



Marine Mammal Markers Activity

Ocean Literacy

Principle: #5

The ocean supports a great diversity of life and ecosystems. Aquatic and ocean biology provides unique examples of life cycles, adaptations, & important relationships among organisms.

Link to:

- Marine Mammals Two by Two video
- Marine Mammals Bingo
- J26 Activity

Space requirements:

Large open space, field, gym, or long hallway (indoors/out)

Modify if necessary:

- Instead of having kids spread out on zero line, you could use a long strip and have all animal tails be the "line or length" of the animals.
- One could put the species cards & heads/tails cards on Popsicle sticks to be placed in the ground.
- Pre-cut line for each species & attach to head and tail cards. Kids stretch them out.

Target Audience: K-4th grade, outreach

Purpose: Help students visualize the diversity of sizes among marine mammals. Students will be able to both estimate and measure the average lengths of common marine mammals of the Pacific. Students will also learn fun facts about the species such as, some mammals use fur to stay warm, others use blubber, & some can use a combination of the two. This activity is a kinesthetic way to compare the lengths of those animals in the Marine Mammals Two by Two video, plus 7 new species (Blue whale, Humpback whale, Transient killer whale, Harbor porpoise, Risso's dolphin, Northern elephant seal, and the Steller sea lion).

Suggested set up for the activity:

Set this up before you start.

Students lined up



XX
XX

0'

A pair of students is given a species card. They have to estimate how long they think that animal is & walk out and place the base of the card at the estimated over-all length.

Supplies Need:

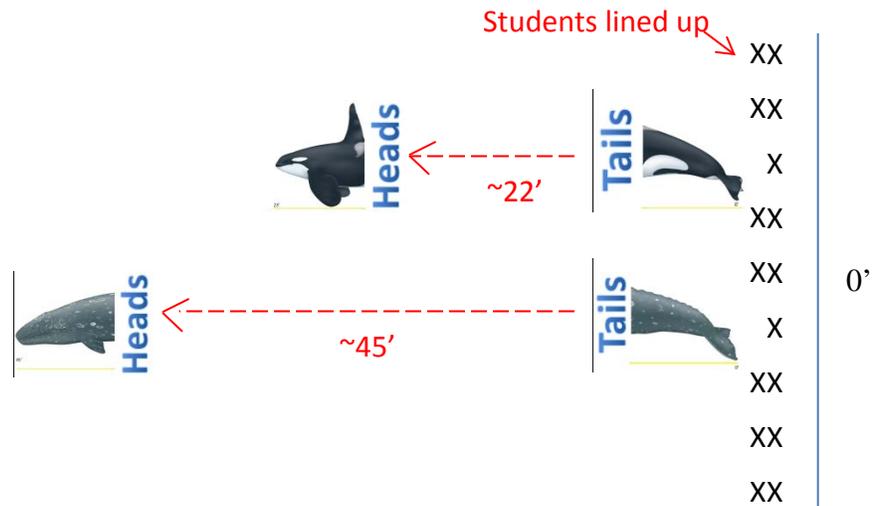
- Marine Mammals Two by Two video
- Small species estimation cards & the larger Heads/Tails cards
- Rope, yarn, or chalk (supplied by teacher) for the start or zero line
- Measuring tape, yard stick for each pair (if possible)
- Additional worksheet or comparison sheet
- BINGO game as a review at the end (optional)
- SWAG (Good Catch Book for class, pencils, or stickers, coloring sheet)
- Outreach tub: Duct tape, blue painters tape, rubber bands, weights, string, business cards (stranding network), dry erase/vis-à-vis/regular
- Laminate small cards (2 slides per page, back to back), can add stick
- Laminate Heads/Tails 1 per page, back to back), can add stick

Tips on how to measure:

- Measuring tape
- Yard stick
- Pre-cut rope attached to head and tail cards

Where they close to their estimates?

- Have them describe how much they were off.
- Did both sides of species card help them figure this out?



Marine Mammal Markers Activity:

1. Introduce yourself, tell them who NOAA is, and how we protect mammals under the MMPA and ESA.
2. View the Marine Mammals Two by Two video (~7 min). Depending on age, they might be able to fill in the comparison sheet (if not send it home with them).
3. **Estimation First:** Go to the prearranged Marine Mammal Markers set up (playground, gym, or sidewalk). Ask them to stand in pairs (side by side or front to back, depending on space). Give each pair a small species card and have them place that card the length of the animal in front of them, away from the zero/start line & return to the line. Debrief with the group, ask “Do you think you’ll be close?”
4. **Measuring:** Tell the students now they are going to measure the actual length (often the males’ length).
 - a) Next have them choose which person will be heads and who will be tails.
 - b) Place the tail card at the zero/start line.
 - c) With a measuring tape or yard stick, students will use an end-over-end strategy. the person holding the tail sign will hold on to zero and the other person will pull the tape to the end. That person will be in charge in adding (using their head), this person stays stationary while the tail walks up to the exact length and asks the “head” to walk the length of the tape measure until they reach the correct length indicated on the “head” card. Place the head card at the exact length of the animal, and
 - d) Double check the measurement from zero. How did you do?
5. Conclude by comparing the estimate with their measured values. What surprised them? What questions arose? Why do you suppose they are all a bit different? As a review, you can play Marine Mammal Bingo (but be sure to print out sheets beforehand, get candy/cups ready in advance).
6. Thank them for participating, doing such a great job and leave them with a Good Catch Book for their classroom or sticker sheet to help remind them who NOAA is and what we are doing to marine mammals through Science, Service, and Stewardship.



22'

Heads

Southern Resident killer whales

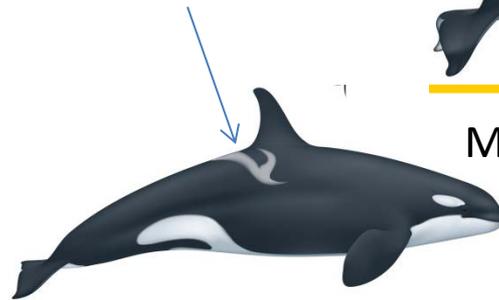
Southern Resident killer whales were listed as endangered under the Endangered Species Act in 2005.



Photo by: Candi Emmons

“Saddle patches” are light gray markings behind the dorsal fin and are different on the right and left sides of the same animal. Scientists use saddle patches to help ID individual whales.

Saddle patch



Females ~19.5' and 16,500 lbs.



Males ~22' and ~22,000 lbs.

Tails



Southern Resident killer whales

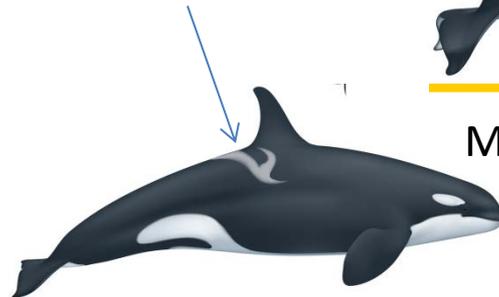
Southern Resident killer whales were listed as endangered under the Endangered Species Act in 2005.



Photo by: Candi Emmons

“Saddle patches” are light gray markings behind the dorsal fin and are different on the right and left sides of the same animal. Scientists use saddle patches to help ID individual whales.

