

GRADES
Pre-K

OCEAN DISCOVERY

FOR EARLY LEARNERS

TEACHER'S GUIDE



SeaWorld[®]
ADVENTURE PARKS

Pre/Post Assessment

Use this assessment to discover how much your students already know about ocean animals before you begin this unit, and later as a conclusion to your study.

- ◆ How many different ocean animals can students name?
- ◆ Make an ocean animal using clay or other modeling compound. Show how your animal moves through the ocean.
- ◆ Draw a picture of a fish. How is it different from a sea lion? From a whale? From a bird?
- ◆ Name three ocean animals. Role play how they get their food.
- ◆ Pretend you are an ocean scientist. What would you tell people to do to help take care of the oceans and ocean animals?

NATIONAL SCIENCE EDUCATION STANDARDS

SeaWorld and Busch Gardens education programs and publications support National Science Education Standards. The *Ocean Discovery for Early Learners* Teacher's Guide for grades Pre-K includes connections to the following standards:

Life Sciences Standards

- ◆ Characteristics of organisms
- ◆ Organisms and environments

Life cycles of organisms

- ◆ Personal and Social Perspectives Standards
- ◆ Types of resources

Science and technology in local challenges

- ◆ Changes in environments

History and Nature of Science Standards

- ◆ Science as a human endeavor
- ◆ Science as Inquiry Standards

Abilities necessary to do scientific inquiry

- ◆ Understanding about scientific inquiry

Unifying Concepts and Processes

- ◆ Systems, order, and organization
- ◆ Evolution and equilibrium
- ◆ Evidence, models, and explanation
- ◆ Form and function
- ◆ Change, constancy, and measurement

National Research Council. National Science Education Standards. Washington, D.C.: National Academy Press, 1996.



Covers

Front (clockwise from upper left): A kindergartner interacts with a bottlenose dolphin (*Tursiops truncatus*); a field trip chaperone uses the *Ocean Discovery Field Trip Guide* to facilitate learning at SeaWorld San Diego's California Tide Pool; colorful reef fishes in World of the Sea Aquarium.

Back (clockwise from upper left): a field trip participant gets a close look at bat stars (*Asterina miniata*), emperor penguins (*Aptenodytes forsteri*) at the Penguin Encounter; a clownfish; Shamu and friends.

ISBN 1-893698-30-0

Printed in the United States of America

©2005 Sea World, Inc. All Rights Reserved.

Published by the SeaWorld Education Department
500 SeaWorld Drive, San Diego, California, 92109-7904

Permission is granted by SeaWorld for classroom teachers to make reprographic copies of worksheets for noncommercial use. This permission does not extend to copying for promotional purposes, creating new collective works, or resale. For more information write or call the SeaWorld Education Department.

Ocean Discovery

Pre-K Teacher's Guide

A SEAWORLD EDUCATION DEPARTMENT PUBLICATION

CONTENTS

Goals and Objectives	2
Vocabulary	2
It's Everybody's Ocean	3
Animal Adaptations	4
Ocean Friends Nametags	5
I'm an Animal – So Are You	6
How Big Are Whales?	7
Animal Wrappers	8
Make Me a Walrus	10
Don't Just Sit There	12
Ocean Friends Animal Cards	centerfold
Make a Book	13
The Penguin or the Egg?	16
Eating Can Be a Strain	18
Ocean Discovery Funsheets	20
Bibliography	24
Pre/Post Assessment	inside back cover

To the Teacher

The *Ocean Discovery* Teacher's Guide for grades Pre-K was developed at SeaWorld to help you teach your students – in an active, hands-on way – about ocean animals. Our goal is to integrate science, mathematics, art, and language. SeaWorld curriculum supports the National Science Education Standards.

The brief background information in this Guide was written for you, the teacher. It will help you do these activities with your students. We suggest you also refer to some of the materials listed on page 24 for more in-depth information. SeaWorld strives to provide teachers with up-to-date information and activities that motivate students to appreciate and conserve wildlife, the oceans, and the natural world.

Do you have comments or suggestions regarding the activities in this Teacher's Guide? We'd love to hear your opinion. Write the SeaWorld San Diego Education Department, email us at SWC.Education@SeaWorld.com or call (800) 23-SHAMU.

Goals of the Ocean Discovery Unit

Students will learn about the ocean by exploring marine animal adaptations and diversity. They will begin to develop a sense of stewardship for the oceans and the animals that live there.

Objectives

After completing the SeaWorld Ocean Discovery unit, the student will be able to...

1. Name four ocean animals and describe one adaptation of each.
2. Describe a difference between a mammal, a bird, and a fish.
3. Demonstrate the swimming or walking behavior of an ocean animal.
4. Describe a difference between how baleen and toothed whales eat.
5. Discuss that the ocean is "home" for many animals.
6. Begin to perceive that human activities affect animals.
7. Share their learning experience with family and friends.

Vocabulary

adaptation — a modification of a species, occurring as a result of natural selection. Adaptations enhance a species' ability to survive.

baleen — parallel plates, composed of keratin, that grow down from the upper jaw of a baleen whale for filtering food from the water.

behavior — the way an animal acts.

blowhole — the nostril(s) at the top of the head in whales, dolphins, and porpoises, through which they breathe.

blubber — a layer of fat between the skin and the muscle of most marine mammals.

conservation — taking care of our environment by wisely managing its resources.

environment — the total surroundings and forces that act upon an organism,

including other plants and animals as well as physical factors such as light, heat, weather, and soil.

fin — a winglike or paddlelike appendage of an aquatic animal that helps the animal steer, swim, or maintain balance.

flipper — a broad, flat limb supported by bones and adapted for swimming.

flukes — the horizontal lobes of the tail of a whale, dolphin, or porpoise, made of connective tissue (not bone).

pod — a social group of whales or dolphins.

predator — an animal that eats other animals.

prey — *v*: to hunt and eat other animals.
n: an animal eaten by another animal.

sedentary — remaining in one place or permanently attached to the substrate.

It's Everybody's Ocean

The oceans are full of life.

From the smallest one-celled creature to the mighty 160-ton blue whale, the variety of life in the ocean is incredible. Even today, scientists discover previously unknown animals living in shallow tide pools, sunlit coral reefs, and dark deep-sea trenches.

In this unit, your students will discover some of the animals that live in the sea. As you do these activities with your students, invite them to think about how ocean animals are similar and how they are different.

For example, some of the animals you'll meet need to breathe air (mammals and birds). Other ocean animals get oxygen from the water (fishes and many ocean invertebrates such as sea stars).



Your students probably know that fish live in the ocean. Can they name other ocean animals?

People are part of the ocean world.

People use the oceans for transportation, harvesting food and minerals, and recreation. And because all water eventually reaches the ocean, the things we do on land also affect the oceans.

Applying what we know about the oceans to the wise management of resources is called *conservation*. Conservation means taking care of the environment by wisely managing its resources. We do this when we interact with the ocean in responsible ways. We conserve when we observe fishing regulations, when we recycle, and when we dispose of trash properly.

Scientists, policy makers, and those who love the sea know that we have the responsibility to study the oceans so that we can learn how our actions may affect the animals that live there. The SeaWorld *Ocean Discovery* Teacher's Guide offers you a way to foster in young children a love for the sea and an enthusiasm for learning about it.



Kids can help conserve the ocean by participating in beach cleanup programs.

Animal Adaptations



This harbor seal (*Phoca vitulina*) has large eyes and sensitive whiskers, adaptations for finding food in a dark ocean. A thick layer of *blubber* is an adaptation for staying warm in chilly seas.

Ocean animals are suited for the sea.

Long, strong front *flippers*... A *blowhole* on top of the head... Nostrils that close under water... *Fins* and *flukes*... Sharp teeth... These are all *adaptations* for living in the sea.

Adaptations are body parts or modifications of a species that make it more suited to live in its *environment*.

Adaptations help a species to survive so that it can reproduce. They may make the animal better at moving, hearing, smelling, surviving when food is scarce, escaping *predators*, or finding a mate.

Each animal, wherever it lives, faces challenges to survival. For a species to survive, animals need to find food, avoid predators, and live long enough to reproduce.

Behavior is an adaptation too.

A *behavior* is how an animal acts. Behavioral adaptations can include methods of feeding. For example, killer whales hunt cooperatively in groups to feed on schools of fish. Another behavioral adaptation is communication. A mother sea lion identifies her pup by barking and listening for its reply.

Ocean Friends Nametags

OBJECTIVE

Students identify and color pictures of ocean animals.

MATERIALS

- yarn
- scissors
- crayons
- hole punch
- copies of nametags at right

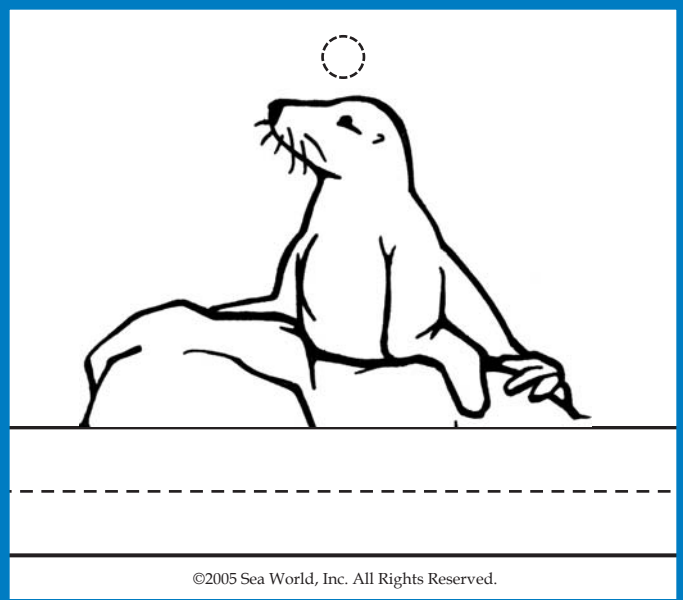
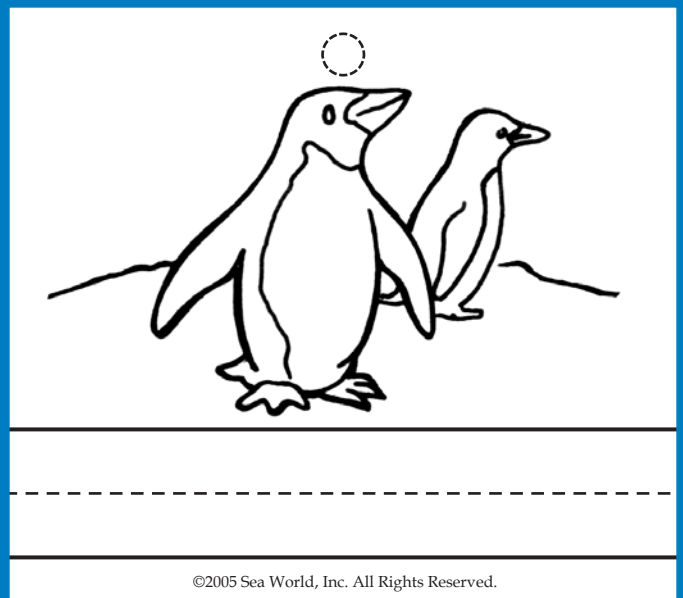
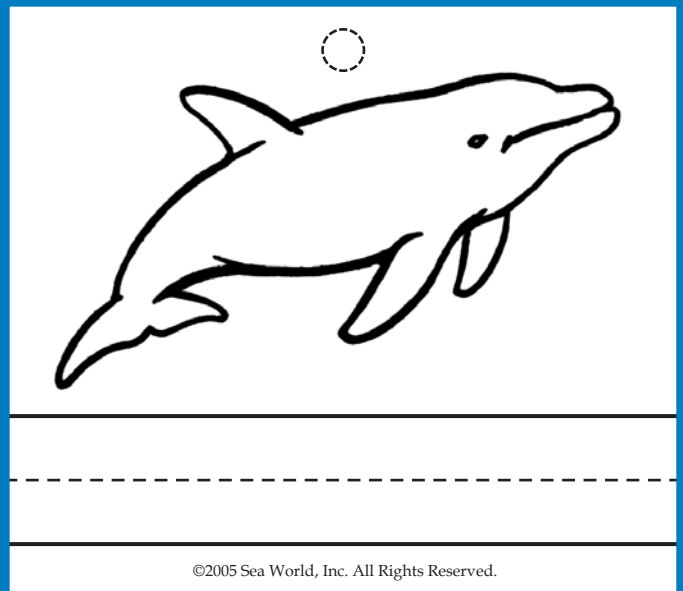


ACTION

1. Of the animals on this page, each student chooses his or her favorite for a nametag.
2. Distribute crayons and a nametag to each student.
3. Students color the pictures and write their names.
4. Punch a hole near the top of each nametag. String yarn through the hole and tie the ends together.
5. Students can wear their nametags in the classroom or at SeaWorld.

