

# Rocky Coast

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EDventures @ the Zoo

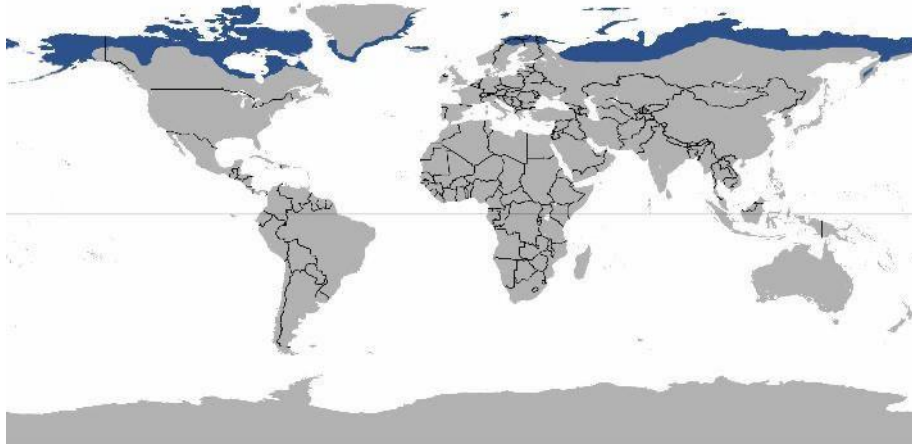
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The Arctic:

The Arctic is neither a country nor a continent, but is a region that makes up the northernmost part of the Earth. The Arctic and Antarctic are characterized by a long winter period and a short growth/summer period. In the winter it averages  $-30^{\circ}$  and in the summer it normally ranges from  $37^{\circ}$  -  $57^{\circ}$ . Although, it has been known to reach into the 80's. Throughout these two parts of the world there is very little precipitation, making some parts of the arctic a cold desert! Though we think of the Arctic and Antarctica as a constant source of snow, they actually receive less than 10 inches of rain (or snow) a year which would categorize them as deserts. Antarctica is the world's largest desert.

The Arctic is divided into two regions: the High Arctic (blue on map below) and the Low Arctic. The High Arctic has more severe environmental conditions and a form of Arctic tundra known as a polar desert. Polar deserts are determined by their low levels of moisture and scarce plant life. There is little vegetation and it is usually no taller than a shrub (also has mosses and grasses). The Low Arctic, on the other hand, has between 80%-100% vegetation coverage, this includes sedges and grasses as well as shrubs and some low growing tree species.



Ask your student to name as many animals they can think of that live in the arctic (not Antarctic).

Some Most Common Answers =

Birds – terns, snowy owls, snow buntings, auks, auklets, geese, ducks, murres, loons, puffins, warblers

Fish – Greenland sharks, cod, capelin, haddock, herrings, salmon, flounder

Mammals – lemmings, reindeer/caribou, arctic hares, arctic foxes, belugas, narwhals (my personal favorite), orcas, whales (right, bowhead), arctic wolves, muskox, polar bear, seals.

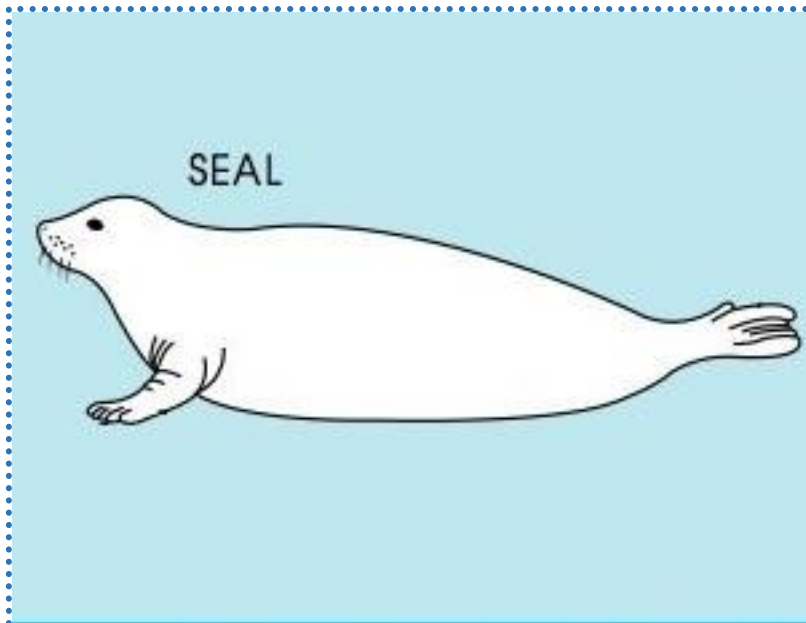
Other Random animals – there aren't really any species of reptiles or amphibians that live in the high arctic