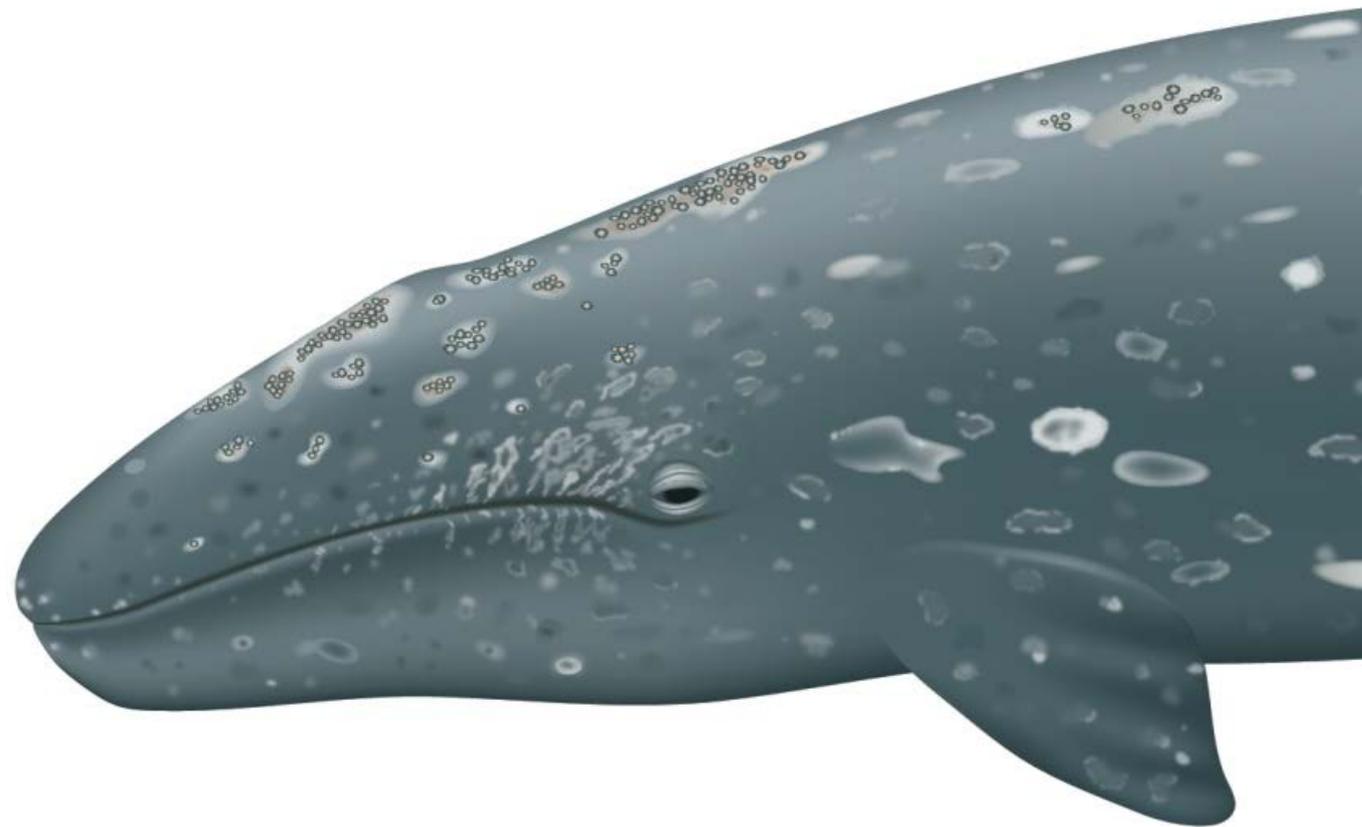
Saddle patch



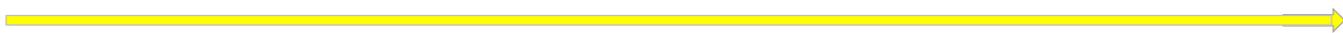
Females ~19.5' and 16,500 lbs.



Males ~22' and ~22,000 lbs.



50'



S p e r m w h a l e s

Gray whales

The Eastern North Pacific gray whale population was taken off of the Endangered Species list, however the Western North Pacific population is still endangered.



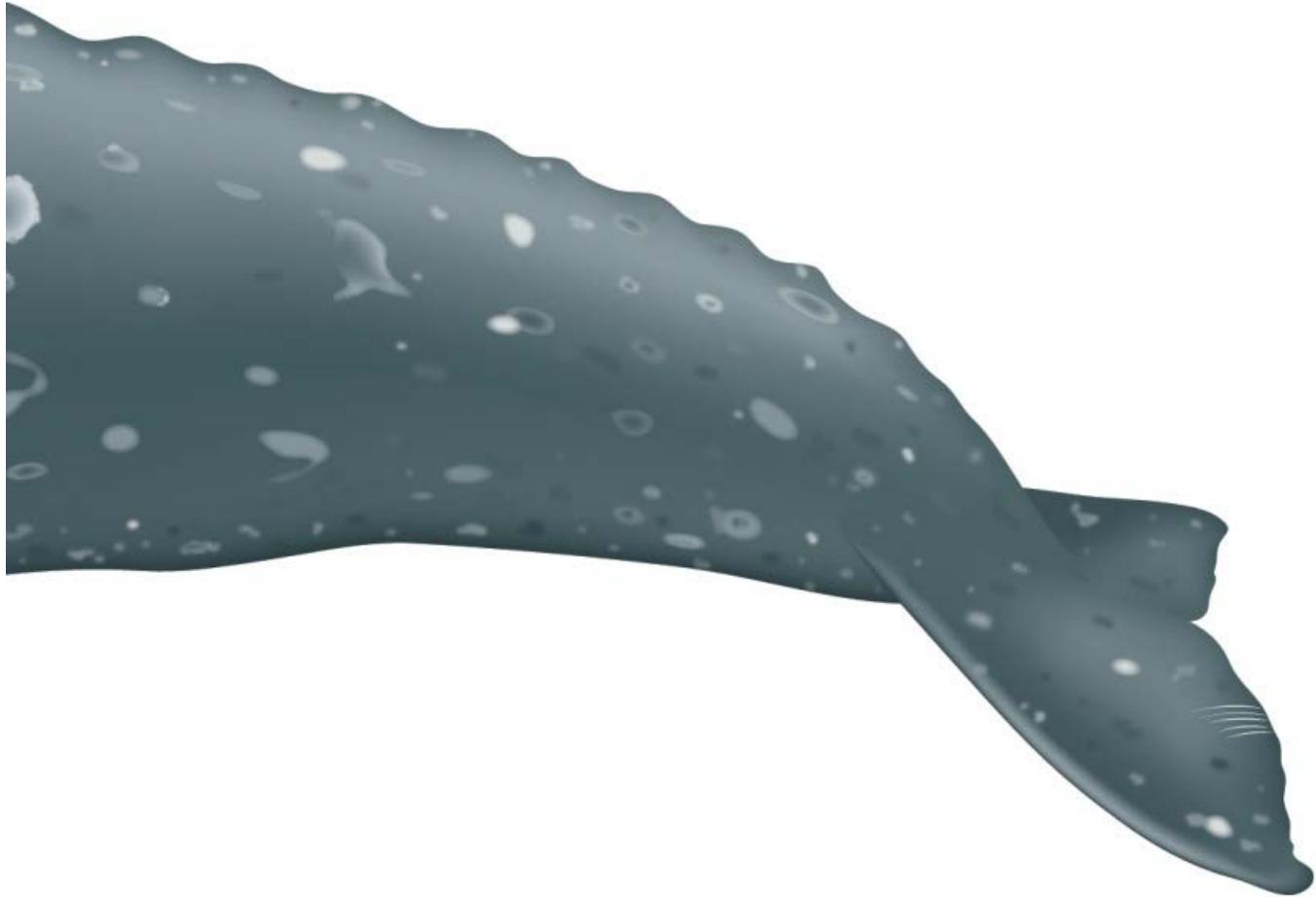
Gray whales don't have a prominent dorsal fin, however scientists photograph the **"KNUCKLES"** on both sides of an individual and then look for coloration patterns or other distinguishing marks.

"knuckles"



~50 feet in length; weigh ~40 tons

Tails



0'

Gray whales

The Eastern North Pacific gray whale population was taken off of the Endangered Species list, however the Western North Pacific population is still endangered.



Gray whales don't have a prominent dorsal fin, however scientists photograph the **"KNUCKLES"** on both sides of an individual and then look for coloration patterns or other distinguishing marks.

"knuckles"



~50 feet in length; weigh ~40 tons

Sheeps heads

8'



California sea lions

California sea lions are members of the "eared seal" family, Otariidae.



Taxonomy

Kingdom: Animalia

Phylum: Chordata

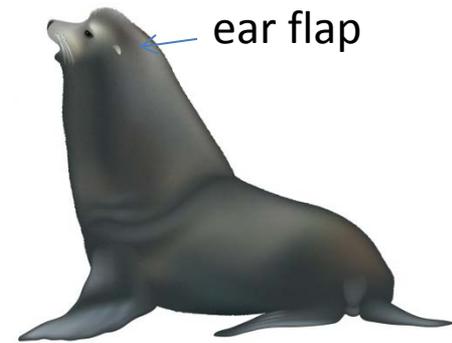
Class: Mammalia

Order: Carnivora

Family: Otariidae

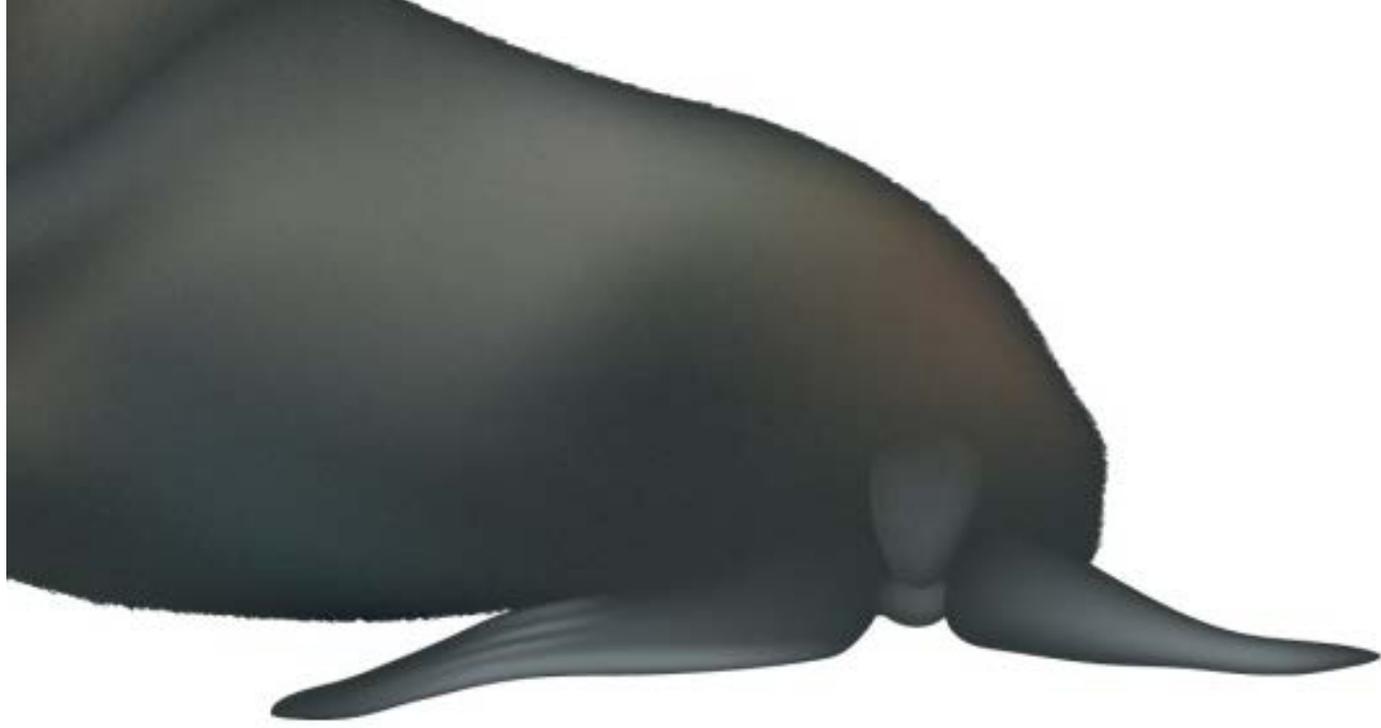
Genus: *Zalophus*

Species: *californianus*



Avg. Male ~ 8' and ~800 lbs.