DEEPER DEPTHS

Make two copies of each student's favorite animal. Have students write their name on both and color both. Use one set to create a graph that shows students' favorite animals. Which animal is the class favorite?



I'm an Animal—So Are You

OBJECTIVES

Students will be able to role play the behavior of four marine animals. They'll differentiate between behaviors these animals can do and those they can't.

MATERIALS

- ❑ animal cards (centerfold)
- ❑ other marine animal photographs or illustrations (*optional*)

BACKGROUND

Here are a few suggestions for role playing:

- ◆ For whales (and dolphins), hands and arms become flippers, feet become flukes, and noses become blowholes. ("Slide" them up to the top of the head.) Role play swimming, jumping, breaching, hunting together, squeaking, and whistling.
- ◆ For sea lions, hands and arms become long flippers, feet become hind flippers, nostrils can open and close. Role play swimming, jumping, crawling on rocks, and barking.
- ◆ For penguins, hands and arms become flippers, feet become webbed, and clothing becomes feathers. Role play swimming, jumping out onto ice, waddling on land, waving flippers, and braying.
- ◆ For stingrays, hands and arms (elbows out) become fins, and feet become tails. Role play swimming and hiding in the sand.



ACTION

1. In this activity you'll role play the animals in the centerfold poster. If you wish, choose additional ocean animals to role play as well, or have students name ocean animals that they'd like to pretend to be.
2. Gather students. Tell them they are going to pretend to be killer whales. Ask all students to "jump into the water."
3. Lead the students as everyone pretends to "grow" the correct body parts. For a killer whale, grow flippers, a dorsal fin, blubber, a blowhole, and tail flukes.
4. Encourage students to use their arms, legs, and head to imitate a killer whale and to "swim" around the "ocean." As students role play a killer whale's movements, describe behaviors such as swimming, hunting, jumping, or resting. Have students catch and eat a meal. Imitate a killer whale's sounds.
5. After a few minutes, say "freeze." When all students have stopped moving, ask them to name stories, cartoons, movies, or books in which a killer whale has attributes that real killer whales do not really have or do things that real killer whales cannot really do. Identify these attributes and behaviors.
6. Repeat this activity, pretending to be sea lions, penguins, and stingrays.

How Big Are Whales?

OBJECTIVE

Students will be able to estimate the lengths of at least three of the whales listed below.

MATERIALS

- tape measure or premeasured string or rope
- playground longer than 27.4 m (90 ft.)
- playground chalk or orange cones

BACKGROUND

Use some or all of the following whales to show how long whales can be.

- bottlenose dolphin. . . 2.6 m (8.5 ft.)
- gray whale 12.2 m (40 ft.)
- beluga whale 3.6 m (12 ft.)
- humpback whale . . . 12.2 m (40 ft.)
- pilot whale 5.5 m (18 ft.)
- sperm whale 18.3 m (60 ft.)
- killer whale (male). . 6.1 m (20 ft.)
- blue whale. 27.4 m (90 ft.)



A newborn gray whale named "J.J." was rescued and rehabilitated at SeaWorld San Diego. In 14 months, she grew from 4.2 m (13.8 ft.) to 9.4 m (30.8 ft.).



ACTION

1. Assemble students outside and ask for two volunteers.
2. Ask students how long they think whales are. Position volunteers to mark the estimated length within the playground area.
3. Once students have estimated a length, use the measuring tape or premeasured rope to mark off the lengths of the whales listed above. Mark the lengths with chalk, orange cones, or with additional volunteers.
4. Discuss how the student estimates compared with real whale lengths.

DEEPER DEPTHS

Ask students to guess how many classmates (lying down) it would take to equal the length of a gray whale. Then help students to lie down on their backs, head-to-toe, to mark a gray whale's length.

Animal Wrappers

OBJECTIVES

Students will identify the body covering of a shark, a sea lion, and a penguin. Students will be able to sort animals according to body covering.

BACKGROUND

Sea lions are mammals and are covered with fur. Penguins are birds and are covered with feathers. Sharks are fish and are covered with rough scales.

MATERIALS

per student:

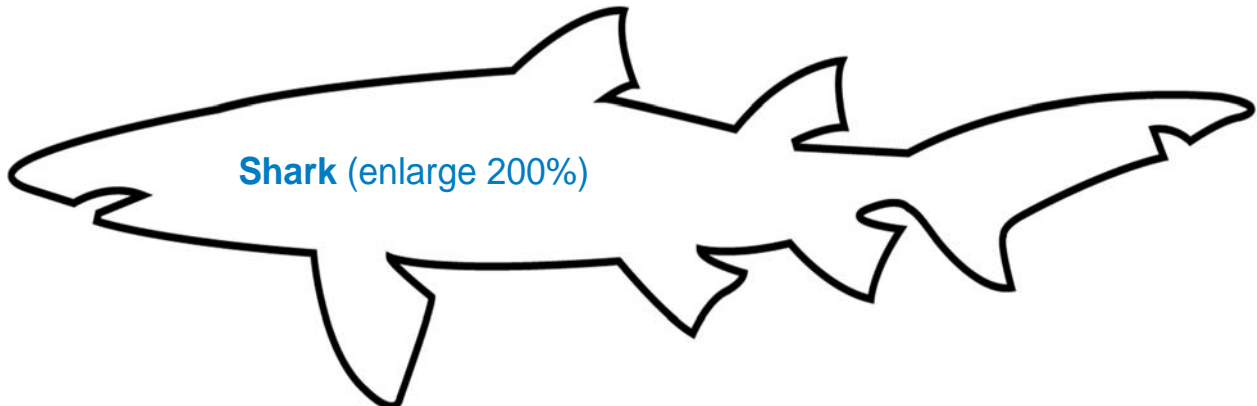
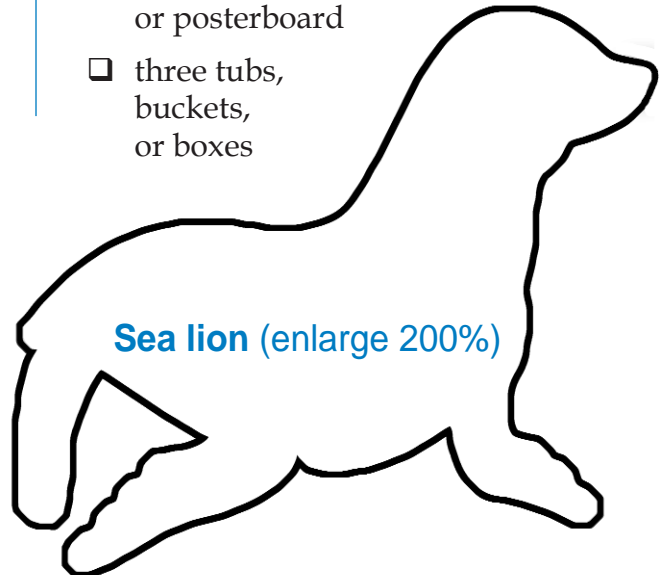
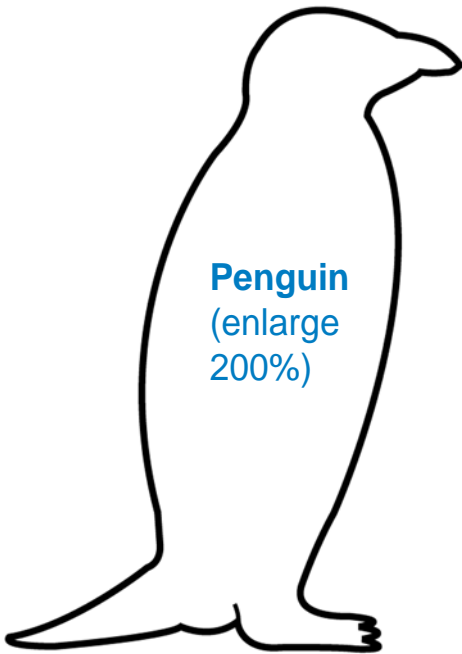
- three sheets of construction paper

per student group:

- cup of sand
- several 1" strands of brown or black yarn
- several arts and crafts feathers
- glue

per class:

- large sheet of construction paper or posterboard
- three tubs, buckets, or boxes








ACTION

Preparation:

1. Enlarge the animal outlines on page 8 to 200%. Trace the shapes onto heavy construction paper. Make one set for each student, plus one extra set.
2. Cut out the animal outlines (or if your students can cut well, have them do it during class).
3. Make a chart with three columns – labeled *scales*, *feathers*, and *fur*. Glue the extra set of animal images under the appropriate headings.

scales	feathers	fur
		

In class:

4. Organize students into cooperative learning groups. Help students cover their work area with newspaper. Distribute sand, glue, strands of yarn, and feathers to each group.
 5. Give each student a set of construction paper animals. Students write their names on the back of each animal.
 6. Ask students which of these three animals has feathers (*the penguin*). Have students spread glue on the penguin and attach feathers.
 7. Ask students which of these animals has fur (*the sea lion*). Have students spread glue on the sea lions and attach strands of yarn.
 8. Ask students what the last animal is (*a shark*). Sharks have rough scales on their skin. Students spread glue on their sharks and pour sand on top. Pour excess sand back into cups.
 9. Allow the animal cutouts to dry.
- In another class period:*
10. Discuss skin, feathers, fur, and scales as different types of body coverings.
 - ◆ What do we (people) have covering our bodies? (*skin and hair*)
 - ◆ Have students lightly stroke the feathers. What do feathers feel like? Are they hard or soft?
 - ◆ Have students feel the sea lions. What do they feel like?
 - ◆ Have students lightly rub the sharks. Are they rough or smooth? Hard or soft?
 11. Sort the animals according to their body coverings. Put three tubs or boxes in the classroom. Seat students in a circle around the tubs. Place the animal chart behind the tubs.
 - ◆ Ask students to put their sharks with scales into the first tub. Can they name other animals that have scales? (*fish, reptiles*)
As students offer answers, write the correct responses on the chart behind the tub.
 - ◆ Next ask students to put their penguins with feathers into the second tub. What other animals have feathers? (*Only birds have feathers.*) Can they name other birds? Write responses on the chart behind the tub of penguins.
 - ◆ Ask which animals go into the third tub (*sea lions with fur*). Write the names of other animals with fur on the chart behind the sea lion tub.

Make Me a Walrus

OBJECTIVE

Students will describe at least two adaptations of a walrus and how the adaptations help the walrus survive in the arctic environment.

BACKGROUND

Walrus live in the Arctic where temperatures average -30°C (-22°F) in January over the pack ice. Walrus have a thick layer of fat called blubber under their skin to help keep them warm. They use their flippers to help them swim. Front flippers help them steer, and rear flippers move them forward. Walrus have long teeth called tusks for pulling themselves from the water and for defending territories. Above the tusks are thick whiskers for feeling around on the ocean floor.

After making their walrus puppets, your students can role play walrus behavior as they follow a story book about a walrus. (Check out *Flip Flop*, by Hugh Rice. See the bibliography on page 24.)

Whiskers, tusks, blubber, and flippers are some of a walrus's adaptations for living in cold polar seas.

