



Educational Resources  
for our Future Footprint

# animal TRACKS

with the Pittsburgh Zoo & Aquarium

## SEA LION **SPLASH**

Teacher Resource & Lesson Guide



PITTSBURGH ZOO  
& AQUARIUM



# SEA LION SPLASH LESSON

Through the use of technology Sea Lion Splash will provide a platform for students, without regards to their geographic location, to learn about sea lions at the Pittsburgh Zoo & Aquarium. In addition to increasing knowledge program goals include fostering a meaningful connection to our sea lions and thus encouraging further engagement in sea lion conservation.



## GUIDE SUMMARY

Students will access a live web cam (coming soon) and prerecorded videos to learn about sea lions at the Pittsburgh Zoo & Aquarium. This flexible lesson guide allows for educators to customize the experience to meet students' academic levels. Topics covered include basic sea lion facts, how sea lions are cared for

at the Zoo, sea lion training, making observations and what's on the sea lions' menu. Students will also learn conservation threats affecting sea lions, how the Pittsburgh Zoo & Aquarium is helping, and will be encouraged to learn more and get involved.

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**PUP** for less difficult extensions



**ADULT** for more advanced extensions





# SEA LION FACTS

## THE BASICS

California sea lions are marine mammals that are part of the “eared seal” family. They are suited to an aquatic lifestyle and rely on the ocean for their food. They are well known to be highly intelligent and social. California sea lions are commonly seen in zoos and aquariums.

California sea lions are mostly found along the coast of California, but their range extends from British Columbia, Canada to Northern Mexico. They spend time on rocky and sandy beaches and usually stay within 10 miles of the coast.



California sea lions have sleek, streamlined bodies with powerful flippers. They use their front flippers for propelling themselves through the water. Their back flippers are used for steering. Adult males are often between 6.5 and 8 feet in length and weigh anywhere between 400 to 900 pounds. Adult females are smaller, ranging between 5 and 6.5 feet in length and weighing between 110 and 250 pounds. They are the fastest of the seal and sea lion group reaching speeds of up to 25mph. Their quickness helps them escape predators such as orcas and sharks. California sea lions are sleek and appear black in color when wet. When dry, their coarse hairs take on a velvety feel, and they range in color from light tan or golden blonde in females to chocolate or dark brown in males. As they mature, males grow a crest along



the length of their skull giving their foreheads a dome shape. Sea lions get their name from a thick mane that grows along their necks, however California sea lions do not have this mane.

California sea lions are carnivores and hunt for their food in the ocean. Sea lions are opportunistic feeders, eating what is abundant and available including a variety of fish, squid, and shellfish. The California sea lions at the Pittsburgh Zoo eat herring, capelin, and squid. They also get vitamins every day. At the Zoo, our adult male sea lion eats about 40lbs of food each day!

Sea lions live 15-25 years in the wild, and up to 30 years at the zoo.



## FAMILY LIFE

California sea lions are highly social. During the nonbreeding season (August -April) they often rest together in large, loosely organized groups. In the water they form smaller groups called rafts. During the breeding season, dominate males establish and maintain territories. They will patrol the boundaries and protect their territory from intruding males. Females move about amongst these territories.

Female sea lions give birth to a single pup each year. Pups are usually about 30 inches long and weigh between 11 and 19 lbs. They are born with their eyes open and can swim (though awkwardly) shortly after birth. Pups can vocalize too, which helps mothers and pups recognize one another. The females are highly protective of their

pups especially for the first several days after birth. After about one week females will begin leaving their pups in large groups called rookeries while they go to feed. Pups nurse for 6 months to 1 year, but begin swimming with their moms and catching fish at about 2 months of age. Young sea lions will leave their moms at about one year of age.

California sea lions are known for being noisy. They use various barks, growls, grunts and roars to communicate with one another on land and underwater too.

Juvenile sea lions are known for being quite playful and have been seen riding the surf in the ocean!