Trait s



0'

California sea lions

California sea lions are members of the "eared seal" family, Otariidae.



Taxonomy

Kingdom: Animalia

Phylum: Chordata

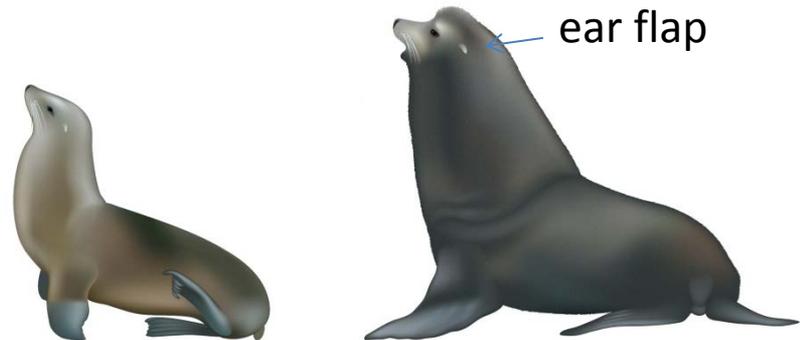
Class: Mammalia

Order: Carnivora

Family: Otariidae

Genus: *Zalophus*

Species: *californianus*



Avg. Male ~ 8' and ~800 lbs.



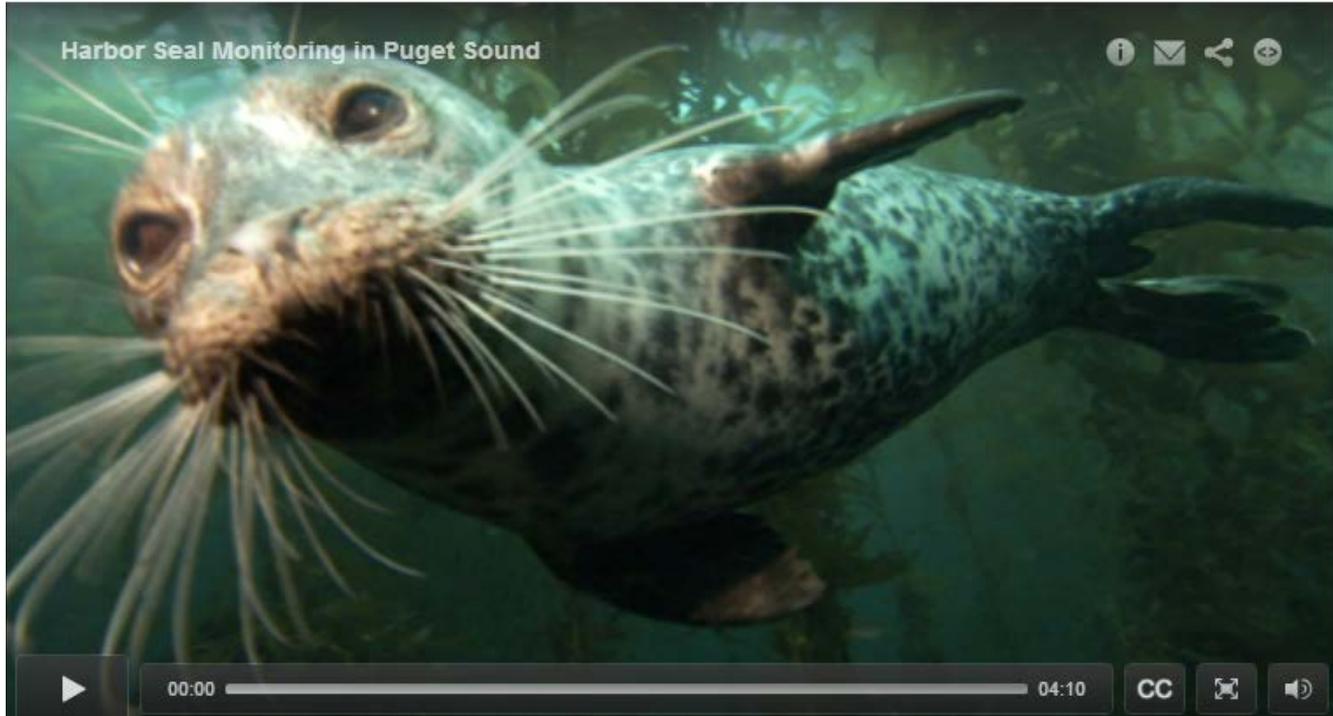
5'



Seals

Harbor seals

Harbor seals are part of the "true seal" family, Phocidae.



Harbor seals haul out on land in a banana-like fashion with their head and rear flippers elevated.



Males and Females ~5' & ~200 lbs.

Tails



0'

Harbor seals

Harbor seals are part of the "true seal" family, Phocidae.



Harbor seals haul out on land in a banana-like fashion with their head and rear flippers elevated.



Males and Females ~5' & ~200 lbs.



8'

Heads spds

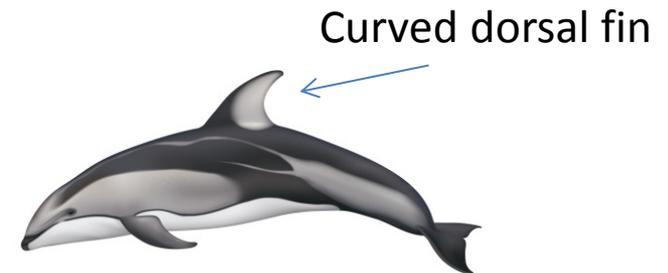
Pacific white-sided dolphin

Do not have teeth in upper jaw, like sperm whales.



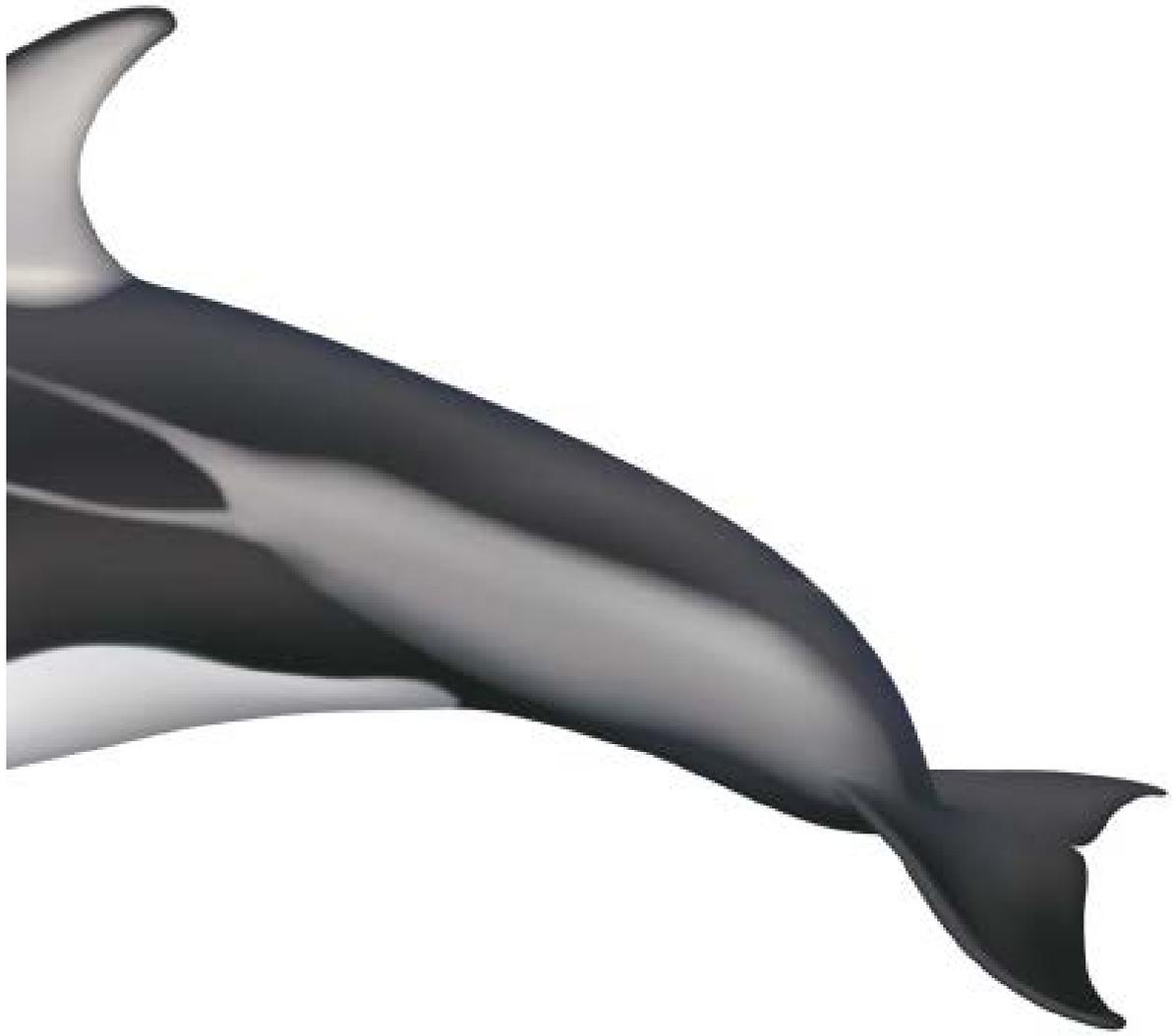
Playful and highly social; likes to **“bowride”**.

