as 15 miles per hour. In water, it propels itself by flexing its body and using its webbed feet. The river otter eats snails, clams, mussels, sea urchins, insects, crab, octopus, frogs, fish and plants. It is found as far north as the Brooks Range and Point Hope.

### River Otter



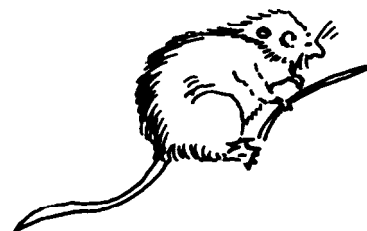
Mink are smaller than otters and the hind feet are only slightly webbed. Their fur is dark chocolate brown and they have fuzzy tails. They eat many of the same foods as river otters and are found throughout the state except

in the Arctic Slope, Kodiak, and the Aleutian and Bering Sea islands. Mink are equally at home on land or in the water when hunting for food. Their rapid movements contrast with the otter's easy lope.



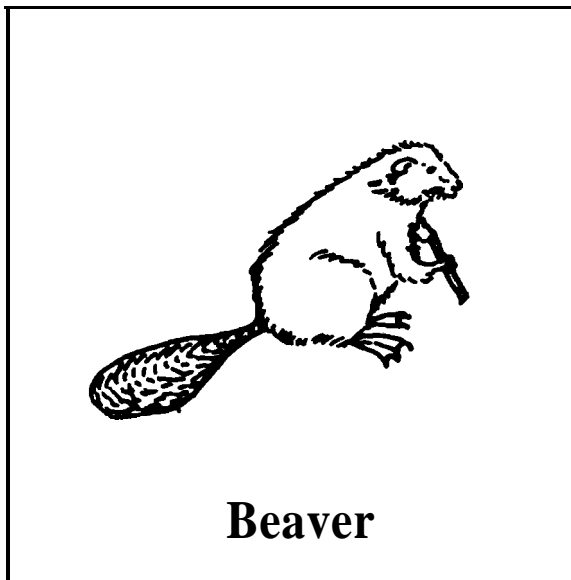
### Mink

Muskrats and beavers are related; both are members of the rodent family. The muskrat looks something like a large, plump, furry common rat and is found throughout most of Alaska. Its tail is about 11 inches long and is adapted to an aquatic habitat by being flattened on each side. The muskrat eats lilies, sedges, roots, grasses and other vegetation.

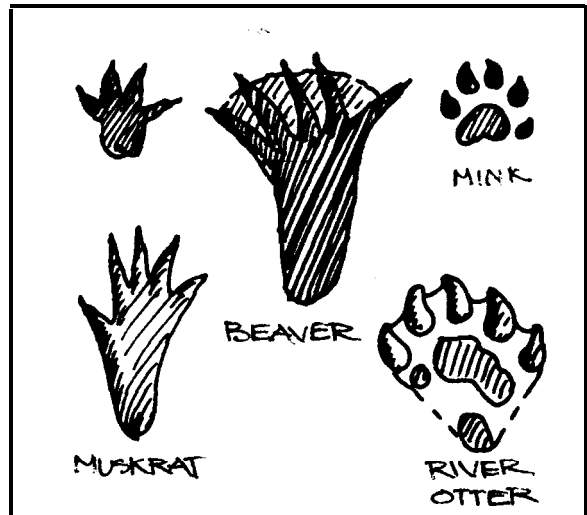


### Muskrat

Beavers are the largest rodents in Alaska and range throughout the state's wooded areas. Animal engineers, they are known for their mud and stick dams, which create ponds in which the beavers build their lodges. Beavers eat small twigs and bark of trees and shrubs, and roots and stems of aquatic plants. They are well adapted to their watery environment with their thick, dark brown fur, large webbed feet, nose and ear valves to shut out water, and broad, flat tails.



## Activity 1 Counting Animal Tracks



### Background:

Tracks are one of the most common signs that animals are around. By watching tracks, students can learn to be careful observers, and can figure out not only what kind of animal has visited an area, but what it was doing there. Olaus Murie's Field Guide to Animal Tracks is the classic treatise on tracks and other animal signs.

One of the best places to spot tracks is in the muddy areas around the edges of streams and ponds. The size and shape of tracks and the space length between them are all important for identification. Other clues to identification are habitat, scats (droppings), browse and scent. Burt and Grossenheider's Field Guide to the Mammals provides additional information on identification.