MATERIALS

per student:

- brown paper lunch bag
- two googly eyes
- one set of walrus face cutouts on page 11, enlarged to 120%
- six to eight 3" cream-colored yarn pieces

per class:

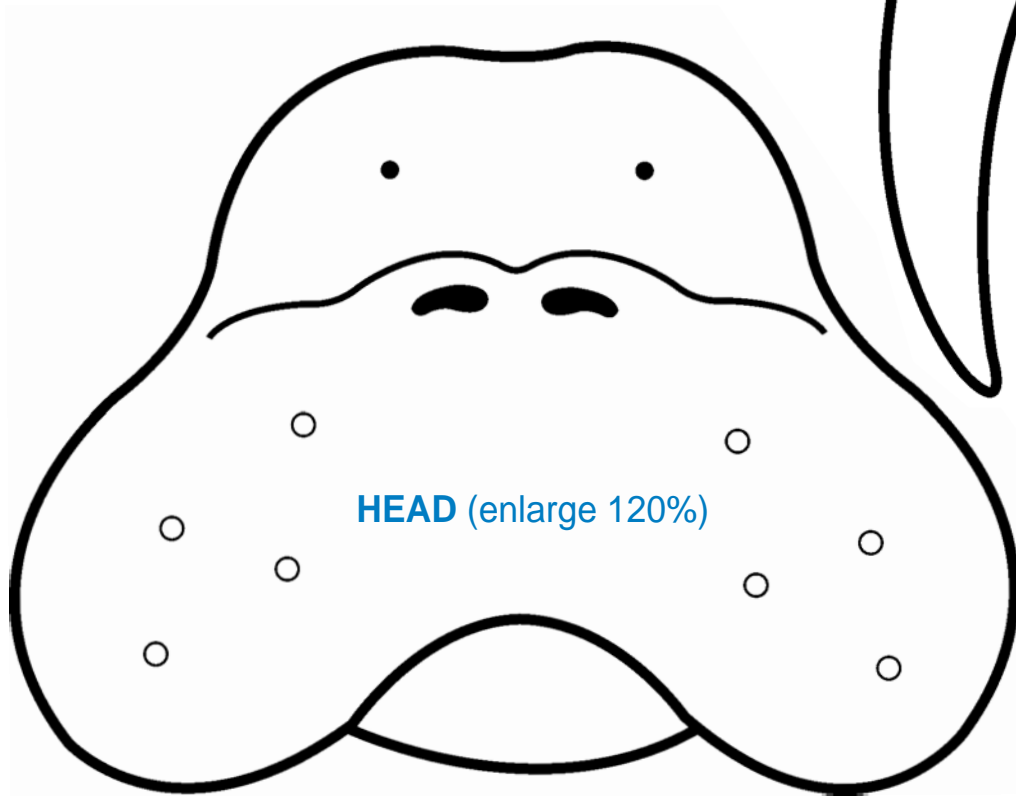
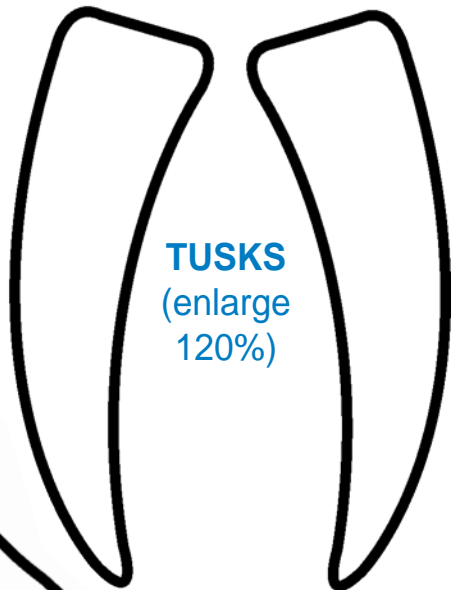
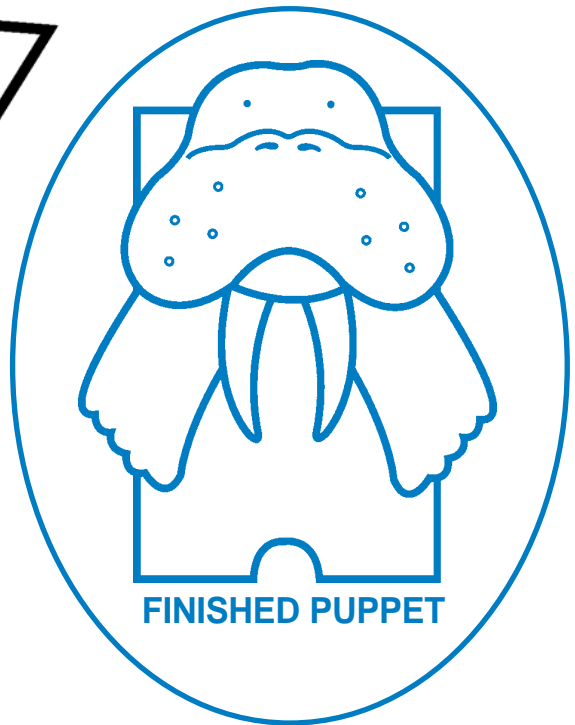
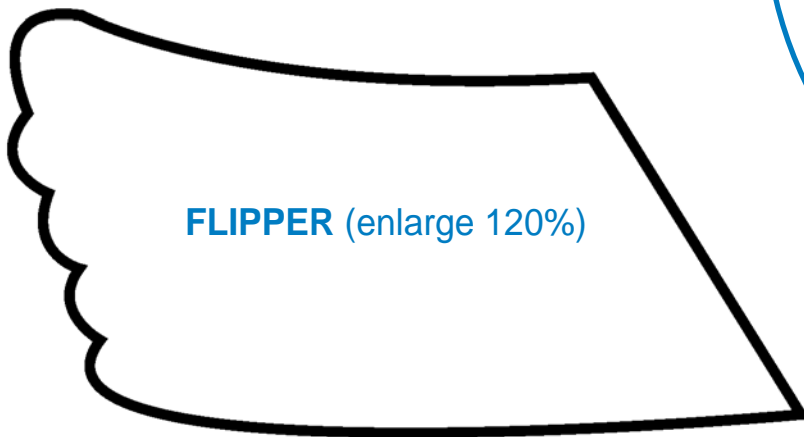
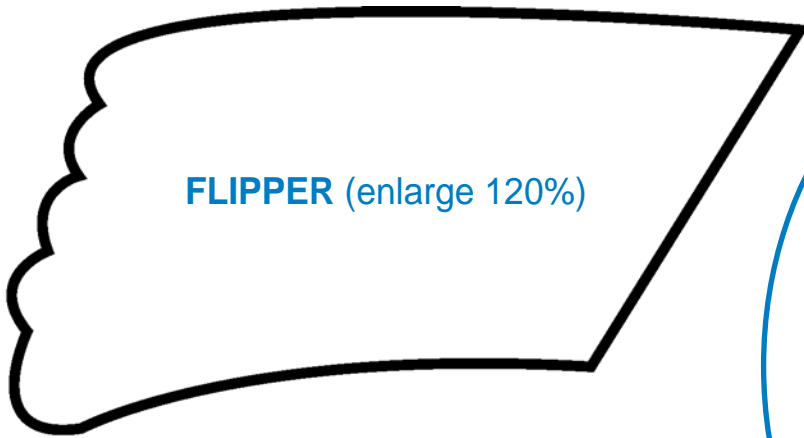
- glue
- crayons or markers



ACTION

1. Distribute paper bags, walrus heads, and glue. Students apply glue to the bottom flap and attach the head. The "cheeks" should overlap the fold.
2. Distribute tusks. Students glue them on the lower underside of the face.
3. Distribute googly eyes and yarn (whiskers). Students glue the eyes and whiskers to the front of the face.
4. Distribute flippers. Students apply glue to the straight edges of the flippers and attach them to the sides of the bag in any position.
5. Using crayons or markers, students may add details to their walrus, including a mouth and nostrils.
6. Students use their walrus puppets to role play walrus behavior.

Make Me a Walrus pattern pieces



Don't Just Sit There

OBJECTIVE

Through role play, students will be able to act out the differences in hunting styles between sea anemones and sharks.

MATERIALS

- open play area
- bubble soap
- bubble wand

BACKGROUND

Each animal has adaptations that help it catch and eat food. Some animals, like sea anemones, are *sedentary*. Sea anemones stay in one place and use their tentacles to catch small animals that drift through the water. Many other animals pursue *prey*. For example, sharks swim to catch fish and other prey animals. An animal must consume as much energy as it uses to catch its food. Sedentary animals may consume less food, but they also expend less energy than predators who chase their prey.



ACTION

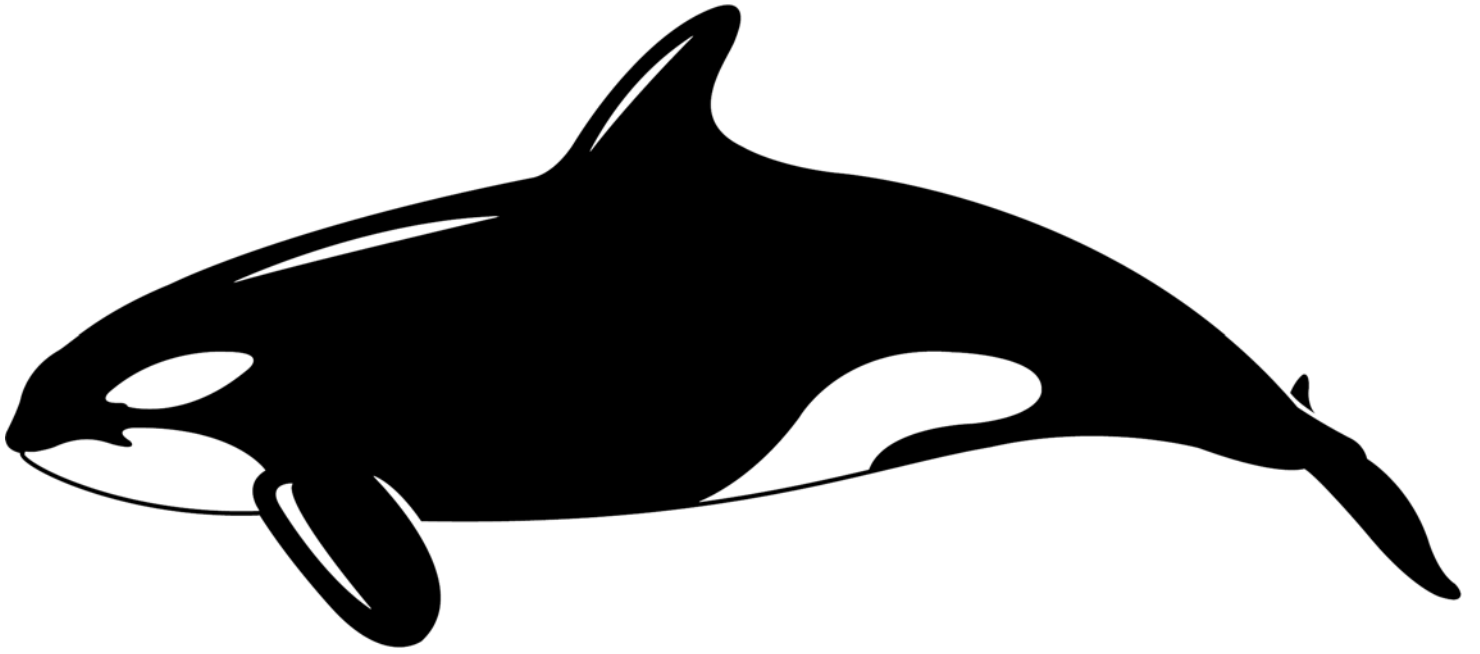
1. Seat all but one student in a circle. Place the extra student in the middle of the circle. This student will be the "bubble-maker." Introduce the terms predator and prey. Students will be predators; bubbles will be prey.
2. Ask students to become sea anemones. Describe what sea anemones look like and role play how these animals wave their tentacles in the water to catch food. Have students practice being sea anemones.
3. Begin ROUND ONE by having the bubble-maker make bubbles (prey). Student "sea anemones" must stay seated as they catch as many bubbles as they can.
4. After a few minutes, end round one and ask students how successful they were at catching food while sitting.
5. Begin ROUND TWO by asking students to become sharks. Describe how sharks swim to catch their food. The bubble-maker blows bubbles.

Students may stand up and walk or run to catch bubbles (their prey).

6. After a few minutes, end round two and ask students how successful they were at catching prey as sharks. Was it easier to catch the bubbles? Did they catch more? Did they use more energy (get tired and out of breath)?