Schools of thousands are observed, but group size is often 10-100 animals.



~8 feet in length; weigh up to 400 lbs.

Tail Slices



0'

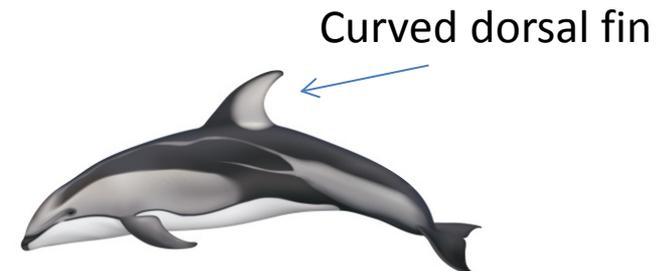
Pacific white-sided dolphin

Do not have teeth in upper jaw, like sperm whales.

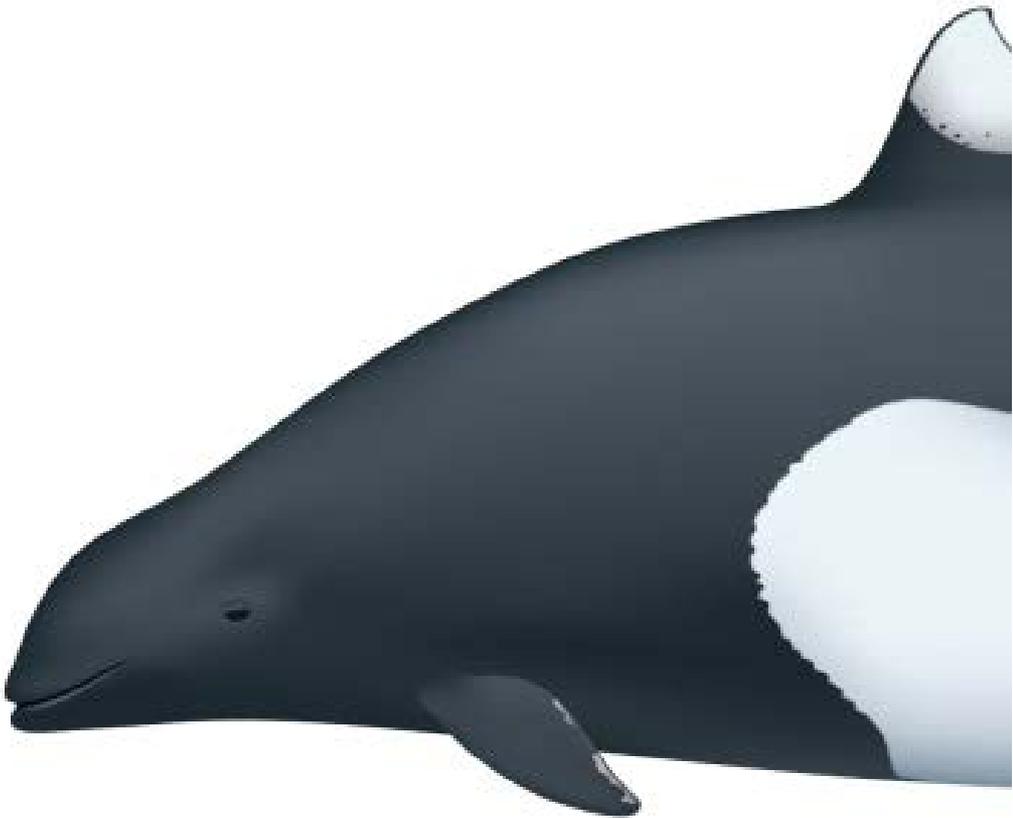


Playful and highly social; likes to **“bowride”**.

Schools of thousands are observed, but group size is often 10-100 animals.



~8 feet in length; weigh up to 400 lbs.



6'

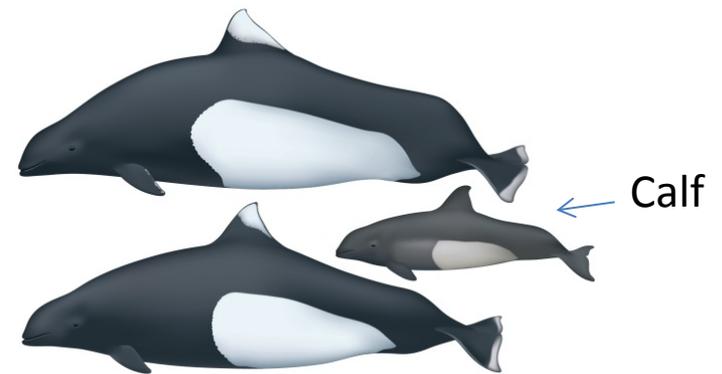
Head Sprints

Dall's porpoise

Often mistaken for baby killer whales, how are they different?

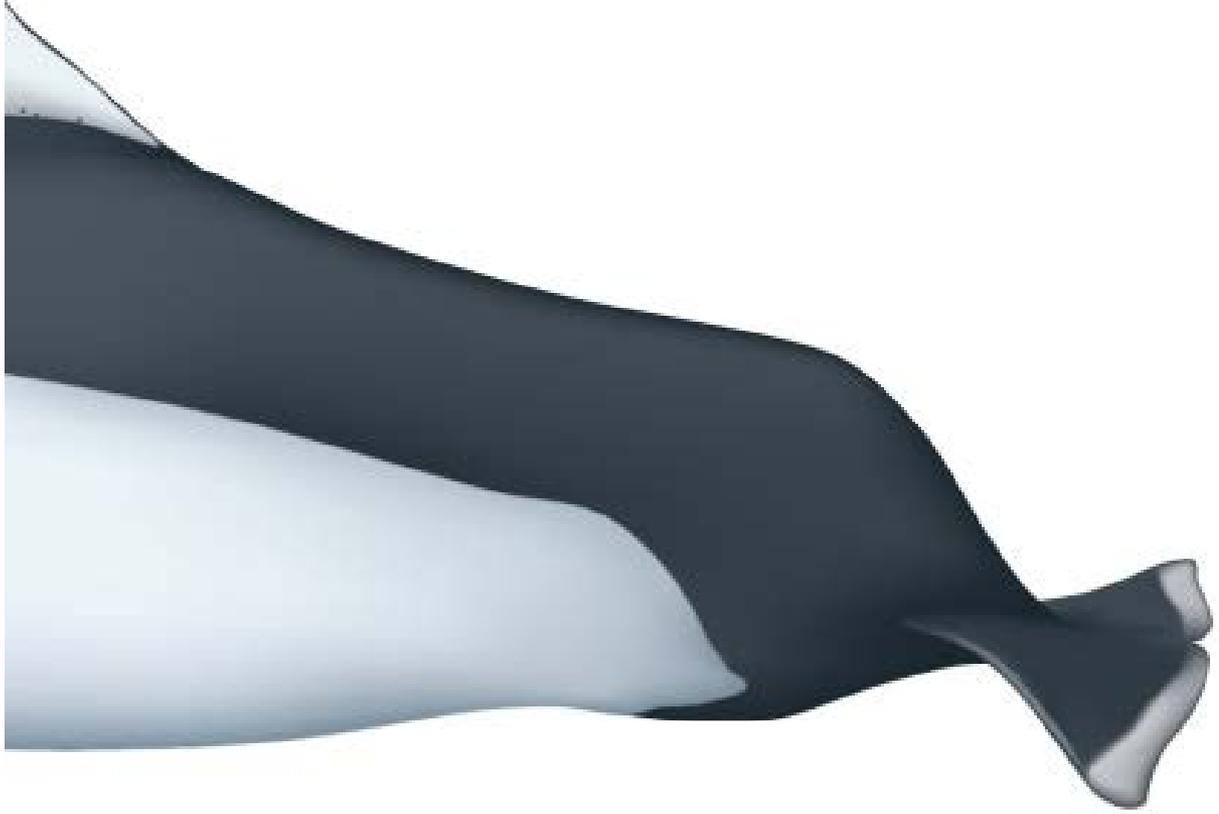


Dall's porpoise can create a **"Rooster tail splash"** when surfacing. These animals also like to bowride, or surface near the front of boats/ships.