### Vocabulary:

- webbed
- mammal (review)

## Materials:

- resource materials from library (filmstrips, books, magazines)
- biologists, trappers, hunters, elders from the community who are familiar with freshwater mammals
- copies of track cards
- rulers
- worksheets :
  - ... River Otter (8-A)
  - ... Mink(8-B)
  - ... Muskrat (8-C)
  - ... Beaver (8-D)

## Procedure:

1. Discuss freshwater mammal characteristics and compare them with those of marine mammals.
2. Ask a local expert to help your class with its studies. Use the River Otter, Mink, Muskrat and Beaver worksheets. Both front and hind feet of the river otter are webbed. Beavers have webbed hind feet and muskrats feet are partly webbed, while mink have just a little

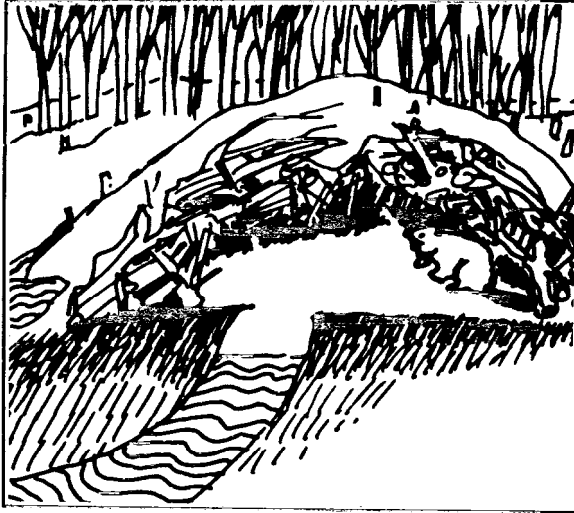
bit of webbing in their hind feet. Discuss the purpose of webbed feet. Refer to the similarity between a scuba diver's flippers and webbed feet.

3. Take a trip to a freshwater pond or stream near your school to look for tracks. Count the kinds of tracks and measure and record their sizes. Include man-made tracks and bird tracks. If a pond or stream is not available, take a walk around the school, counting various tracks. Make copies of the track cards, first cutting off the labels. Place them around the classroom or school grounds. (Be sure students realize that these tracks are much smaller than normal.)
4. Discuss the importance of wetlands habitat (with its interspersion of ponds and streams) to otters, mink, muskrats and beavers. Wetlands are a source of food and shelter for all these animals.

TRACK CARDS



## Activity 2 Constructing a Beaver Dam and Lodge



### Background:

Beavers have been important to the Alaskan economy for many years. Their pelts provide cash for subsistence hunters, who sell beaver furs to be made into hats and coats. Beaver meat is eaten by people, and is much prized as food for dog teams. Trappers along the Iditarod dog team race route save their beaver carcasses to sell to the racers. Beaver Roundup is a big celebration every year in Dillingham.

Most adult beavers weigh 40 to 70 pounds and live about 10 to 12 years. Their heavy, chestnut brown coats and soft underfur keep them warm. The beaver's nose and ear valves close automatically under water. Their lips are loose and can be drawn tightly behind the protruding teeth, so that the animal can cut and chew wood underwater without getting water in its mouth.

Young beavers (kits) are born from late April through June; they can swim immediately. They stay with their parents for two years,

then leave to make their own homes. Life depends primarily on food supply. Beavers eat tree bark, aquatic plants, roots and grasses. When an area is cleared of food, the family migrates.

Abandoned, with no one to maintain its dam, the old beaver pond drains and turns into a meadow. Then trees begin to sprout, and the area eventually becomes a forest. But in the meantime, the pond has provided habitat for a variety of aquatic life and added many nutrients to the soil from feces and silt from upstream, built up behind the dam. (This background material was adapted from the Alaska Department of Fish and Game's Wildlife Notebook Series.)

### Materials:

- . aquatic plants
- . sticks and mud
- . water
- . large baking sheets (with edges)
- . worksheets :
  - ... Water Mysteries (8-E)
  - ... Freshwater Mammal Puzzle (8-F)

### Procedure:

1. Take a trip to a local pond or stream to look for beaver signs and old or new lodges and dams. Collect small sticks cut by beavers and note their teeth marks. Collect mud and a few aquatic plants, too. If a pond or stream is not accessible, collect mud and twigs around the school grounds.
2. Back in the classroom, construct a beaver dam and lodge with the sticks, mud and aquatic plants. Use a

cookie sheet or baking pan with edges. Then see if your dam will hold water!