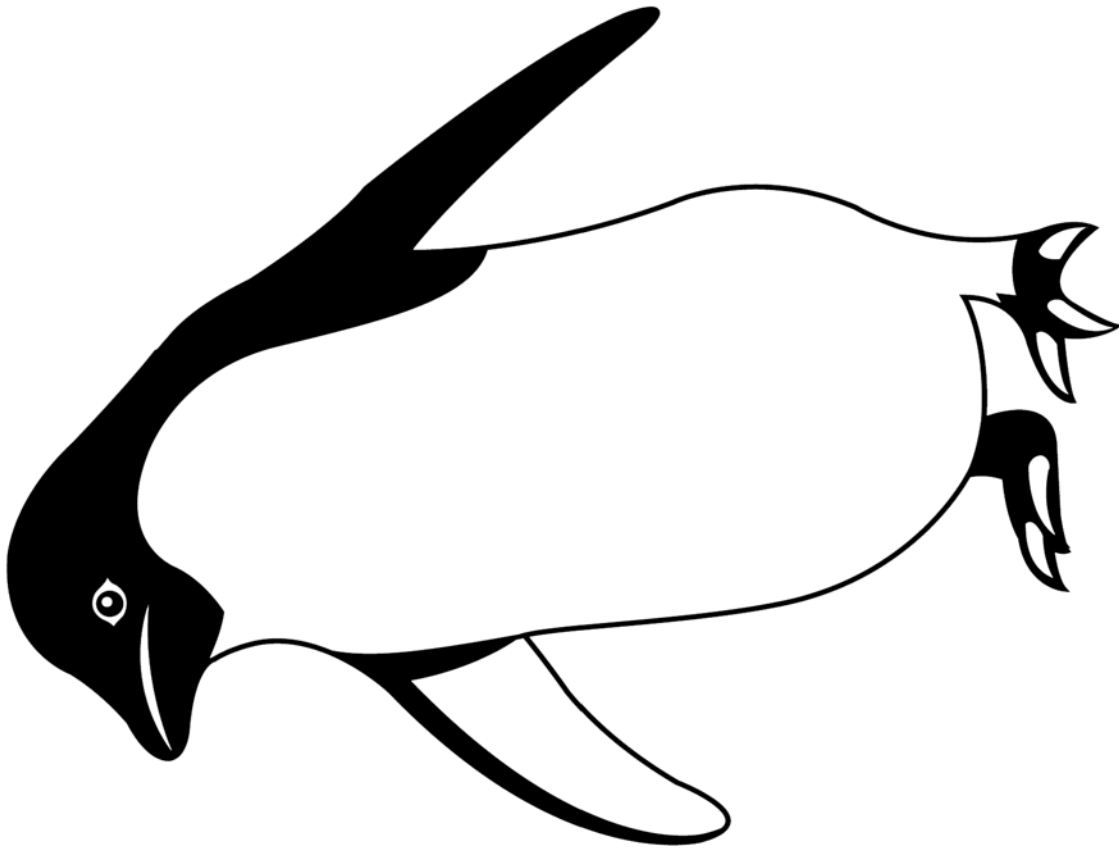
DEEPER DEPTHS

Arrange students in pairs. Assign one pair to count or estimate the total number of bubbles made. For other pairs, one student is the predator and the other counts the number of bubbles caught. Play both rounds again for two minutes each. Compare the number of bubbles caught versus number of bubbles made. Compare the number of bubbles the sea anemones catch to the number of bubbles the sharks catch.



killer whale

©2005 Sea World, Inc. All Rights Reserved.



Adélie penguin

©2005 Sea World, Inc. All Rights Reserved.

killer whale

Orcinus orca

That's no fish!

Killer whales spend their entire lives in water, but like us, they are warm-blooded mammals. A thick layer of blubber beneath the skin insulates a killer whale from even the coldest polar waters.

A killer whale surfaces to breathe air through a blowhole. Under the muscular flap that covers the blowhole, a killer whale's two nasal cavities are similar to nostrils.

Killer whale calves are born under water. They nurse for 12 months or more, filling their tummies with rich milk that can be as much as 48% fat!

A black and white pattern helps hide these predators.

It's easy to recognize a killer whale. A distinct white patch on its belly and two white "eyespot" (actually located just above and slightly behind each eye) contrast with a jet-black body.

A killer whale's striking black and white pattern may help it hunt in the sea. Its color pattern contradicts its body shape, and prey animals may not recognize it as a potential threat until it's too late.

Killer whales are top predators.

Killer whales are social animals. They live and travel in groups called *pods*.

Swimming together in a pod, killer whales coordinate their hunting so that the whole pod catches food. This gives killer whales the ability to eat just about any animal that swims in the sea – even other, larger species of whales.

What do they eat? Fishes, squids, seals, sea lions, walruses, penguins, and more. Scientists have found that some pods prey mostly on fishes, and others prey mostly on marine mammals.

©2005 Sea World, Inc. All Rights Reserved.

Adélie penguin

Pygoscelis adeliae

These birds don't fly.

Like other birds, penguins have feathers. A thick, water-proof layer of feathers keeps them dry and insulated.

Unlike most other birds, penguins can't fly. They catch all their food in the sea, and their solid, dense bones make them heavy so that they can dive under water. They swim with flipperlike wings. Heavy bones are good for ocean predators, but these birds can't get off the ground!

On land, penguins "waddle" on webbed feet, their upright body supported by short, strong legs.

Penguins live only in the Southern Hemisphere.

All 17 species of penguins live south of the equator. Many species in SeaWorld's *Penguin Encounter* – including the Adélie – are native to the chilly seas surrounding Antarctica. They are adapted to live in freezing temperatures.

Other species live in warmer areas of the Southern Hemisphere, in waters off Africa and South America. One species, the Galápagos penguin, lives on the equator.

Chicks hatch from eggs.

Adélie penguins nest on Antarctica and nearby islands. They may travel as far as 60 km (37 mi.) from sea to find an ice-free area for their nest.

Adélie parents build a nest of small stones. They take turns incubating their eggs.

Fluffy down feathers cover a chick. Chicks stay close to their parents for food and protection. Both parents help keep the chick warm and feed it regurgitated food. When a chick's waterproof feathers grow in, it can dive and swim to find its own food: fishes, squids, and krill.

©2005 Sea World, Inc. All Rights Reserved.

California sea lion

Zalophus californianus

Flippers are for swimming and walking.

A California sea lion's flippers have a bone structure similar to that in our hands and arms. If you could see inside a sea lion's flipper, you'd see five long digits or "fingers" and short "arm" bones.

A sea lion swims by moving its long, winglike foreflippers up and down. Its paddlelike hind flippers steer.

Sea lions are also at home on land. Unfazed by rough or rocky terrain, a sea lion rotates its hind flippers under its body and walks on all four flippers, even clambering onto sea cliffs.

Sea lions are both predator and prey.

Sea lions are active predators. Under water, acute vision and hearing help them track down prey animals such as fishes, squids, and octopuses. (Unless it is inhaling or exhaling, a sea lion's nostrils stay closed, and smell is not an important sense for locating food.) A large male sea lion may eat as much as 18 kg (40 lb.) of food in a day.

Adults are safe on land, but at sea, killer whales and sharks prey on California sea lions.

Blubber is a beautiful thing.

Maintaining a constant body temperature is one of the biggest challenges marine mammals face. Mammals lose body heat in water about 27 times faster than in air of the same temperature.

A sea lion stores most of its body fat in a thick layer of blubber just under the skin. The blubber layer insulates the sea lion from cold water. And like any fat deposit, it is also an excess energy reserve.

When diving in very cold water, warm blood is shunted away from the skin and flippers to prevent heat loss.

©2005 Sea World, Inc. All Rights Reserved.

blacktip reef shark

Carcharhinus melanopterus

Prehistoric predators.

If you traveled back in time 400 million years, our planet would appear alien and unfamiliar. You'd find no birds, no flying insects, no mammals – not even any dinosaurs. But in the sea, you would find sharks.

The earliest shark fossils date back to the Devonian Period, also known as the "Age of Fishes."

Representatives of modern-day shark families appeared 100 million years ago, when dinosaurs lived. Unlike other animals, sharks have changed very little since.

Most sharks don't eat people.

Only 32 of nearly 400 species of sharks are known to attack humans. Most of the time, humans become prey by accident. Sharks may confuse swimmers or divers for prey.

As a group, sharks eat almost anything: fishes, shellfish, marine mammals, and even other sharks. Certain sharks are selective feeders. Hammerhead sharks are known for eating stingrays, and smooth dogfish eat crabs and lobsters.

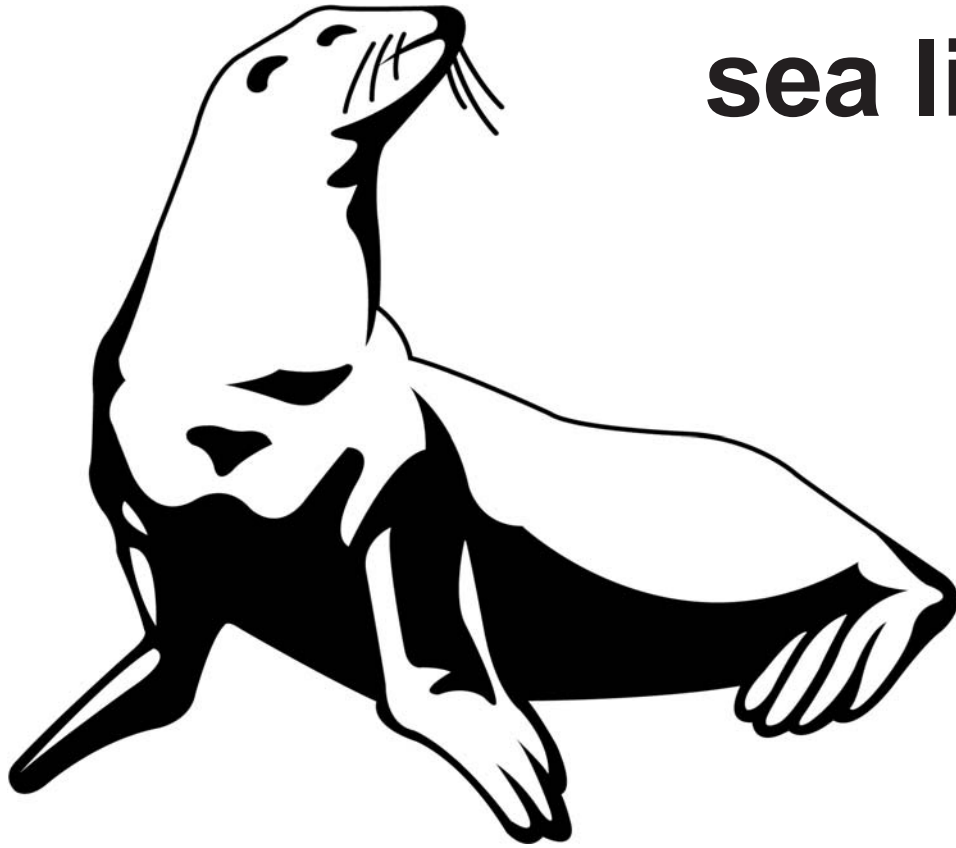
Sharks in a tide pool?

Sharks range in size from 13.7-meter (45-ft.) whale sharks to 22-centimeter (8-in.) midwater sharks. They inhabit all oceans of the world.

Blacktip reef sharks prefer warm shallow waters close to shore. In the tropical Pacific, you're likely to find these 2-meter (6.6-ft.) sharks among coral reefs at depths of less than 30 cm (1 ft.), even in tide pools!

Blacktip reef sharks eat a variety of small fishes, cuttlefish, squids, octopus, and shrimp. In turn, they are prey for large fish, including other, larger species of sharks.

©2005 Sea World, Inc. All Rights Reserved.



sea lion

©2005 Sea World, Inc. All Rights Reserved.



shark

©2005 Sea World, Inc. All Rights Reserved.

Make a Book

OBJECTIVES

The student will order pages to create a book. They will gain practice reading simple sentences.

BACKGROUND

The oceans are home to many animals. Some ocean habitats include tide pools, rocky shorelines, open seas, coral reefs, and icy antarctic seas. Different kinds of animals live in different ocean homes.

MATERIALS

- copies of “The Sea is Home” book pages on pages 14–15 (*one per student*)
- scissors
- crayons or markers
- stapler



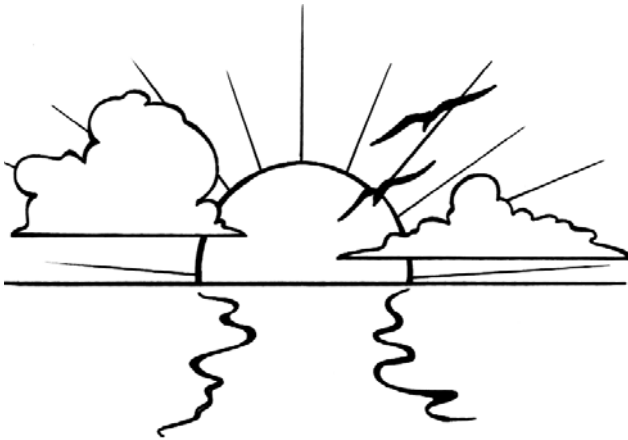
Students create their own little books. Emerging readers can read the words themselves.