~6 feet in length; weigh up to 300 lbs.

Tail Slices



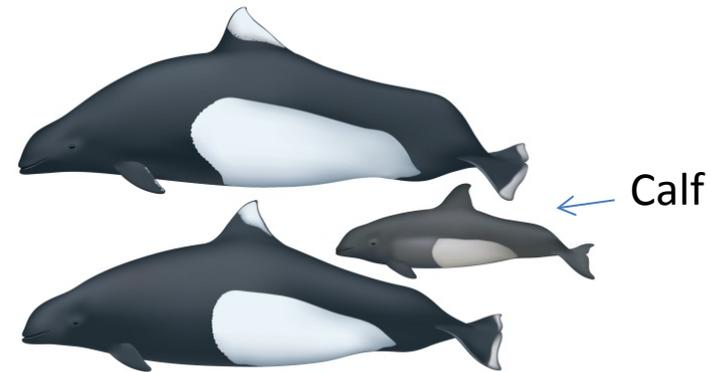
0'

Dall's porpoise

Often mistaken for baby killer whales, how are they different?



Dall's porpoise can create a **"Rooster tail splash"** when surfacing. These animals also like to bowride, or surface near the front of boats/ships.



~6 feet in length; weigh up to 300 lbs.



5'



Head S

Sea otter

Get smart about seafood, visit our fishwatch website.



ear flap



© Phillip Colla
www.OceanLight.com

The sea otter's diet includes many of the foods human's eat like mussels, clams, crabs, & urchins.



Avg. Male ~ 5' and 50-100 lbs.

Tails Slits



0'

Sea otter

Get smart about seafood, visit our fishwatch website.



ear flap



© Phillip Colla
www.OceanLight.com

The sea otter's diet includes many of the foods human's eat like mussels, clams, crabs, & urchins.



Avg. Male ~ 5' and 50-100 lbs.



4.5'



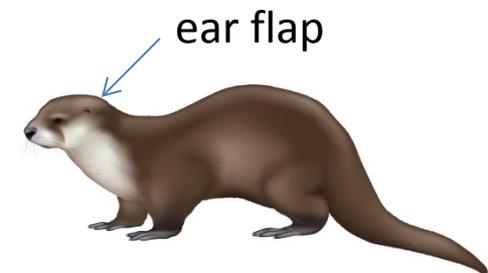
Heads spds

River otter

River otters are NOT marine mammals, even though they can be seen in salt water.

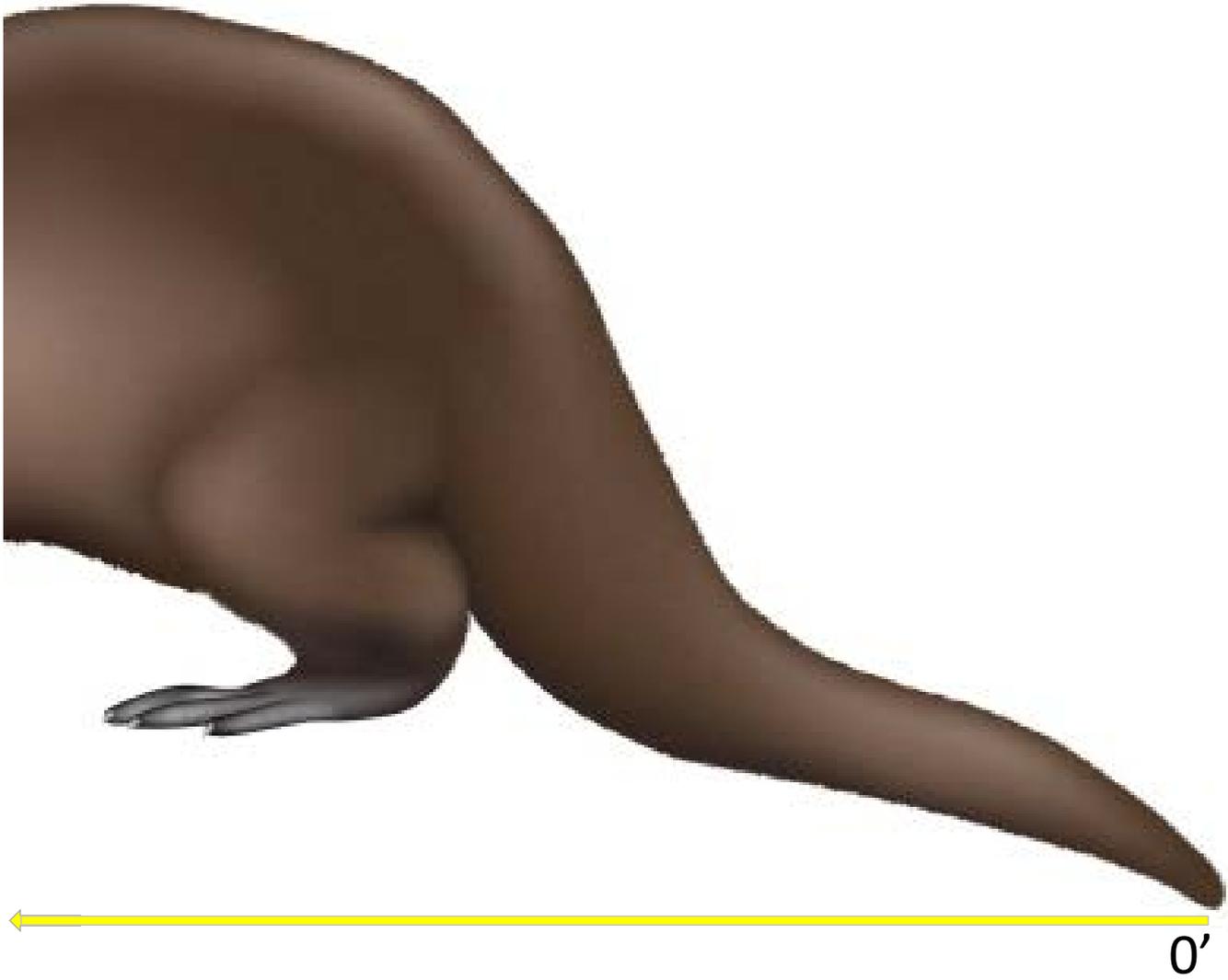


Did you know that river otters mostly eat fish, but if crabs, shellfish, birds, or other easy prey they will eat that too.



~4.5' in length and ~30 lbs.

Tails

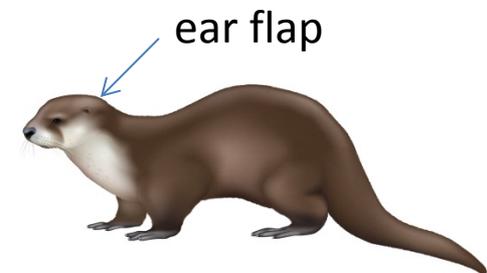


River otter

River otters are NOT marine mammals, even though they can be seen in salt water.



Did you know that river otters mostly eat fish, but if crabs, shellfish, birds, or other easy prey they will eat that too.



~4.5' in length and ~30 lbs.



100'



Sperm Whales

Blue whales

Blue whales were listed as endangered under the Endangered Species Act since 1970.



~100' in length & 165 tons (as heavy as 24 elephants)

The blue whale is the largest animal ever known to have lived on Earth. Despite their massive size, they feed almost exclusively on krill, tiny shrimp-like animals about the size of a jelly bean!



Tails



Blue whales

Blue whales were listed as endangered under the Endangered Species Act since 1970.



~100' in length & 165 tons (as heavy as 24 elephants)

The blue whale is the largest animal ever known to have lived on Earth. Despite their massive size, they feed almost exclusively on krill, tiny shrimp-like animals about the size of a jelly bean!





60'



Spears Heads

Humpback whales

Humpback whales were listed as endangered under the Endangered Species Act since 1970.



The tail of a whale is made up of two “flukes”.

Left fluke



Right fluke

Scientists use coloration, overall shape, and the notch in the middle to help ID individual whales.



Average ~45-60 ft; weigh ~25-40 tons

Tail Sleets



0'

Humpback whales

Humpback whales were listed as endangered under the Endangered Species Act since 1970.



The tail of a whale is made up of two “flukes”.