3. Discuss with students how beavers create wetland habitats with their buildings. Their dams flood an area and make more room for fish, water birds, pondweed and moose. Beavers are master engineers, as students will discover when they try to construct a mud dam that holds water. Beavers are fast builders; often, if a hole is knocked out of one of the dams, they can rebuild it overnight.
4. Use the worksheets Water Mysteries and Freshwater Mammal Puzzle as a review of this unit. Water Mysteries is based on actual relationships. Muskrats often use old beaver lodges for dens. Mink eat muskrats. And otters (although it is not mentioned on the worksheet) often tear holes in beaver dams, lowering the water and exposing beavers to predators. In the Freshwater Mammal Puzzle, have students color, cut out, and match the different names and characteristics.

# Unit Nine

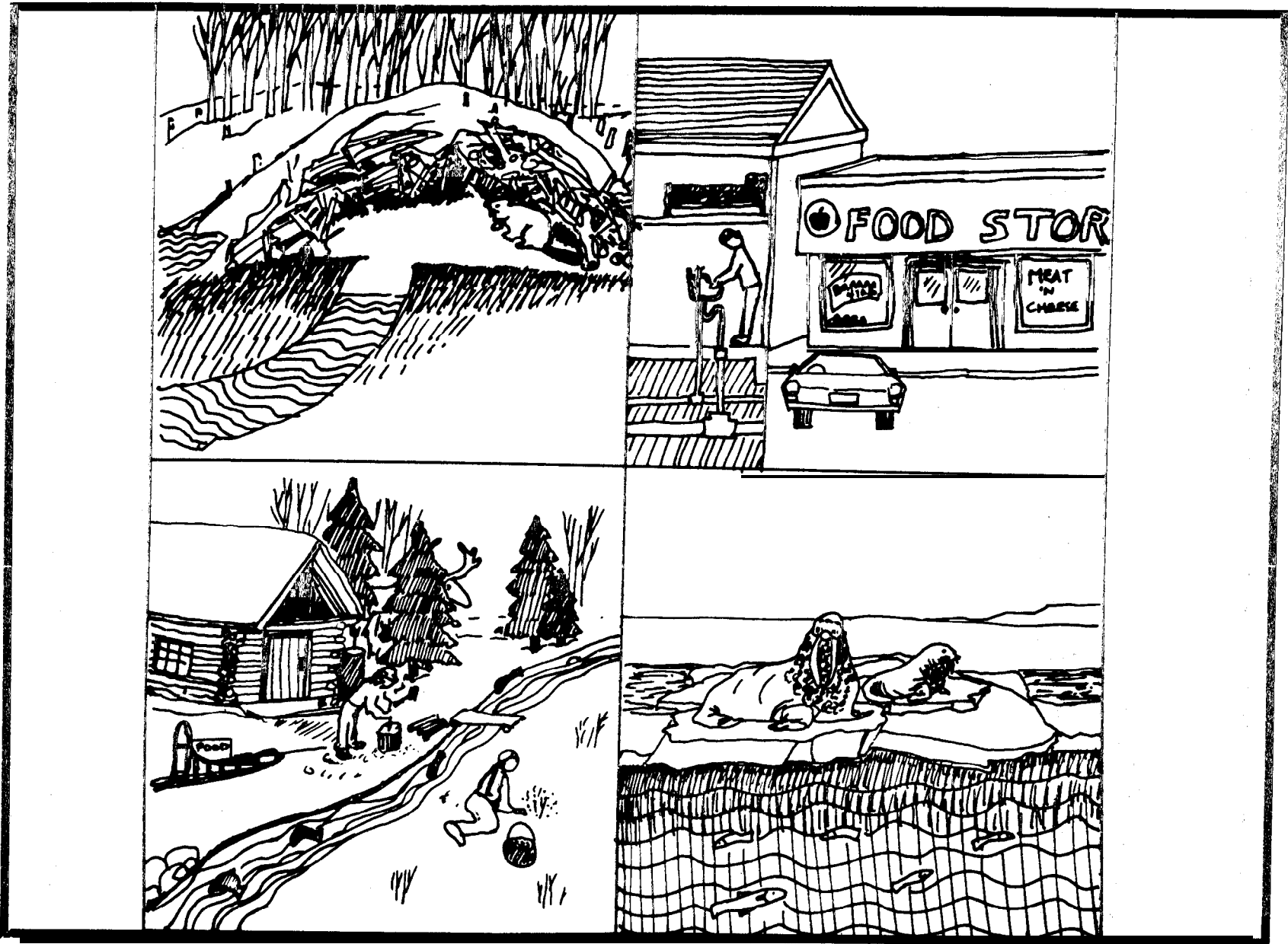
## From Wetlands to the Sea

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### Objectives:

To help students:

- . Define the term “habitat” (Activity 1).
- . Understand that all animals need food, water and cover (Activity 1).
- . Identify and compare animal and human habitats (Activity 1).
- . Imitate different forms of underwater locomotion (Activity 2).
- . Place Sea Week food signs on food. from the seas, rivers, and wetlands in a local grocery store (Activity 2).
- . Draw a mural of local habitats (Activity 3).
- . Role play the animals living in a particular habitat (Activity 3).
- . Compose and perform a song about local habitats (Activity 3).
- . List potential changes and ways people can help care for these animals and their habitats (Activity 3).