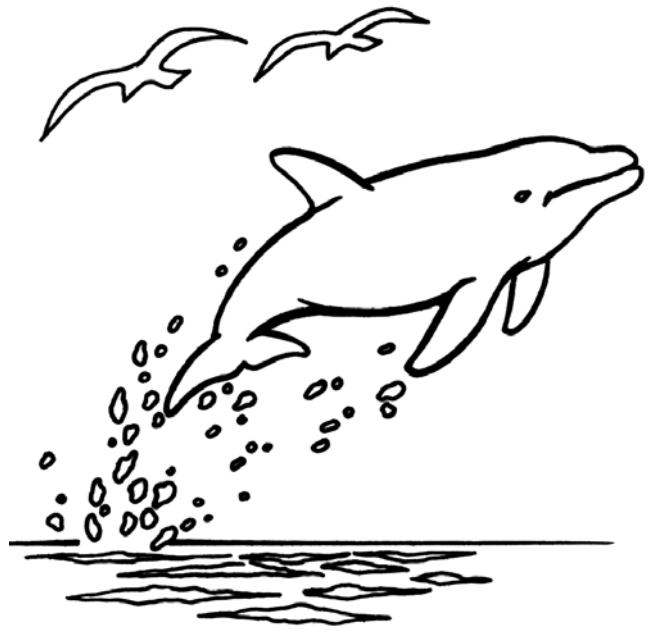
ACTION

1. Distribute a set of “The Sea is Home” book pages to each student.
2. Students cut apart the book pages and assemble their books: they put the pages in order and staple them. Then they color the drawings.
3. On page 8, students draw their own home. (*They can draw a house, a city, or anything that they identify as home.*)
4. Students practice reading their books. They take them home and read them with their families.

The Sea is Home



©2005 Sea World, Inc. All Rights Reserved.



The sea is home
for dolphins.

©2005 Sea World, Inc. All Rights Reserved.

2



The sea is home
for sea lions.

©2005 Sea World, Inc. All Rights Reserved.

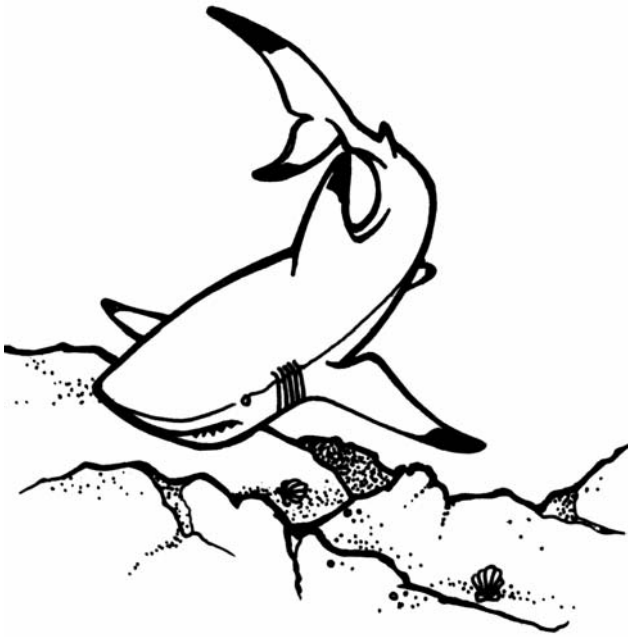
3



The sea is home
for whales.

©2005 Sea World, Inc. All Rights Reserved.

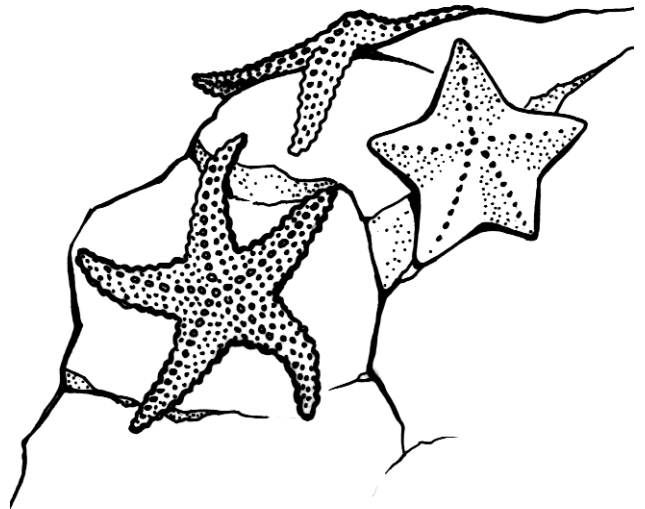
4



The sea is home
for sharks.

©2005 Sea World, Inc. All Rights Reserved.

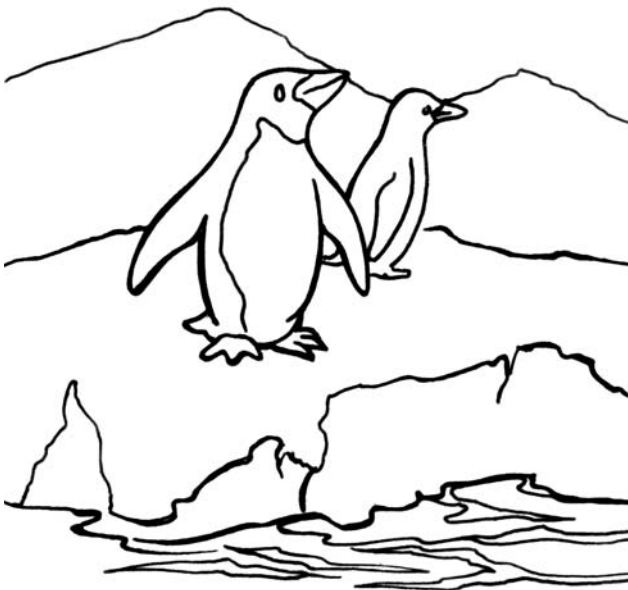
5



The sea is home
for sea stars.

©2005 Sea World, Inc. All Rights Reserved.

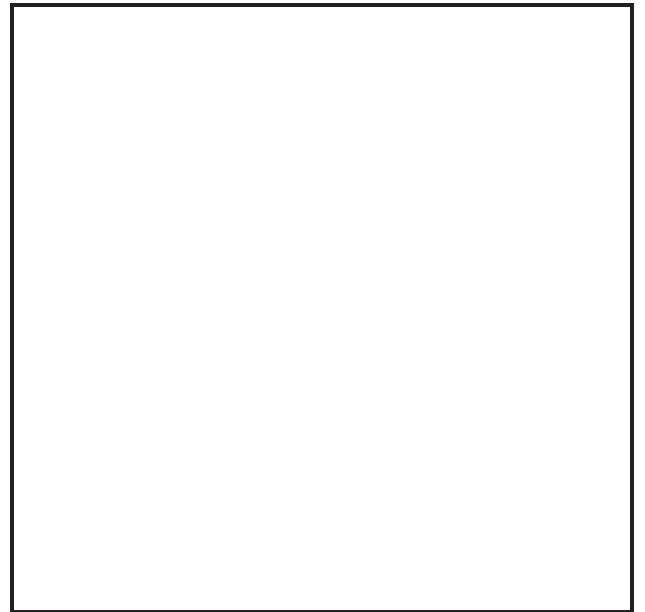
6



The sea is home
for penguins.

©2005 Sea World, Inc. All Rights Reserved.

7



This is home
for me.

©2005 Sea World, Inc. All Rights Reserved.

8

The Penguin or the Egg?

OBJECTIVES

Students will name penguin body parts and recognize that penguins hatch from eggs.



An emperor penguin (*Aptenodytes forsteri*) chick hatches from an egg.

MATERIALS

per student:

- one white construction paper egg/body*
- two black construction paper flippers*
- one black construction paper head*
- one orange construction paper beak*
- two brads
- two googly-eyes (craft eyes) or white hole-punch reinforcer rings
- scissors

per class:

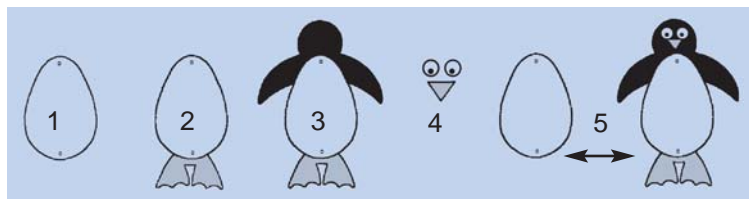
- glue

(*Depending on the level of your students, you may pre-cut construction paper pieces or have students cut them.)

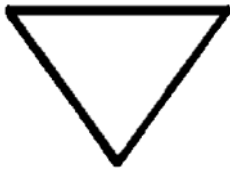
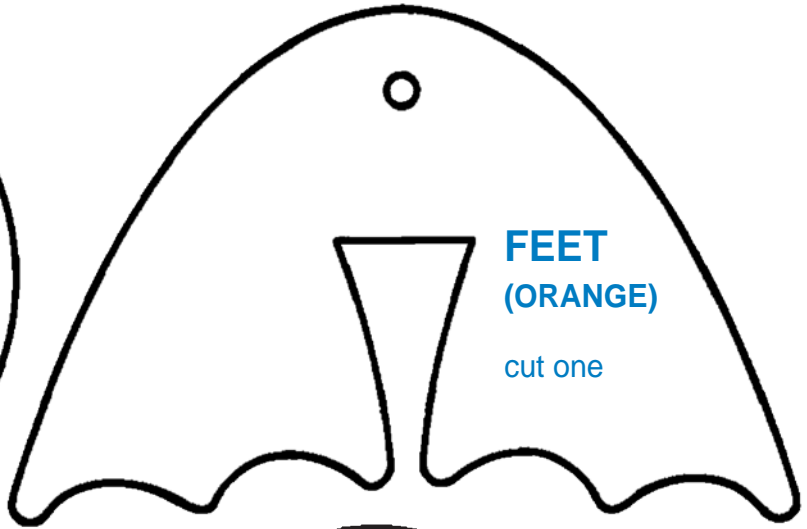
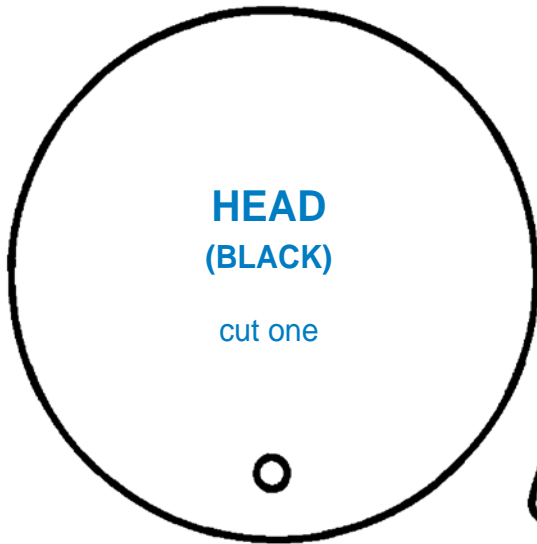