## You will start your trek with Seals and Sea Lions

Seals and Sea Lions are called pinnipeds which means fin-footed. Can you think of the last animal that belongs in this group? (Walrus). Since seals and sea lions spend so much time underwater their nostrils stay closed and they have special muscles to open them when they come up to breathe. Sea lions and seals have large eyes, with a clear membrane like an eyelid, which aid in capturing their prey underwater. These animals use a thick layer of blubber to keep themselves warm in such cold temperatures.

### Sea Lion vs Seal Comparison -

- The North Carolina Zoo houses both California Sea Lions and Harbor Seals. Students should find the differences between the two species below. Younger kids can circle the areas why older kids write.



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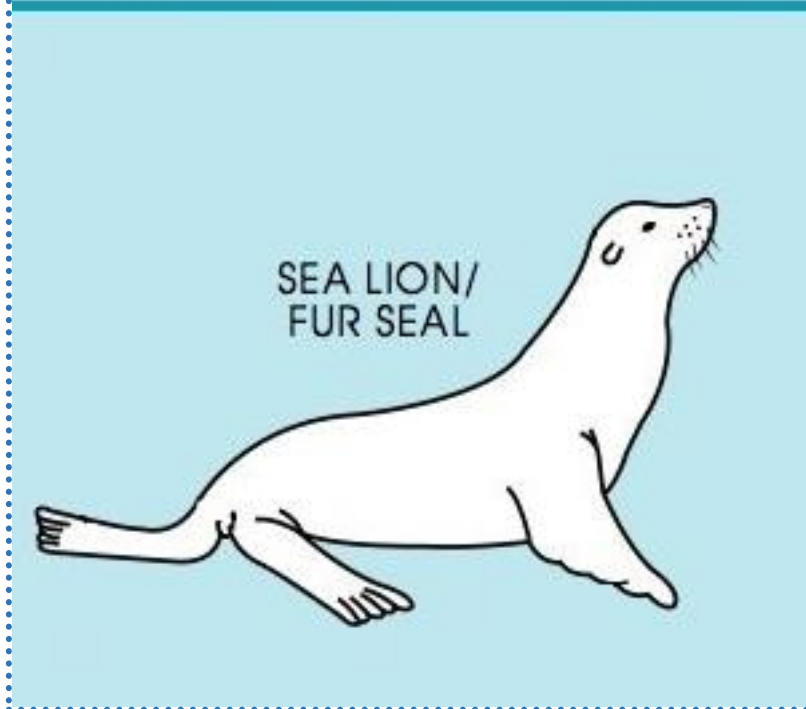
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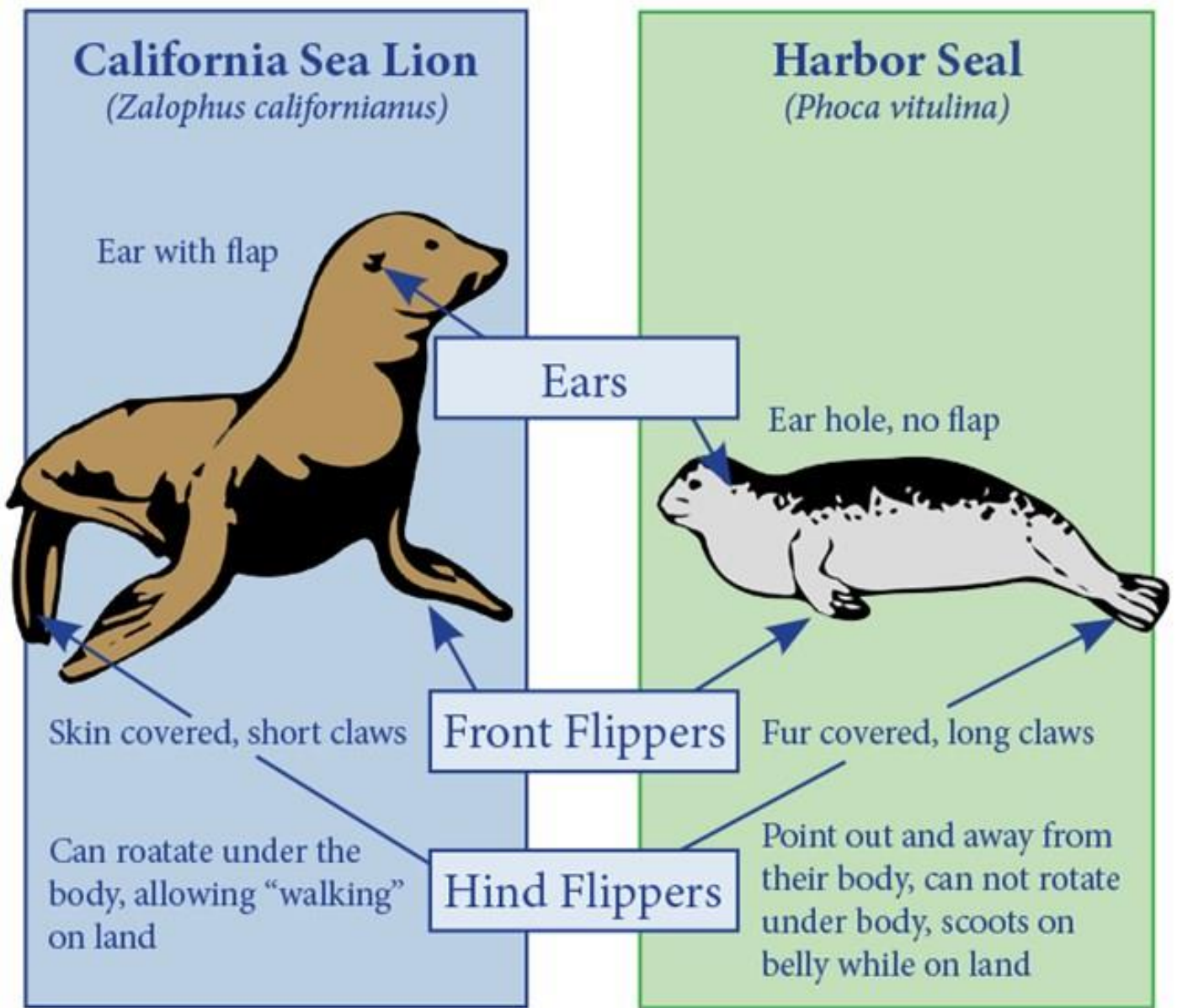
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Answer Sheet for Sea Lion vs Seal Comparison:



Some other differences include:

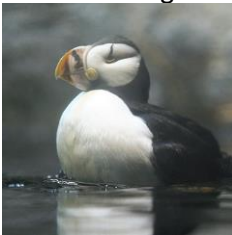
Sea Lion	Seal
Long neck, can touch nose to backbone	Short, thick neck
Long flippers	Short flippers
Vocal, make lots of noises	Mostly silent
social	solitary



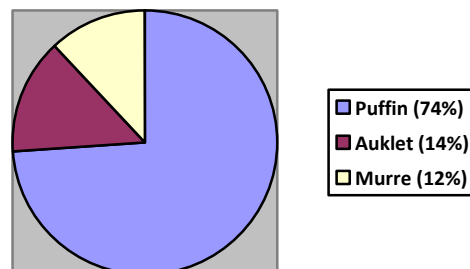
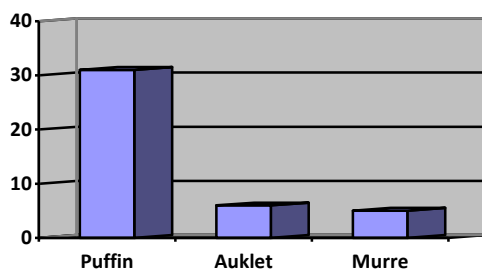
## Next area is Sea Birds!