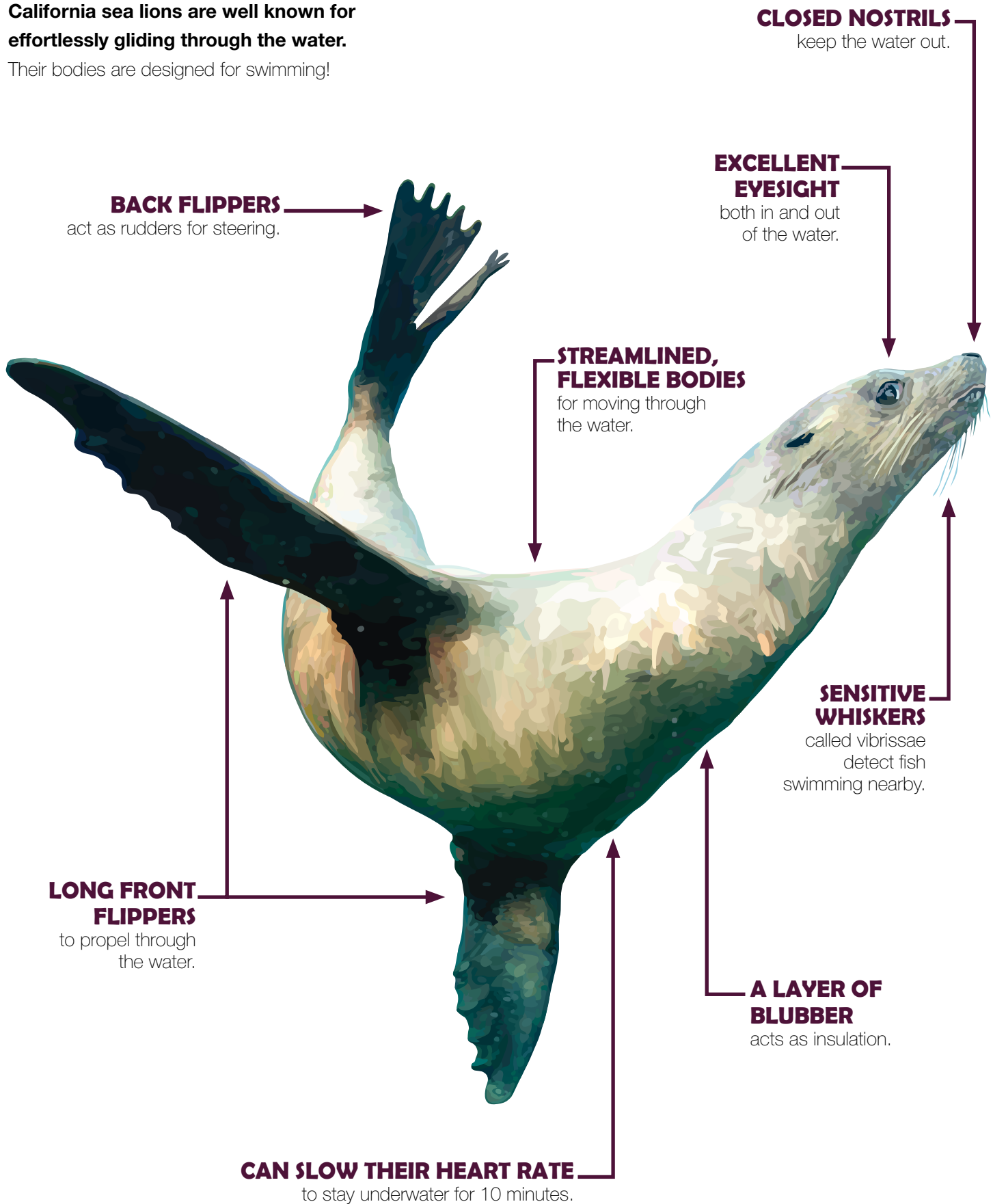




## SPECIAL ADAPTATIONS

California sea lions are well known for effortlessly gliding through the water.

Their bodies are designed for swimming!





# SEA LION OR SEAL ACTIVITY

Students will use observations skills to determine the physical differences between seals and sea lions.

Seals and sea lions are marine mammals known as pinnipeds. Marine mammals rely on the ocean for their survival; their main food source comes from the ocean. Pinniped means “feather or fin foot”. Both seals and sea lions are well suited for life in the ocean and share similar characteristics such as front and rear flippers used for locomotion, streamlined bodies for ease of motion in the water, thick blubber for insulation, and sensitive whiskers to detect prey. They are separated into two families based on their differing characteristics. Seals and sea lions are easily distinguished by looking at their ears and flippers. Seals lack external ear flaps, have smaller front flippers and are unable to rotate their hind flippers forcing them to move on land by flopping along on their bellies. Sea lions have external ear flaps, large front flippers, and are able to rotate their hind flippers allowing them to walk on land. Seals use their hind flippers to propel them underwater while sea lions get their swimming power from their front flippers. Also, seals have fur and claws on their front flippers whereas sea lions do not.