Left fluke



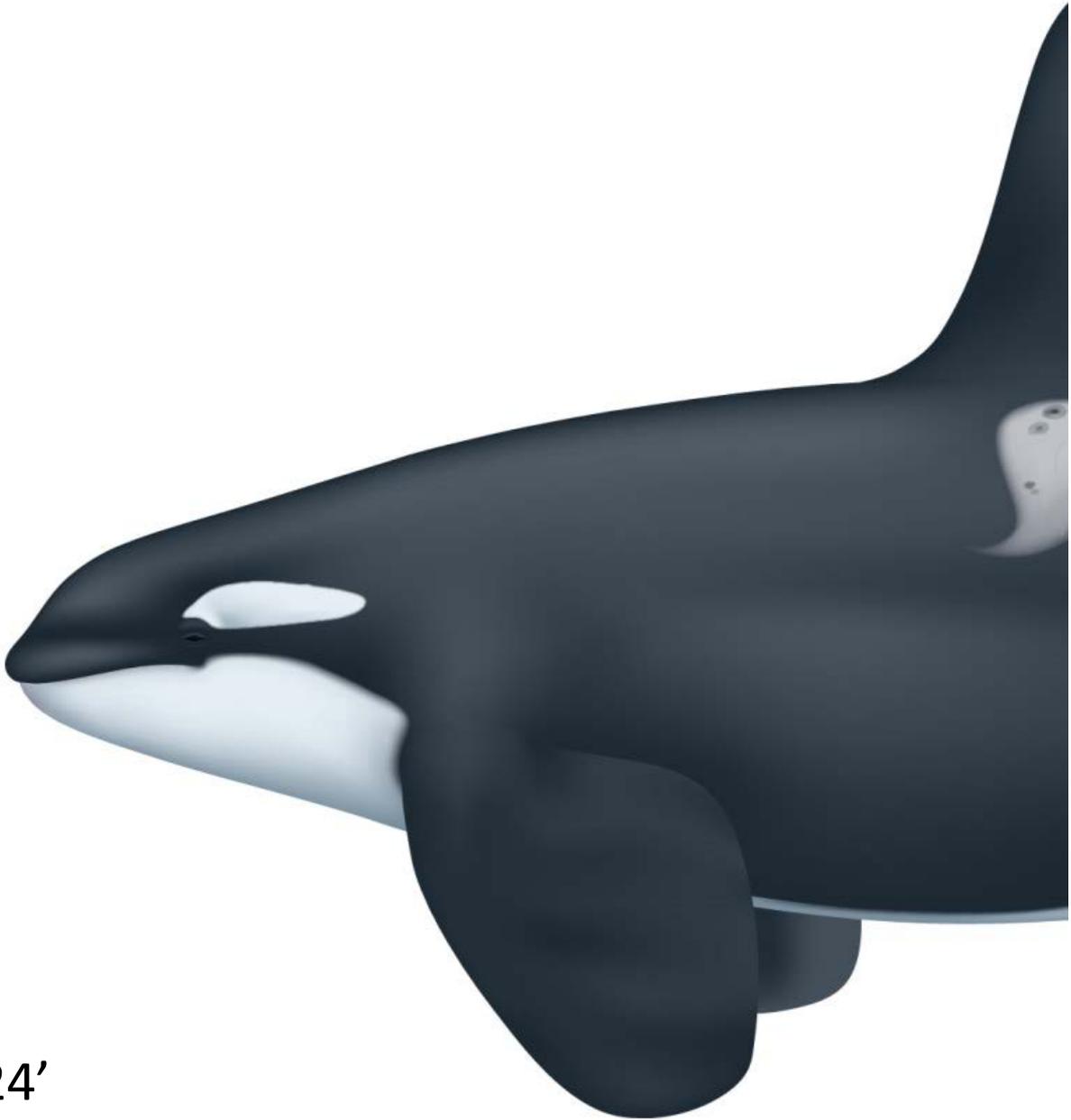
Right fluke

Scientists use coloration, overall shape, and the notch in the middle to help ID individual whales.



Average ~45-60 ft; weigh ~25-40 tons

24'



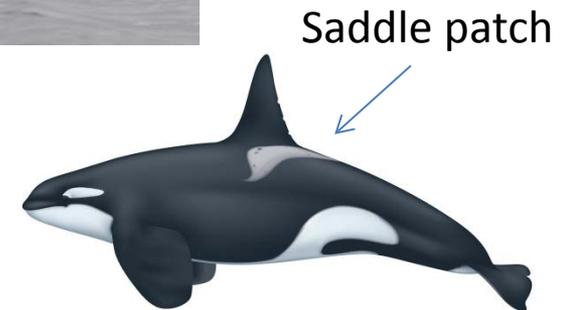
Heads spr s

Transient killer whales

These killer whales feed on marine mammals like porpoise, seals, or other whales.



Transient killer whales, also known as Bigg's killer whales, swim, hunt, and forage in smaller groups than residents. What would be the advantage of this?



Avg. male ~24' in length

Tails



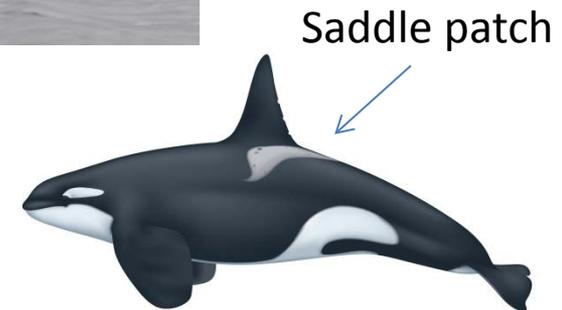
0'

Transient killer whales

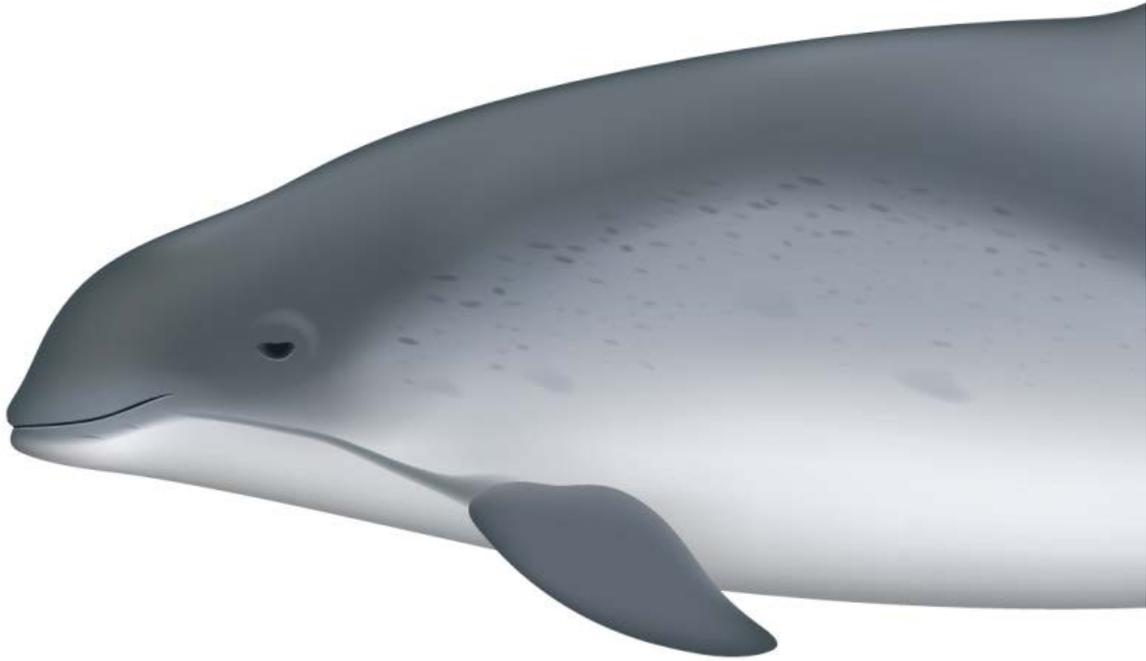
These killer whales feed on marine mammals like porpoise, seals, or other whales.



Transient killer whales, also known as Bigg's killer whales, swim, hunt, and forage in smaller groups than residents. What would be the advantage of this?



Avg. male ~24' in length



5.5'

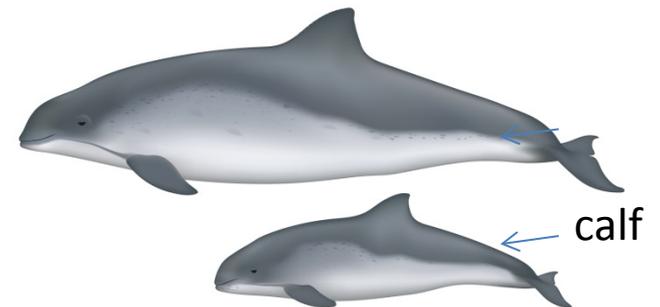
Heads spds

Harbor porpoise

Harbor porpoise are shy, often seen once and then they swim away.



All marine mammals have lungs like you, so they have to come up to the surface of the water to breathe. Harbor porpoise don't make a splash when surfacing.



Adults are 5.5 ft. long and weigh ~170 lbs.

Tails



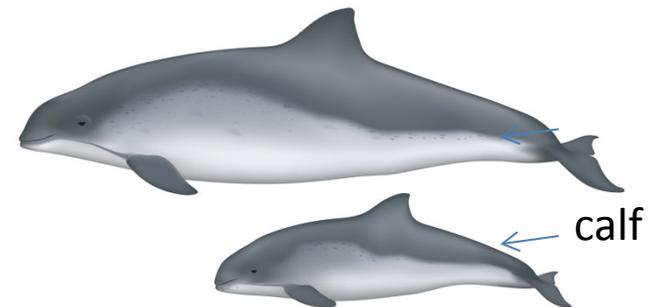
0'

Harbor porpoise

Harbor porpoise are shy, often seen once and then they swim away.