UNIT NINE: From Wetlands to the Sea: Beavers, fish, whales, human beings and all other animals must live in habitat that has the necessary ingredients for life: food, water and cover. Within each type of habitat are concentrations of plants and animals whose lives are closely woven together.

Alaska's water animals live in many different communities within our seas, rivers and wetlands. A community is a group of plant and animal species whose lives are closely woven together so that they are interdependent.

From the ocean to the tundra, each animal inhabits a certain place (called its habitat) that has all the necessary components for life: food, water and cover. The range may be very small, like that of a clam, or very large, like that of a bald eagle, which soars over an entire saltwater marsh, tideland, and adjacent forest to seek food, water and shelter.

Each animal is specifically adapted to its habitat. Water animals breathe oxygen taken from the water and move differently from their relatives on land, since water is denser than air and gives the animals more support.

## Activity 1 Aquatic Habitat



### Background:

Studying the walrus and beaver, two typical Alaskan aquatic animals, will help students to understand the term "habitat ."

The walrus lives in the ocean, primarily along the coasts of the Bering and Chukchi Seas; its habitat is composed of ice floes, rocky islands and the surrounding salt water. Walrus eat clams, other bottom marine life and, occasionally, seals.

Beavers live in wetlands; in fact, they often add to wetland habitat by damming up small streams to form ponds. They live in lodges which they build of sticks, or they burrow into riverbanks. Beavers eat small twigs and bark of willow, alder and poplar trees and are found all over Alaska except for the far northern and western sections of the state.

### Vocabulary:

- . habitat
- . needs

## Materials:

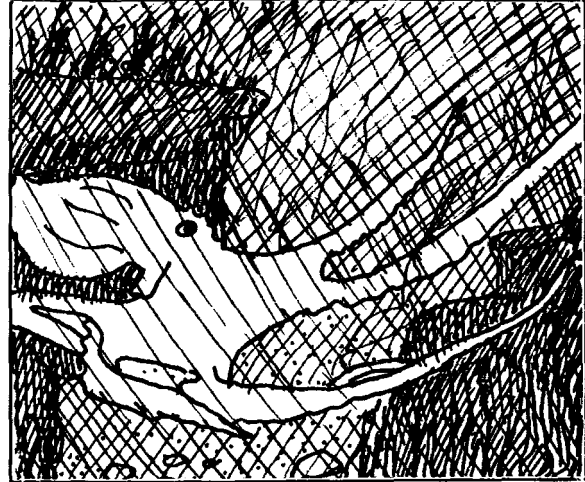
- pictures : from Alaskan magazines, calendars or photos
- pencils
- crayons
- paper
- worksheet:
  - ... Animal and Human Habitats-(9-A)

## Procedure:

1. Ask students what they like best about the seas, rivers, or wetlands around them.
2. Show pictures of different Alaskan aquatic environments from magazines, calendars, or photos. Explain that these are called "habitats." What animals live in these places, and what do they need for life? (food, water, cover).
3. Use the worksheet Animal and Human Habitats to compare walrus, beaver, and human habitats. What does each species eat? Where does each live? Color water blue, food yellow, and cover (space or shelter) red in each of the three worksheets. Which animal needs the most water, the most food and the most cover? Which animal makes the most changes in its habitat? List the good things and the bad things that result from these changes.
5. Have the class choose another aquatic animal and draw its habitat.

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## Activity 2 Swimming in an Underwater World



### Background:

Seals, sea lions, walrus, beavers, mink and muskrats breathe through mouths and noses as we do, and must come to the water's surface for air. Whales and porpoises breathe through a special blowhole on the top of their heads. The blowhole opens when the animal surfaces; old air is expelled and fresh breath is drawn in. Fish, however, use their gills to "breathe" oxygen out of the water that is constantly moving over their gills.

Movement in the water is quite varied :

- Fish move through the water by flexing their tails from side to side. Fins help them to keep their balance and sometimes to move in special ways.
- Whales and porpoises flex their bodies and move their flukes (tails) up and down when they swim.