## Step 1:

### Compare and Contrast: California Sea Lion to Elephant Seal

Ask students what we mean by classification and why we classify things. We classify simple things all the time to make our lives more organized. For example, when you put your clothes away do you have separate drawers for socks, shirts, and pants? Have the students name other things they classify (organize). Establish that classification—the arrangement of objects, ideas, or information into

groups—makes things easy to find, identify, talk about, and study. Animals are classified into groups based on their similarities. Seals and sea lions are both marine mammals in the Carnivora order based on similarities they share, but are divided into two separate families based on their differences.

Using the Sea Lion & Seal Worksheet\* compare and contrast the seal and sea lion photos. How many things can you list that are the same? How many are different?

## Step 2:

**Watch the video to learn how to tell the difference between seals and sea lions.**

[Sea Lions vs Seals video](#)

## Extensions:



Have students complete the drawings on the Seal & Sea Lion worksheet\*



1. Make a chart comparing and contrasting seal and sea lions. Include drawings or photos.

2. Have students research their favorite species of pinniped. They should record facts such as name, habitat, distribution, size, color/patterns, diet, life span, social structure, special adaptations, and conservation threats.

*\*These pages located in the Resource section.*





# LIVING THE SEA LION LIFE **ACTIVITY**



Zookeepers work hard to provide the best care for the sea lions, and all of the animals, living at the Zoo. A zookeeper's main responsibilities include cleaning animal spaces, providing fresh food and water, observing behavior, and providing enrichment and training.

## Step 1:

Have the students brainstorm what a typical day is like for the sea lions and the zookeepers providing their care.

**What might a daily routine for the sea lions consist of?**

**What are some daily zookeeper tasks?**



## Step 2:

Play the [Day in the Life](#) video.

Students will now watch a video that shows just what a day is like for the sea lions and their zookeepers.

**What did you learn about taking care of sea lions at the Zoo?**

**What would your favorite part of the day be?**



## Extensions:



Compare & contrast taking care of sea lions at the zoo to taking care of pets at home. Make a chart or draw a picture showing similarities and differences.



Research the training and skills required to become a zookeeper.



## Step 3:

**What are the Sea lions doing right now?**

Make a prediction (based on info from the video)

View the live Pittsburgh Zoo's [Sea Lion Web Cam \(coming soon\)](#)







## SEA LION OBSERVATIONS ACTIVITY

Students will use the live Pittsburgh Zoo & Aquarium [Sea Lion webcam](#) ([coming soon](#)) to make sea lion observations.



### Step 1:

#### Sea Lion Webcam

Display the [Sea lion webcam](#) ([coming soon view this video instead](#)) for your students. Ask the students to describe what they are seeing. Where are the animals located (beach or pool)? Are they moving? How? Are the sea lions interacting with each other? With the Zookeepers? Assign some students to take notes or write class notes on the board. Tell the students they are making observations (noticing or taking note of something). Right now, they are using their eyes to observe. What other senses might they use if they were observing sea lions at the Zoo?

### Step 2:

#### Sea Lion Observation Activity

Discuss the observations the students made. Were they surprised by what they saw? How might their observations change if they viewed the webcam at a different time of day, if the weather was different, or if different sea lions were outside? Introduce the Sea Lion Observation activity. Decide how and when students will make observations. Will they work individually or as a group? Will observations be made at set times of the day? How long will observation periods last?

### Step 3:

Use the Sea Lion Observation sheet (in the Resources section) to record observations.

### Step 4:

Discuss the students' observations. Can they find any patterns? For example, were the sea lions usually swimming at certain times of the day? How did time of day or weather affect their observations?

### Extensions:



Before beginning observations have the students watch the "[Day in the Life](#)" video and make a hypothesis on which sea lion behaviors they will observe most often.





# SEA LION TRAINING ACTIVITY

Students will learn why and how the zookeepers train the sea lions at the Zoo.



## Step 1: What is training?

Ask the students what animal training means? Training is the action of teaching a particular skill or type of behavior. Do they have any pets at home that they or a family member has trained? What trained behaviors have their pets been taught? Why did they train their pets? Do zookeepers train animals at the Zoo? Yes! Training is a tool that zookeepers use to enhance the welfare of animals under their care.

## Step 2: Why train animals at the zoo?

Ask the students why they think we train animals at the Zoo? At the zoo animals may be trained for:

1. **Daily Care** - to shift animals on and off exhibit, to provide opportunities to examine them closely, or to offer individual animals food.
2. **Veterinary Care** - to participate voluntarily in their own medical care by taking medicine or sitting still for x-rays or ultrasounds.
3. **Enrichment** – to keep the animals physically and mentally active.
4. **Safety** – to keep the animals and the zookeepers safe
5. **Education** – to help visitors learn about the animals' natural behaviors and adaptations.
6. **It's Fun!**

## Step 3:

### How do we train animals at the zoo?

Zookeepers always use positive reinforcement when training animals at the Zoo. Animals are not punished for not doing a behavior that is asked. Many of our animals are clicker trained. Clicker training is a form of operant conditioning: behaviors followed by reinforcement will be strengthened and more likely to occur again in the future. The animal learns that the click (or any consistent sound such as a whistle) means a reward, such as food, a toy, or attention. Clicker training tells the animal exactly which behavior earned them a reward. It is also known as a bridging signal. Watch the [Sea Lion Training video](#) to learn more!