All marine mammals have lungs like you, so they have to come up to the surface of the water to breathe. Harbor porpoise don't make a splash when surfacing.



Adults are 5.5 ft. long and weigh ~170 lbs.



13'



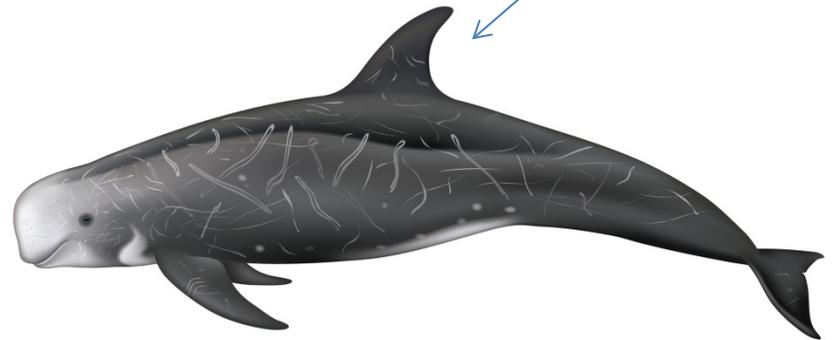
Steads

Risso's dolphin

Do not have teeth in upper jaw, like sperm whales.



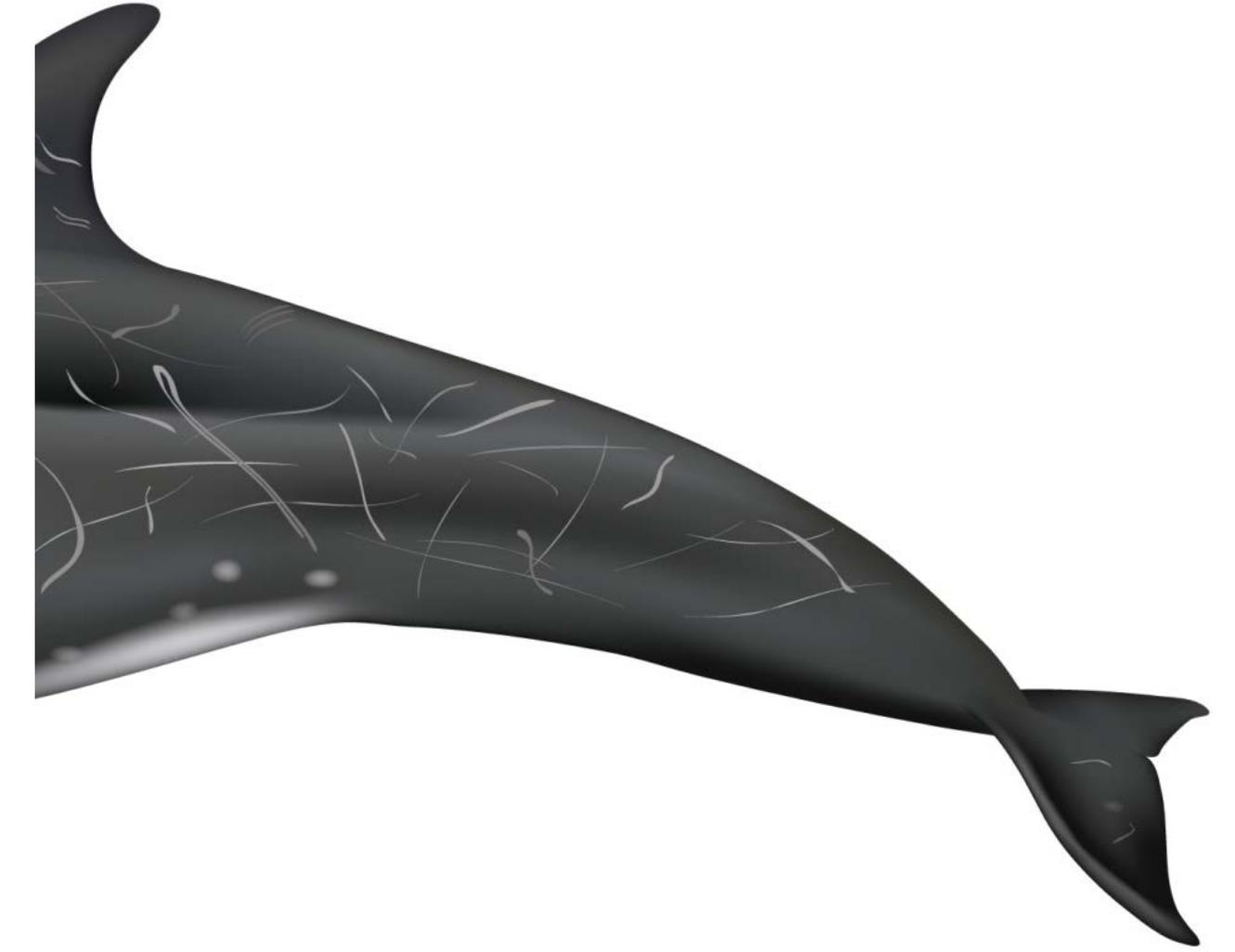
Curved dorsal fin



Risso's are often gray in color often with lots of scars from teeth marks from other dolphins, as well as circular markings from prey like squid, cookie-cutter sharks, or lamprey.

Adults can be 13 ft. long and weigh ~1,100 lbs.

Tails



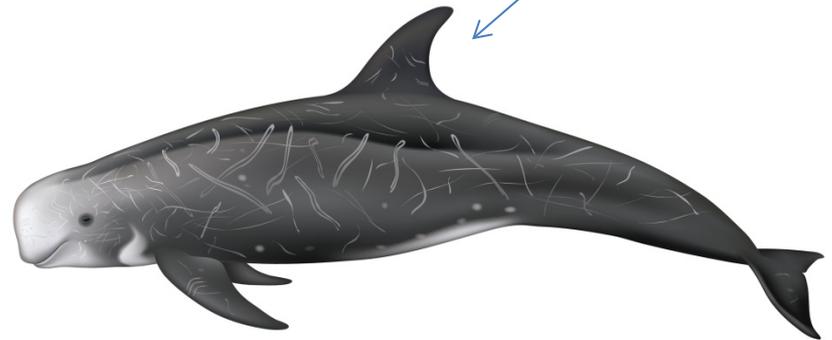
0'

Risso's dolphin

Do not have teeth in upper jaw, like sperm whales.



Curved dorsal fin



Risso's are often gray in color often with lots of scars from teeth marks from other dolphins, as well as circular markings from prey like squid, cookie-cutter sharks, or lamprey.

Adults can be 13 ft. long and weigh ~1,100 lbs.



16'



HEADS

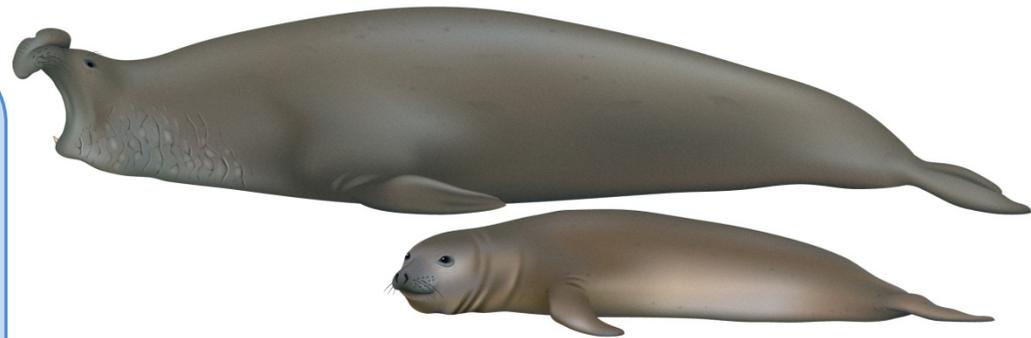
Northern elephant seal

Elephant seals are the largest phocid, or true seal. So no visible ear flaps on the head.



“PROBOSCIS”

Why do males have a long extended nose or “proboscis”? What function does it provide?



Avg. Male ~ 12-16' and 5,000 lbs.

Tail Sleets



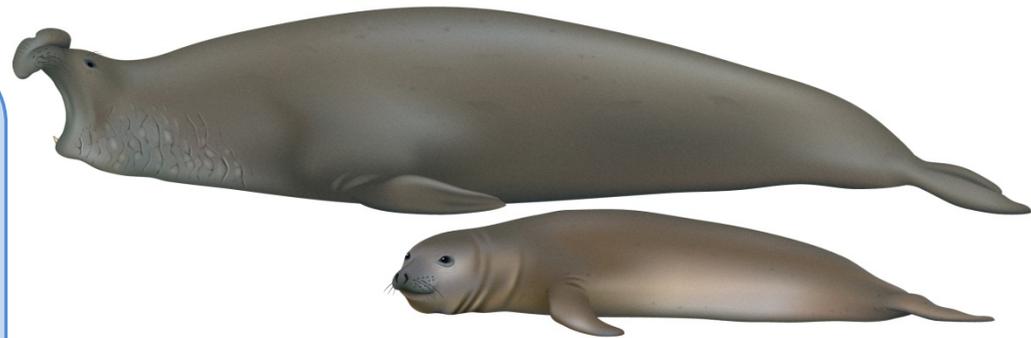
Northern elephant seal

Elephant seals are the largest phocid, or true seal. So no visible ear flaps on the head.