ACTION

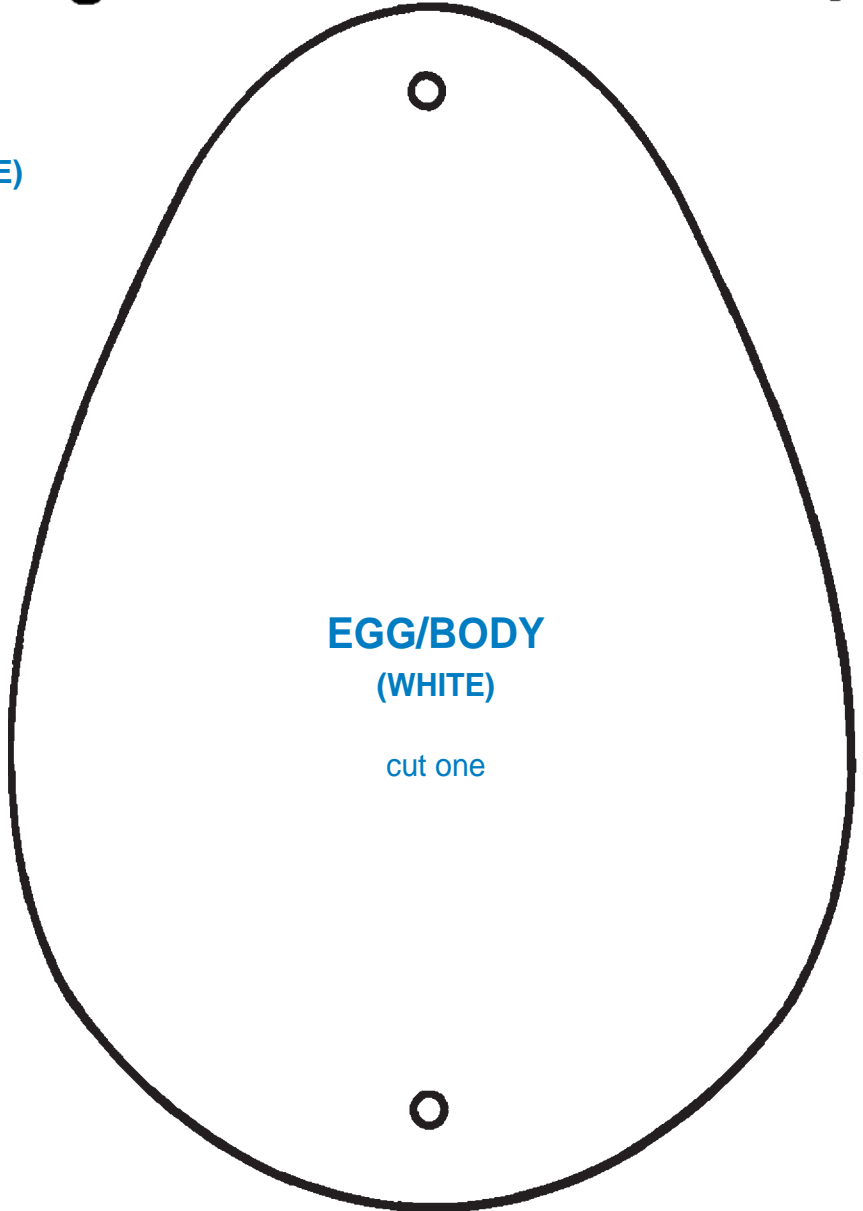
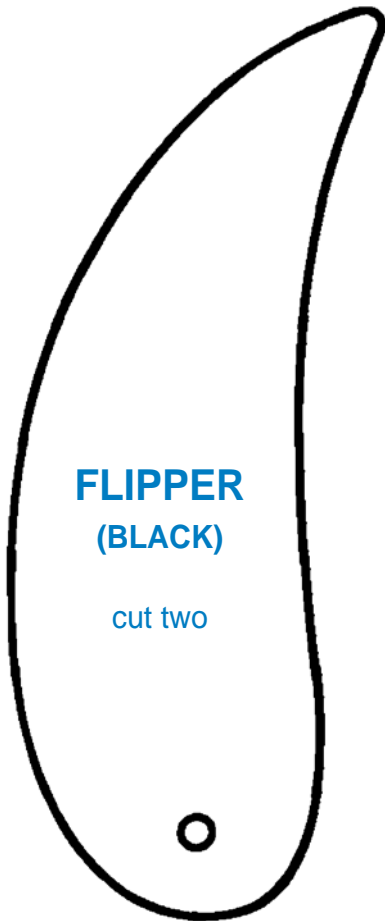
1. Review penguin body parts: head, beak, flippers, feet, and body.
2. Give each student one penguin body and one brad. Students place the brad through the hole at the wide end of the body. The brad should rest on the table with the prongs pointing up.
3. Distribute penguin feet. Students attach the feet to the body by poking the brad through the feet. They secure the brad by opening it.
4. Distribute one head, two flippers, and another brad to each student. Students attach the head and both flippers to the top of the body by poking the brad through the holes.
5. Students glue the beak and the eyes to the head.
6. Show students how to rotate their penguins' head, flippers, and feet in to "hide" in the egg and turn them out to see their "newly hatched" chick.



The Penguin or the Egg pattern pieces



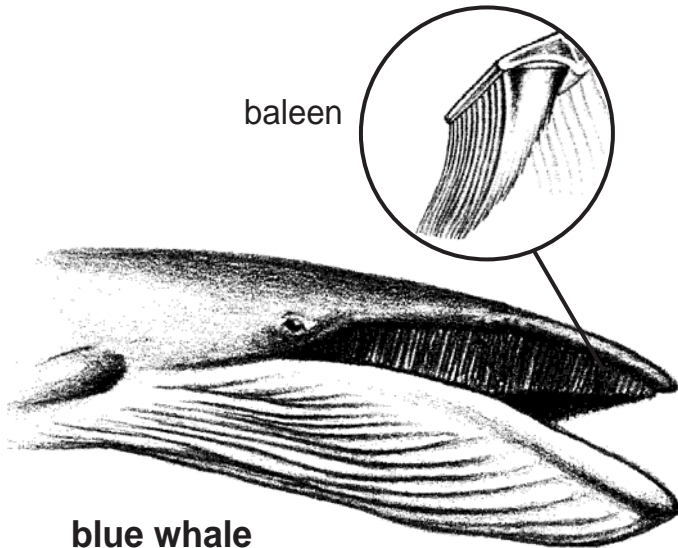
BEAK
(ORANGE)
cut one



Eating Can Be a Strain

OBJECTIVES

Students demonstrate how objects of different sizes can be most effectively gathered. They show the feeding methods of *baleen* and toothed whales.



MATERIALS

per student group:

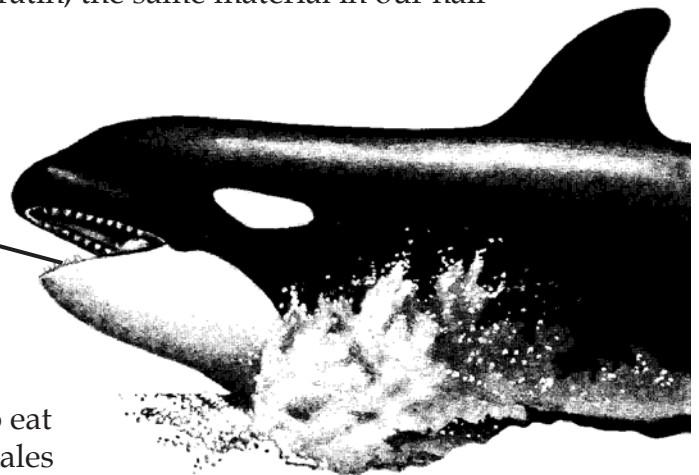
- 9" x 12" x 3" pan, tub, or other container
- 9" pocket comb
- food strainer
- small aquarium net
- fork
- toothpick
- pair of tongs
- water
- parsley flakes
- sliced, cooked carrots
(Canned carrots work well.)

BACKGROUND

Baleen whales such as blue and gray whales feed by filtering food from the water with baleen. Baleen plates in these whales' mouths are somewhat triangular and arranged like teeth in a giant comb. The inner edge is frayed, and the fringes form a dense mat inside the whale's mouth. Some baleen whales feed by swimming while holding their mouths wide open. Others open their mouths, gulp in a huge amount of water, and then close their mouths, forcing the water out through the baleen. Small fishes and invertebrates such as krill get trapped in the fringed mat. After the water is gone, the whale swallows its meal. Baleen is made of keratin, the same material in our hair and fingernails.

Toothed whales such as dolphins and killer whales don't chew. They have teeth adapted for ripping and gripping food—not for chewing it.

Toothed whales swallow their food whole or in large chunks. Most eat fish but some also eat invertebrates such as crabs or squid. Killer whales eat fish, seals, sea lions, and occasionally other whales.





ACTION

1. Using the information on page 18, introduce the two types of whales and how they feed.
 - ◆ Explain that toothed whales have teeth to catch and tear their food. Have students rub their tongues over their teeth. Which teeth work best for biting? Which teeth work best for chewing?
 - ◆ Describe baleen whales' stiff plates of hairlike baleen, which filter food from the water. Have students feel their hair. Baleen is stiffer than our hair – it feels more like our fingernails. Baleen, hair, and fingernails are all composed of keratin.
2. Divide the class into student groups. Give each group a container, a comb, a food strainer, an aquarium net, a fork, a toothpick, and a pair of tongs.
3. Fill containers halfway with water.
4. Sprinkle parsley flakes in each baking dish. The parsley flakes represent krill, a small shrimplike ocean invertebrate. Many baleen whales eat krill, which they strain from the water with their baleen. Ask students to experiment with the tools they have to see which are best for “capturing krill” (collecting parsley flakes). Which work best? Which tools work in a way similar to a whale’s baleen? Can they describe what is happening?
5. Next drop several carrot slices into the water. The carrot represents fish and other larger prey animals. Toothed whales use teeth to catch fish and other prey. Have students experiment with their tools to see which are best for “capturing fish” (collecting carrots). Which work best? Which tools work in a way similar to a toothed whale’s teeth? Can they describe what is happening?
6. Discuss how an animal’s adaptations help it survive in its environment. Would a killer whale be able to eat krill? Would a blue whale be able to catch and eat large fishes?
7. Ask students to hypothesize if baleen or teeth would be a better adaptation for eating each of the following foods:

cake sprinkles	vegetables
whole fruit	spaghetti
alphabet soup	bread
sunflower seeds	noodles
cheese sandwich	hot dogs
small candies	pizza

(Optional: Use the tools listed in this activity to simulate baleen and teeth, and test students’ hypotheses.)

DEEPER DEPTHS

Have students pretend to be baleen whales. *(Try this outside.)* Give each student a cup of water. Add cake decoration sprinkles to represent krill. Can students strain the “krill” from the water as a whale does? Demonstrate how: fill your mouth with water (and sprinkles), close your teeth together, and squirt the water through your teeth into the cup (back into the ocean). The “krill” remain behind your teeth. Like whales, students use their tongues to lick the “krill” from their teeth and swallow it.

Ocean Discovery Funsheets

OBJECTIVES

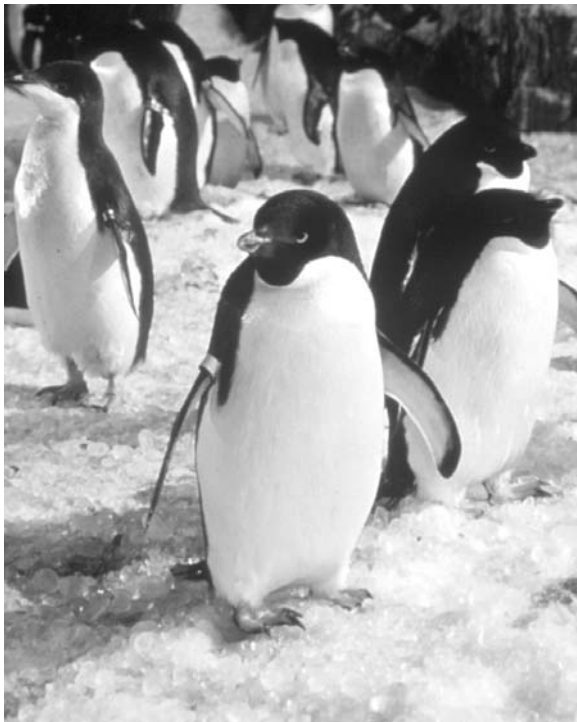
Students recognize numerals and the numbers to which they correspond. They identify the habitats of four marine animals.

MATERIALS

- copies of funsheets on pages 21–23 (*one per student*)
- pencils, crayons, or markers
- “Ocean Friends” cards (centerfold)

ACTION

1. To prepare students for the **“We’re All Mixed Up”** funsheet, review numerals and counting.
2. To prepare students for the **“Find My Home”** funsheet, familiarize students with the information on the “Ocean Friends” cards (centerfold of this Teacher’s Guide).
3. To prepare students for the **“I Spy – Do You Spy?”** funsheet, teach them to play the “I Spy” game, then “spy” an animal in one of the drawings. When a student spies the animal you name, all the students color it. Once students get the hang of the game, give student volunteers a chance to “spy” animals or objects.
4. When all students have had time to complete their funsheets, review the answers as a group.



Do your students know where Adélie penguins live? These birds live in the ice and snow of Antarctica. SeaWorld’s *Penguin Encounter*® recreates an antarctic habitat.