## Extensions:

### Play a silly game of Simon



#### (or Zookeeper) Says

Ask the students to mimic some behaviors they saw in the sea lion training video such as spin, raise a flipper, bark, etc. Give the students a click after successfully completing the behavior.



#### You be the trainer!

Play the [Training Game](#). Visit the website for instructions.



# WHAT'S FOR LUNCH ACTIVITY

Learn what is on the menu for our California sea lions and special adaptations that help them catch and eat their food.

## Step 1:

### Review sea lion feeding habits.

California sea lions are carnivores and must hunt for their food in the ocean. They can see and hear very well, even under the water. They have very sensitive whiskers called vibrissae that help them locate food especially in dark water. They rely on their senses and their swimming speed and flexibility to catch food. They eat a large variety of different foods including several species of fish such as sardines, anchovies, herring, mackerel, and rockfish, and invertebrates such as krill, squid and octopus. Sea lions have sharp teeth for grabbing their slippery food. They mostly swallow their food whole.

## Step 2:

### Watch the [What's for Lunch video](#)

What do the sea lions at the zoo eat?  
How do the zookeepers ensure each sea lion is getting enough food?

## Extensions



1. Hawk sea lion eats about 40 lbs. of food a day. How many pounds does he eat in one week? How many pounds a year?
2. In the video we saw Hawk eating herring. Each herring weighs about 0.25 lbs. If Hawk ate 40 lbs. of herring, how many fish would his zookeepers need to give him?
3. Maggie sea lion eats 14 lbs. of food a day. How many pounds less than Hawk does she eat?
4. Maggie sea lion weighs 230 lbs. What percentage of her body weight does she eat in fish each day?





# HOW YOU CAN HELP ACTIVITY

California sea lions currently have a steady population and are not endangered. Fortunately, laws such as the Marine Mammal Protection Act have helped to keep California sea lions safe, but they rely on clean oceans and healthy fish populations for their survival. They still need our help!

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## Major threats include:

One of the main threats to sea lions is getting caught in fishing gear. Once entangled, sea lions may become injured or have a hard time swimming or catching food. In many places wild sea lions are easy for humans to view. This puts them at risk when people get too close or try to feed them. Also, warmer ocean waters cause a decline in their prey species which affects nutrition for both the adults and the pups. Plastic pollution in the ocean can be very harmful to sea lions too, especially if they swallow it.

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## How the Pittsburgh Zoo & Aquarium helps

Rising ocean temperatures have caused fish to move farther off shore to seek cooler water. This impacts sea lion mothers because they must travel farther distances to find food, causing a higher caloric demand and an extended time away from their pups on land. Oftentimes, the pups struggle to obtain an adequate amount of calories and become stranded on the California coastline due to starvation. Some of these animals receive a second chance because of hardworking rescue organizations and accredited zoos and aquariums. The Pittsburgh Zoo & PPG Aquarium has provided a home for multiple orphaned pinniped pups. Watch Hawk's rescue story to learn more!

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## Step 1:

Play [Hawk sea lion's rescue story video](#). Learning is the most important thing you can do to help sea lions. Visit the Zoo or watch the [Sea Lion Web Cam \(coming soon\)](#) to keep learning.

## Step 2:

Choose a take action activity and tell us how you're making a difference. If your students complete a project we want to hear from you. Email [learn@pittsburghzoo.org](mailto:learn@pittsburghzoo.org) with your project information.



## Take Action:

1. Reduce single-use plastics  
When plastic waste finds its way into the environment, it can have a significant impact on habitats and wildlife around the world. Brainstorm ways your students can be a part of the solution. For example, eliminate the use of plastic water bottles, bags, and straws, encourage students to pack waste-free lunches, or organize a marker recycle drive. Check out our [Conservation for Teachers](#) page for more ideas!
2. Adopt a Pittsburgh Zoo & Aquarium sea lion through the [Adopt-An-Animal program](#).
3. Fundraise for new [enrichment items](#) (toys) for the sea lions at the Zoo.
4. Keep Learning! The Marine Mammal Protection Act has been protecting iconic ocean species for more than 50 years.
  - Learn more about [marine mammal species](#).
  - Visit the [Marine Mammal Species of Concern](#) page to learn about the species most at risk of extinction.
5. Discover how to make ocean-friendly choices when eating seafood. Visit the Monterey Bay Aquarium's [Seafood Watch®](#) guide.