“PROBOSCIS”

Why do males have a long extended nose or “proboscis”? What function does it provide?



Avg. Male ~ 12-16' and 5,000 lbs.

Spads heads



11'



Steller sea lion

Steller sea lions are also members of the "eared seal" family, Otariidae.



The fore-flippers are broader and longer than the hind-flippers and are the primary means of locomotion in water. On land, sea lions can turn their hind flippers forward for walking.



Avg. Male ~ 8.5-11' and 2,200 lbs.

Tails



Steller sea lion

Steller sea lions are also members of the "eared seal" family, Otariidae.



The fore-flippers are broader and longer than the hind-flippers and are the primary means of locomotion in water. On land, sea lions can turn their hind flippers forward for walking.



Avg. Male ~ 8.5-11' and 2,200 lbs.

HEADS



52'



Sperm whale

Largest toothed whale with 20-26 cone shaped teeth in each side of lower jaw. No upper teeth like the Risso's dolphin.



Tim Cole

Sperm whales can dive for over an hour to depths over 3,280 ft. They are feeding on large squid, sharks, skates, and fishes.



Avg. Male ~ 52' and 45 tons

Tails



0'



Sperm whale

Largest toothed whale with 20-26 cone shaped teeth in each side of lower jaw. No upper teeth like the Risso's dolphin.



Tim Cole

Sperm whales can dive for over an hour to depths over 3,280 ft. They are feeding on large squid, sharks, skates, and fishes.



Avg. Male ~ 52' and 45 tons



Southern Resident killer whales



Gray whales



Can you estimate my length?



Can you estimate my length?



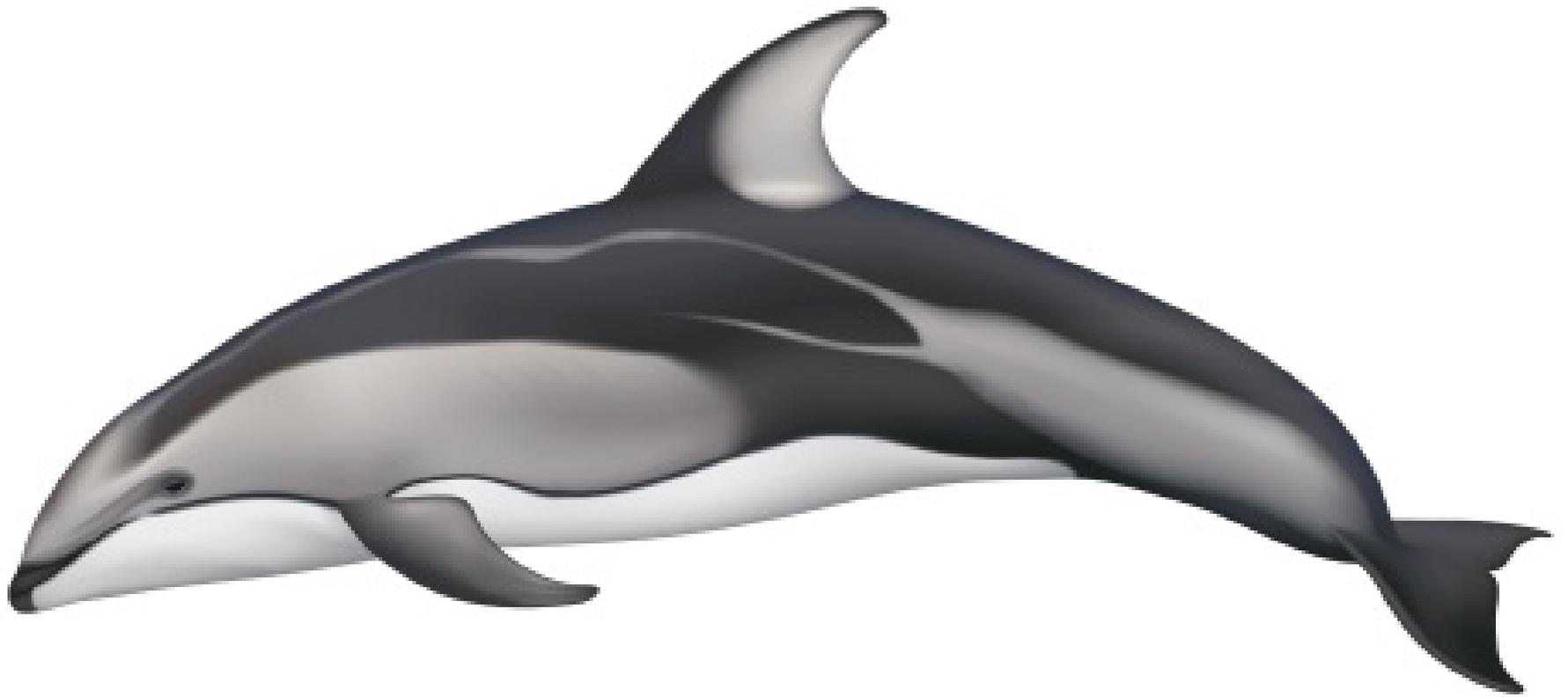
<http://swfsc.nmfs.noaa.gov/PRD/>

Holly Fearnbach

Pacific white-sided dolphin



Dall's porpoise



Can you estimate my length?



Can you estimate my length?



California sea lions



Harbor seals



Can you estimate my length?



Can you estimate my length?



Sea otter



River otter



Can you estimate my length?



Can you estimate my length?



Blue whales



Humpback whales



Can you estimate my length?



Can you estimate my length?



Transient killer whales



Photo by: Candi Emmons

Harbor porpoise



Can you estimate my length?



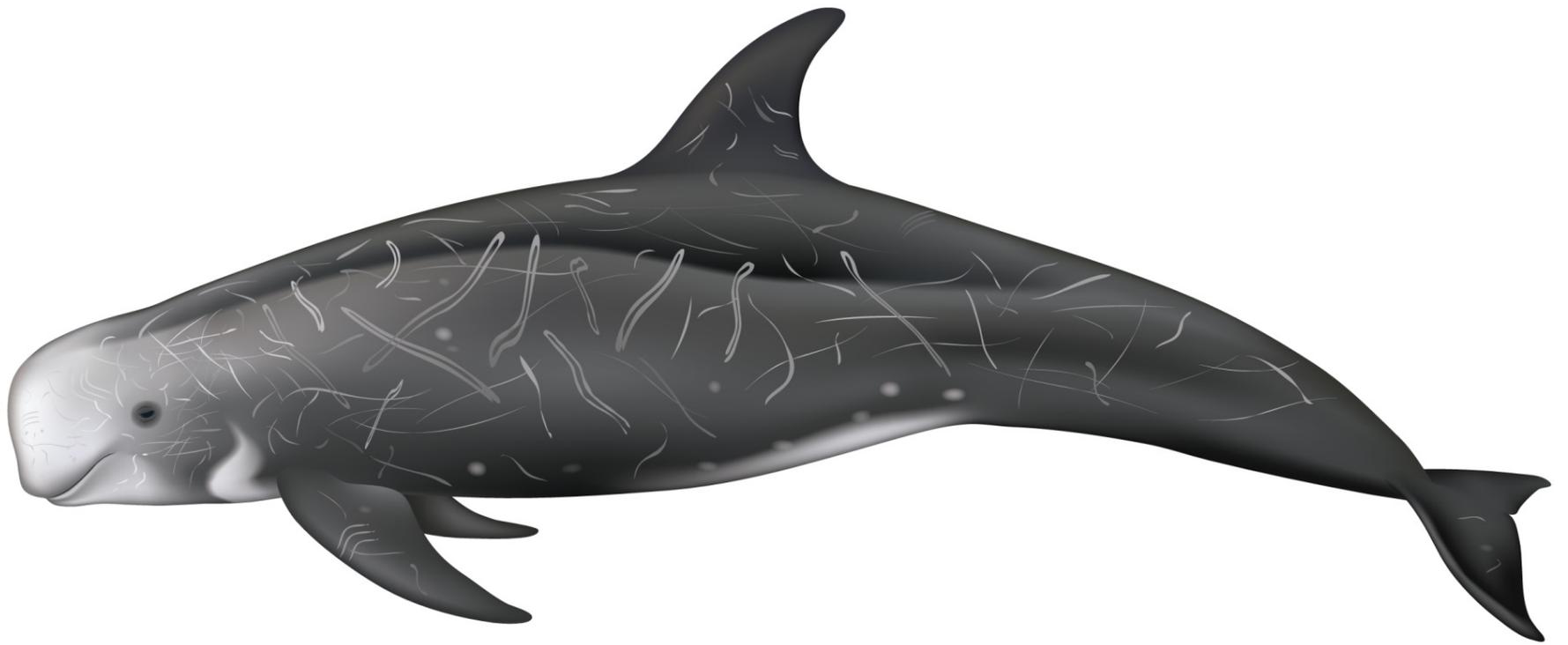
Can you estimate my length?



Risso's dolphin



Northern elephant seal



Can you estimate my length?



Can you estimate my length?



Steller sea lion



Sperm whale



Can you estimate my length?



Can you estimate my length?