ANSWERS

“Find My Home” Funsheet

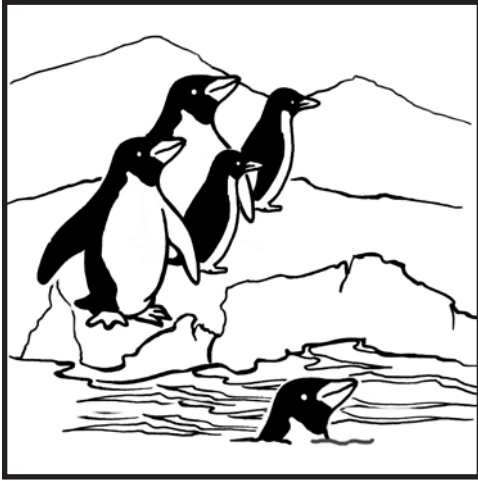
- ◆ The Adélie penguin’s home is in Antarctica. (*Penguins live in the southern hemisphere.*)
- ◆ The California sea lion’s home is the California island. (*California sea lions range from British Columbia, Canada to central Mexico.*)
- ◆ The blacktip shark’s home is in the coral reef. (*Blacktip sharks are found throughout tropical and subtropical waters along the coasts and islands of the Atlantic and western Pacific Oceans. They live near continents, islands, and coral reefs.*)
- ◆ The killer whale’s home is open ocean. (*Killer whales inhabit all oceans of the world.*)

Name _____

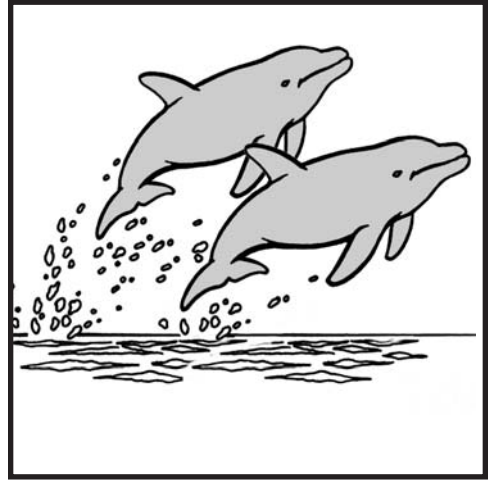
We're All Mixed Up

How many animals are in each picture?

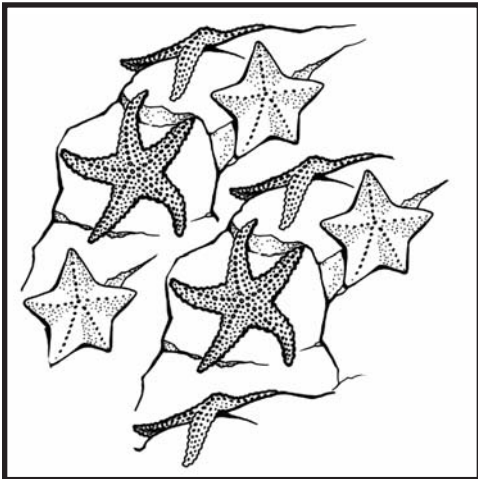
Draw a line from the picture to the matching numeral.



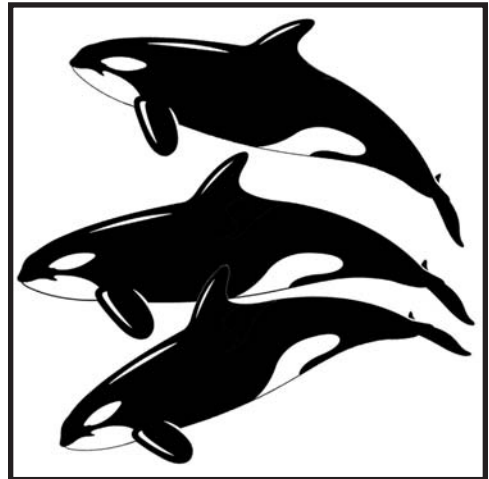
2



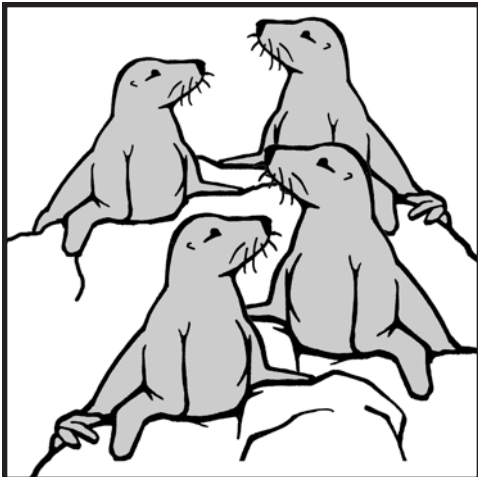
9



5



4



3

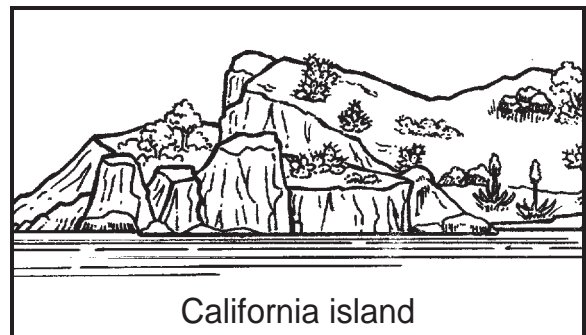
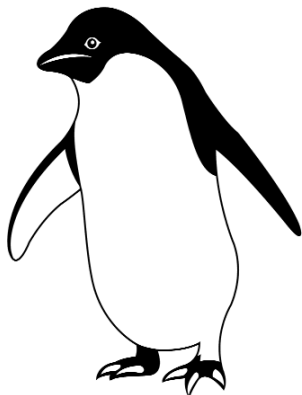
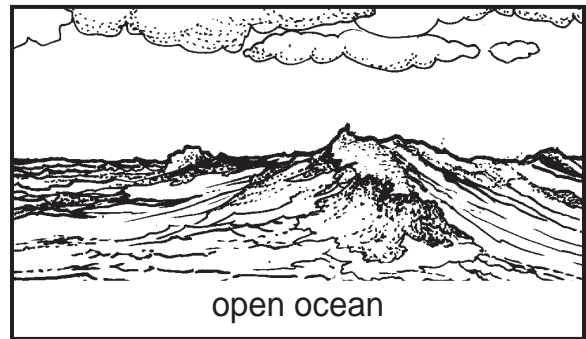
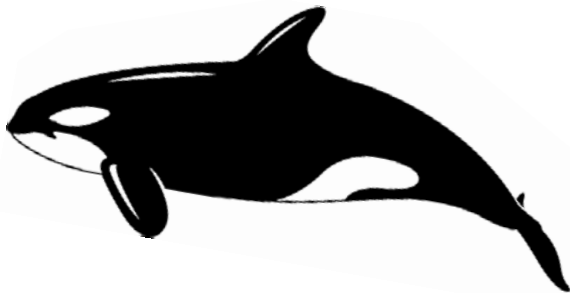
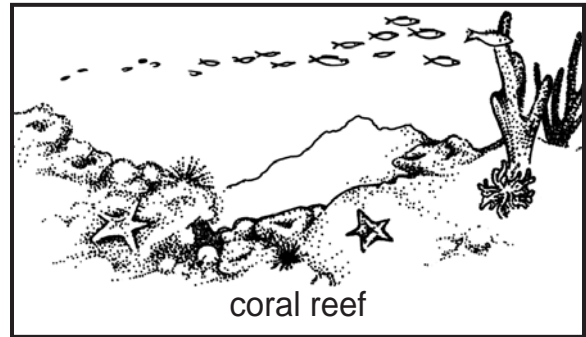
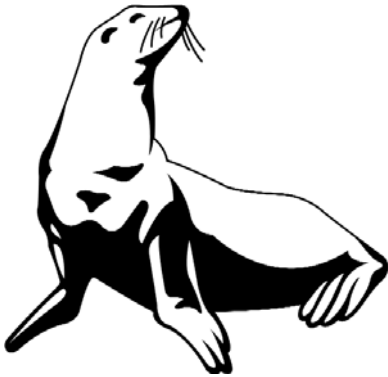
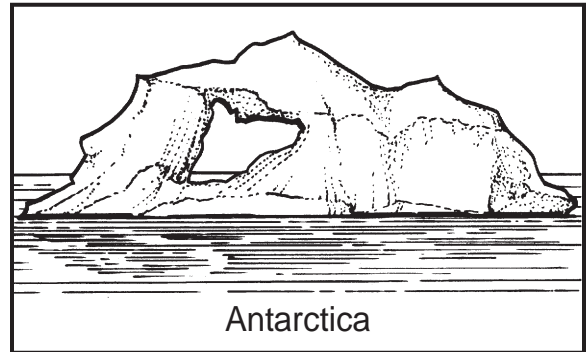


8

Name _____

Find My Home

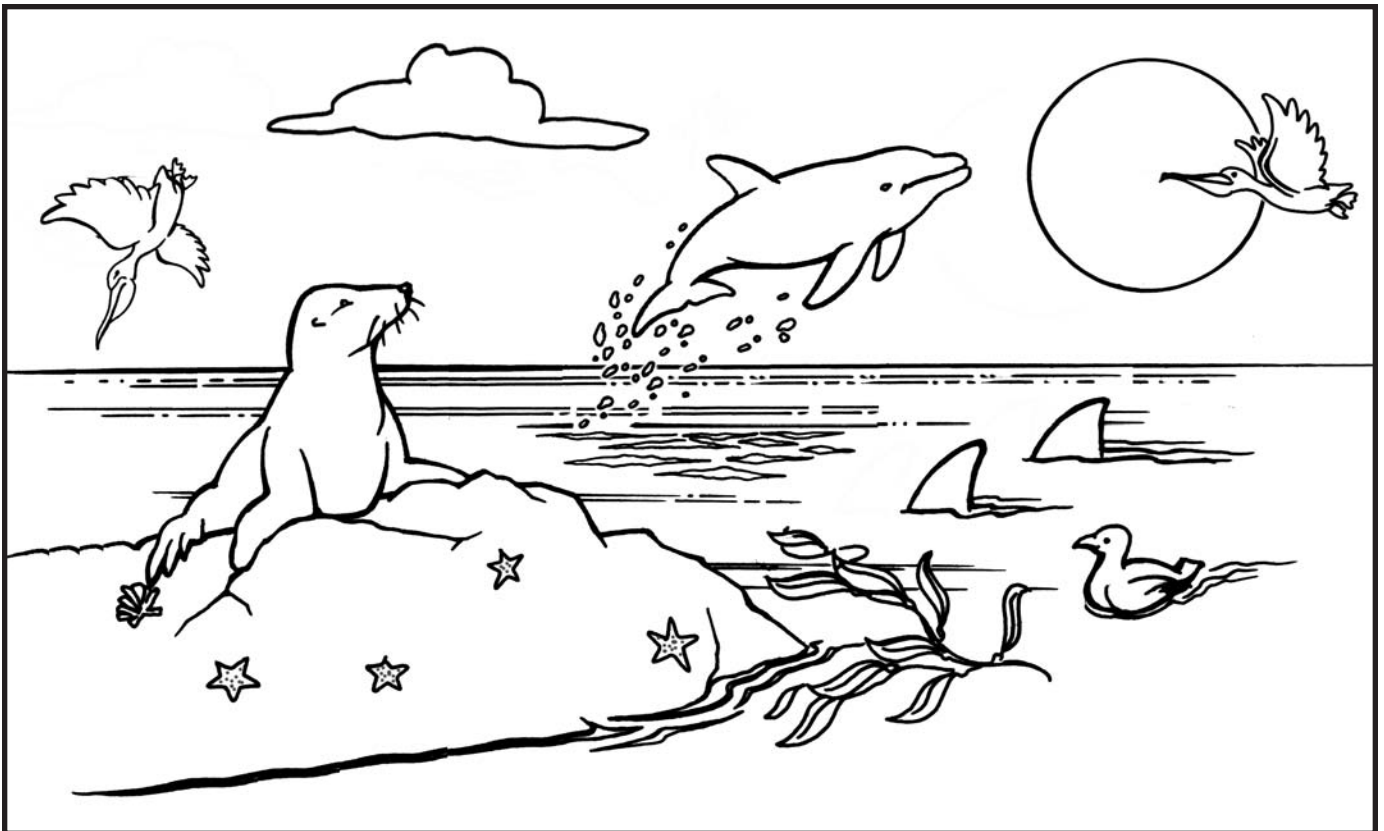
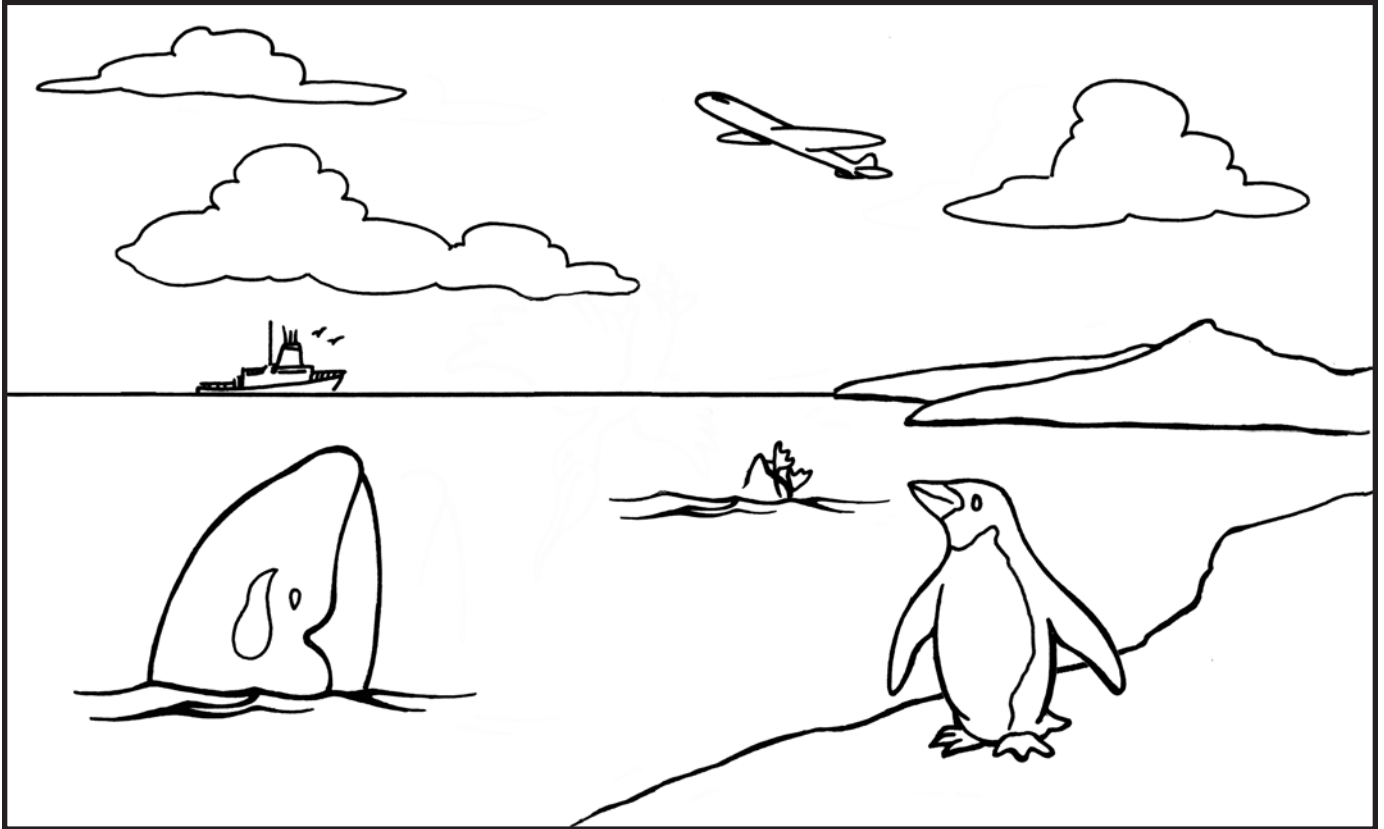
Connect each animal to its home.