- Sea lions, otters and seals flex their bodies or use their powerful forelimbs to propel themselves.
- Beavers, otters, muskrats, frogs and toads use webs between their feet to help them swim.
- Crabs walk over the sea floor as if on tiptoe. The pointed tips of their legs help keep them poised and yet ready to run and escape if the need arises.
- Sponges, anemones, mussels and barnacles anchor themselves firmly to the sea floor. Water currents cannot dislodge them, but instead bring the animals a steady supply of plankton and drifting organic debris for food.
- Clams and worms may burrow deep into the sea floor. This gives them protection and keeps them from being moved about by currents.
- Scallops, jellyfish, octopi and leeches use various techniques to move through the water:  
Scallops clap the valves of their shells together.  
Jellyfish cause their bells to pulsate.  
Octopi can spread the webs located between their arms for gliding, or they can jet away by expelling water from their siphons. Like sea stars or urchins, they also use suction discs to move over the sea floor. These discs let them hold on tight so that they won't be dislodged by strong currents.  
Leeches loop through the open water by alternately

stretching and shortening their segmented bodies. They also have head suckers that they use to move along in inchworm style.

### Vocabulary:

- breathe
- gill
- move
- blowhole
- fluke
- webbed feet

### Materials:

Large space indoors or outdoors where students can move freely.

### Procedure:

1. Prepare the children for an undersea voyage. Ask them to imagine water moving around them and to imagine what they would see underwater.
2. Pretend that you are various undersea animals. Pretend to breathe, move and eat like those animals. What are your needs? What is your habitat like?  
  
Use the teacher background material for ideas. This activity should be a good review of animals studied in previous units. If students have further questions about the animals, have them look up the answers in the library, or ask their parents.
3. Have each student pick a sea animal to imitate and see if the others can guess its identity.

### Activity 3 Look at Your Habitat



#### Background:

Streams flow into rivers on their way to the sea. Lakes and ponds occasionally interrupt the faster current of the stream and river water. Along the banks of these water systems are wetlands of one kind or another: wet tundra, marshes, tidelands, river deltas, bogs, swamps, or muskegs. Practically all of Alaska is wetland except for the mountains and upland forests. Throughout this book, the students have been studying the animals that live in wetland habitats. Now is the chance to apply their knowledge to their own locality.

#### Materials:

- scissors
- butcher paper
- felt-tip markers
- paper
- crayons
- worksheet
- ... Invertebrate or Vertebrate? (9-B )

#### Procedure:

1. Review with the children the different animals that they have studied. Distribute the worksheet Invertebrate or Vertebrate? Have the students color the animals, then cut out and separate them into two piles: invertebrates (anemones, insects, sea stars, crabs, leeches, clams, snails) and vertebrates (beavers, frogs, whales, birds, seals, fishes, otters).
2. Go over the different aquatic habitats which these animals live (ocean, river, wetlands). Make a list of the different types of habitat found locally (mudflats, rocky intertidal, marsh, river, open ocean, lake, muskeg, tundra), and the different animals in each. Talk about the importance of each area. What kinds of habitat support human recreation, jobs, water for drinking or transportation, clothing? What food comes from each area?
3. Make Sea Week food signs. Take them to the grocery store and put them on all the food that comes from the sea, rivers, or wetlands. (Suggested by Jan Kecklove, Craig Elementary, Craig.)
4. Make a large class mural of different habitats and the animals in each. Divide the class into small groups, and have each work on a section of the mural.
5. Then make up a song to go with your mural. Use "Old MacDonald had a Farm" or a similar model.

"In Alaska we have a (name a habitat)

E-i-e-i-o

Or try "Row, Row Your Boat."

"Row, row, row your boat  
Gently (across the ocean, )  
Merrily, merrily, merrily,  
merrily,  
(Don't forget the motion! )

(Songs suggested by Lynn Fry, Weller Elementary, Fairbanks. )

6. Ask students what would happen to them if there were changes in these habitats. Discuss earthquakes, floods, forest fires, roads, housing developments and gas stations. Some of these changes are natural (earthquakes, floods, forest fires), but others occur as Alaska grows and develops. Some animals such as gulls and ravens have adapted to living near humans. But others, such as bears and moose, have trouble adapting.

7. What can people do to help care for these animals and their habitats? (Some ideas : taking care when walking through areas populated by animals not to disturb their "living room"; not killing more than is needed for food or clothing; not polluting the animal's water, air or land; not using more of the animal's land than needed; picking up litter and keeping the wildlands clean. )
8. Later, have each group pick one kind of habitat and role play the animals living in it. Let the other students guess which kind of habitat they are imitating. The children can add drama by imagining a natural or human change occurring in their habitat and showing the animals' reaction.
9. As a finale, invite parents or another class to look at your mural and to watch your habit at plays. See if they can guess what animals you are imitating. Sing your song for them!