## RESOURCES

### SEA LION & ELEPHANT SEAL WORKSHEET

**Compare and Contrast** List two items that are the same and two items that are different between the California sea lion and the Northern elephant seal.



#### **At the Zoo: Seahawk**

Arrived at Pittsburgh Zoo: June 15, 2006

Wild caught by the Marine Mammal Center

Marin Headlands Golden Gate National Rec. Area

Sausalito, CA 94965

**CALIFORNIA SEA LION**



#### **At the Zoo: Ellie Mae**

Arrived at Pittsburgh Zoo: November 5, 2017

Received from the Marine Mammal Care Center

Los Angeles, 3601 S. Gaffey St.,

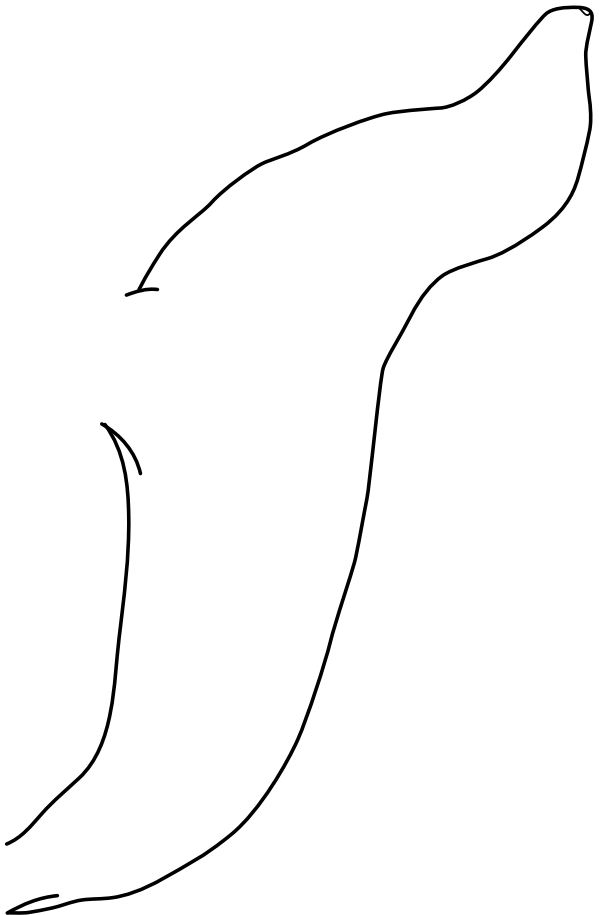
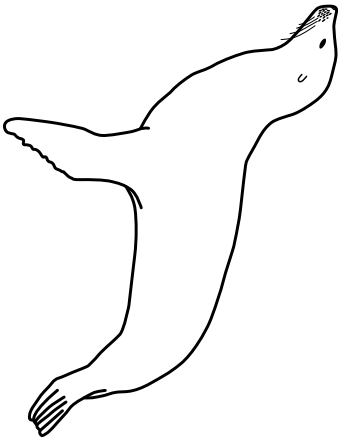
San Pedro, CA 90731.

**NORTHERN ELEPHANT SEAL**



## RESOURCES WHO AM I?

Can you tell which is the Sea lion and which is the Elephant seal? Write their names below each animal, and then draw the missing flippers, ears, eyes and whiskers.





## CALIFORNIA SEA LION OBSERVATIONS

## PITTSBURGH ZOO & AQUARIUM SEA LION WEBCAM

Observers: \_\_\_\_\_

Date: \_\_\_\_\_ Time Observation Started: \_\_\_\_\_ Time Observation Ended: \_\_\_\_\_

Weather: \_\_\_\_\_

1. How many sea lions can you see?

- ☐ 0  
☐ 1  
☐ 2  
☐ 3  
☐ 4  
☐ 5

2. Where are the sea lions located?

- ☐ On the beach
- ☐ In the pool
- ☐ Both

3. What are the sea lions doing?

- ☐ Swimming
- ☐ Sitting on their beach
- ☐ Sitting on their rocks
- ☐ Eating
- ☐ Training Session
- ☐ Interacting with each other
- ☐ Playing with toys
- ☐ Other \_\_\_\_\_

Observation Notes: \_\_\_\_\_