Name _____

I Spy—Do You Spy?

What do you see?



Bibliography*

- Byrum, Jody. *A World Beneath the Waves. Whales, Dolphins, and Porpoises*. San Diego: SeaWorld, 1998.
- Byrum, Jody. *Pinnipeds From Pole to Pole. Seals, Sea Lions, and Walruses*. San Diego: SeaWorld, 2000.
- Coats, Judith. *Penguins. Flightless Birds of the Southern Hemisphere*. San Diego: SeaWorld, 2001.
- Nuzzolo, Deborah. *The Commerson's Dolphin Story*. San Diego: SeaWorld, 2004.
*2005 Teacher's Choice Award Finalist and
a "National Science Teachers Association Recommended Title"*
- Nuzzolo, Deborah. *Dolphin Discovery. Bottlenose Dolphin Training and Interaction*. San Diego: SeaWorld, 2003.
- Rake, Jody. *Behind the Scenes. Animal Training at SeaWorld, Busch Gardens, and Discovery Cove*. San Diego: SeaWorld, 2003.
- Wlodarski, Loran. *Siren's Song. The Story of Manatees*. Orlando, Florida: SeaWorld, 1998.
- Wlodarski, Loran. *Sharks! From Fear to Fascination*. Orlando, Florida: SeaWorld, 1999.
- Wlodarski, Loran. *Killer Whales. Creatures of Legend and Wonder*. Orlando, Florida: SeaWorld, 2000.

Books for Young Readers

- Byrum, Jody. *Aquatic AnimalZ. Ocean Animals A to Z*. San Diego: SeaWorld, 2001.*
- Chessen, Betsey and Pamela Chanko. *A Dolphin Is Not a Fish*. New York: Scholastic, Inc., 1998.
- Johnston, Marianne. *Manatees*. New York: The Rosen Publishing Group, Inc., 1997.
- Kalman, Bobbie. *Sea Otters*. New York: Crabtree Publishing Company, 1997.
- Nuzzolo, Deborah. *Penguin March*. San Diego: SeaWorld, 2002.*
- Nuzzolo, Deborah. *SeaWorld Preschool Funbook. Activities and Songs*. San Diego: SeaWorld, 2002.*
- Nuzzolo, Deborah. *This is a Dolphin*. San Diego: SeaWorld, 2002.*
Winner, 2005 Teacher's Choice Award for Children's Books
- Pfeffer, Wendy. *What's It Like to Be a Fish?* New York: Harper Trophy, 1996.
- Rice, Hugh R. *Flip Flop*. New York: Richard C. Owens Publishers, Inc., 1998 (*walrus*).
- Rose, Deborah Lee. *Into the A, B, Sea: An Ocean Alphabet*. New York: Scholastic, 2000.
- Ward, Jennifer and T.J. Marsh. *Somewhere in the Ocean*. Flagstaff, Arizona: Rising Moon, 2000.

Videos*

- Shamu's ABCs and 123s *2002 Telly Award Winner*
- Shamu's Sea Song Sing Along *2005 Teacher's Choice Award Finalist*

* These books and videos available through SeaWorld. Call **(800) 23-SHAMU** to order.

Ocean Discovery

Pre-K Teacher's Guide

PART OF THE
SEAWORLD EDUCATION SERIES

Research/Writing

Judith Coats
Donna Parham

Technical Advisor

Brad Andrews
Tom Goff
Frank Murru
Daniel K. Odell, Ph.D.
Mike Shaw
Wendy Turner
Glenn Young

Education Directors

William Street
Ann Quinn
Joy Wolf

Editorial Staff

Deborah Nuzzolo
Donna Parham
Patti Schick

Illustrations

Doug Fulton
Noelle Phillips
August Stein

Photos

Mike Aguilera
Bob Couey
Chris Gotshall
SeaWorld San Diego
Photo Department

SeaWorld and Busch Gardens

Based on a long-term commitment to education and conservation, SeaWorld and Busch Gardens strive to provide an enthusiastic, imaginative, and intellectually stimulating atmosphere to help students and guests develop a lifelong appreciation, understanding, and stewardship for our environment. Specifically, our goals are ...

- ◆ To instill in students and guests of all ages an appreciation for science and a respect for all living creatures and habitats.
- ◆ To conserve our valuable natural resources by increasing awareness of the interrelationships of humans and the environment.
- ◆ To increase students' and guests' basic competencies in science, math, and other disciplines.
- ◆ To be an educational resource to the world.

Want more information?

Visit the SeaWorld/Busch Gardens Animal Information Database at SeaWorld.org or BuschGardens.org. Still have questions? Email us at Shamu@SeaWorld.org or call **(800) 23-SHAMU** (800-237-4268). TDD users call **(800) TD-SHAMU** (800-837-4268). Emails and phones are answered by SeaWorld Educators.

SeaWorld has books, teacher's guides, posters, and videos available on a variety of animals and topics. Call **(800) 23-SHAMU** to request an Education Department Publications catalog, or shop online at our e-store.

SeaWorld San Diego

(800) 23-SHAMU
500 SeaWorld Drive
San Diego, CA 92109-7904

Discovery Cove

(407) 370-1280
6000 Discovery Cove Way
Orlando, FL 32821-8097

SeaWorld Orlando

(800) 406-2244
7007 SeaWorld Drive
Orlando, FL 32821-8097

Busch Gardens Tampa Bay

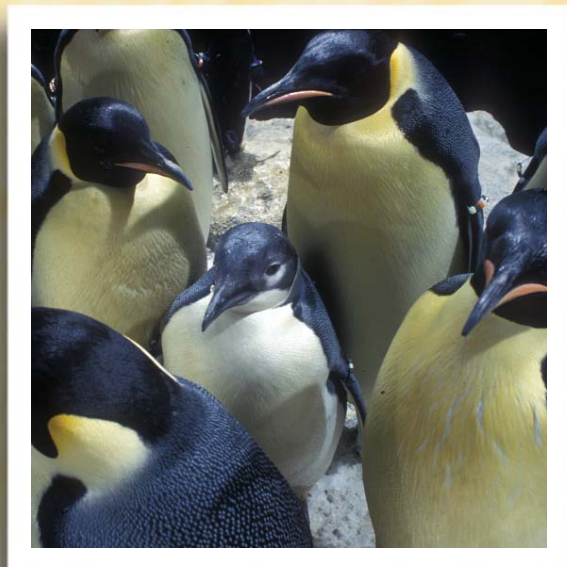
(813) 987-5555
P.O. Box 9157
Tampa, FL 33674-9157

SeaWorld San Antonio

(210) 523-3606
10500 SeaWorld Drive
San Antonio, TX 78251-3001

Busch Gardens Williamsburg

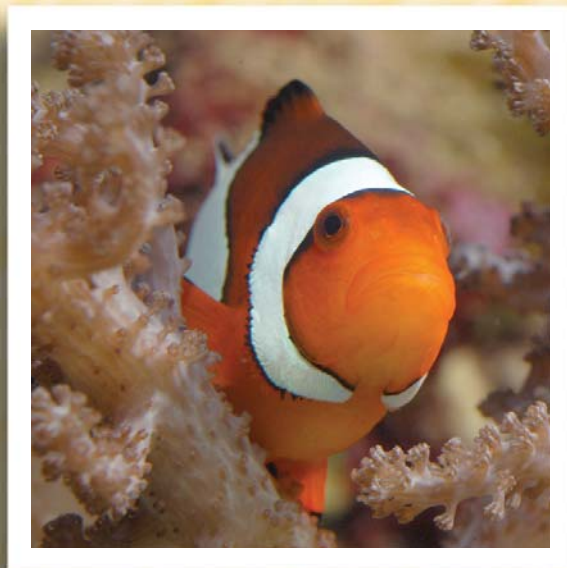
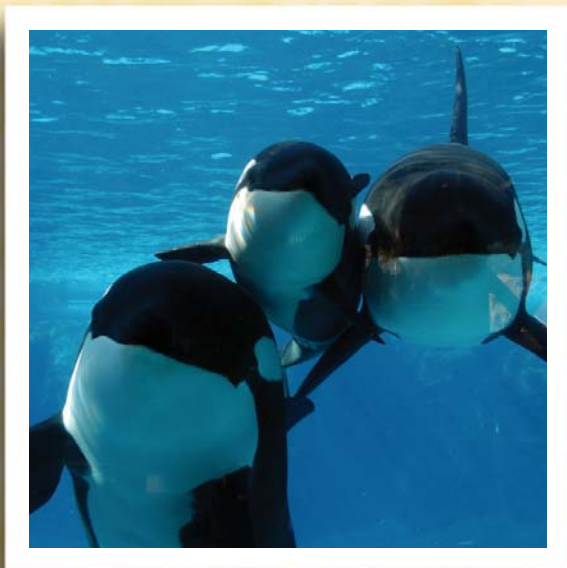
(757) 253-3000
One Busch Gardens Blvd.
Williamsburg, VA 23187-8785




SeaWorld.
ADVENTURE PARKS

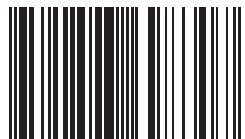

DISCOVERY COVE.
ORLANDO

Busch
GARDENS.



 Printed on recycled paper.

ISBN 1-893698-30-0



9 781893 698307