What population of a million or more live in coastal communities 4 to 5 times the size of Anchorage, Alaska, where nobody drives, but everyone can fly? Seabird! These amazing birds are different from other species of birds in that seabirds spend most of the year on the open ocean, only coming ashore in summer to nest. At the zoo, we have different types of birds – Atlantic Puffin, Thick-billed Murre, and Parakeet Auklet. Some of the adaptations different seabirds possess include: being built like a torpedo to “fly” underwater, special salt gland so they can drink sea water, light belly feathers and dark back feathers to provide camouflage in the open sea called countershading), and waterproof feathers to keep them warm and dry. These animals are able to share a habitat in the wild because they share resources and avoid competition. During winter they live in the open ocean, and in summer return to the rocky cliffs along the Eastern and Western coastlines of Canada and Alaska. Each has a special place to nest and a particular food that they eat – they are specialists, each having their own niche (or job). The murre lays its eggs on the edge of rocky cliffs, not in nest holes like the other sea birds. They also make nests so close to each other that incubating adults are literally touching each other on either side. The egg shape of a murre’s egg has adapted to the environment by being conical rather than round. This makes the eggs spin in a circular motion as opposed to rolling straight in one direction and keeps the egg from falling off the cliff. One environmental problem for seabird populations are oil spills. The oil coats the birds’ feathers and make it difficult for them to swim or keep warm. If birds try to clean their feathers or drink the contaminated sea water they can be poisoned. If oil gets on an egg shell, it can actually go through the shell and harm the chick.

Answers to Next Page

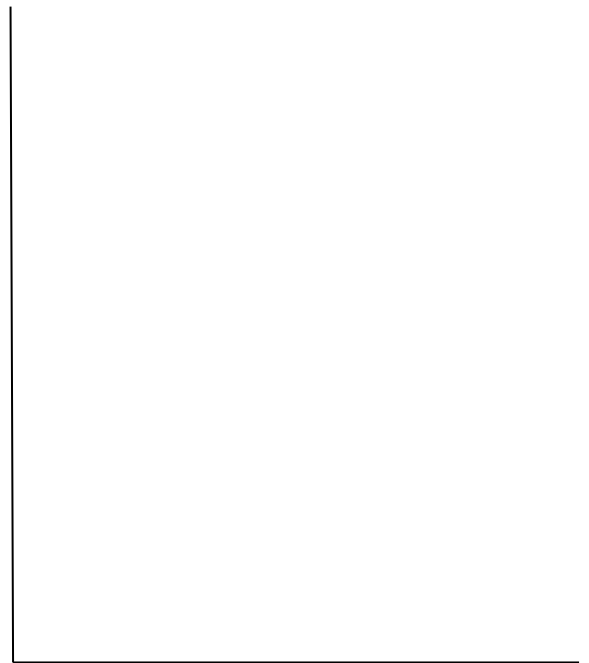
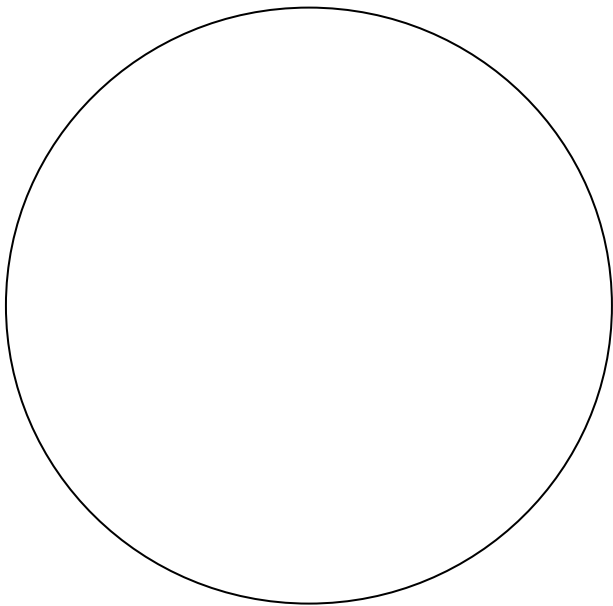


Horned Puffin	Parakeet Auklet	Thick Billed Murre
31 individuals	6 individuals	5 individuals
<ul style="list-style-type: none"> <li>- brightly colored bill, even brighter during breeding season</li> <li>- large white area on sides of face</li> <li>- large bill can carry over 50 small fish</li> </ul>	<ul style="list-style-type: none"> <li>- roundish bill thought to be used for handling slimy prey.</li> <li>- long white feathers below eye</li> <li>- walk around mostly on legs and not toes</li> <li>- bright white eyes</li> </ul>	<ul style="list-style-type: none"> <li>- large and stocky, most penguin looking</li> <li>- bill is thick and pointed</li> <li>- young and non-breeding adults have a shorter bill and browner chests/stomachs</li> </ul>



- Animal D -
  - Student(s) should tally up each species and see what they have the most of/least of. For older kids, create a pie or bar graph and figure out percentages.

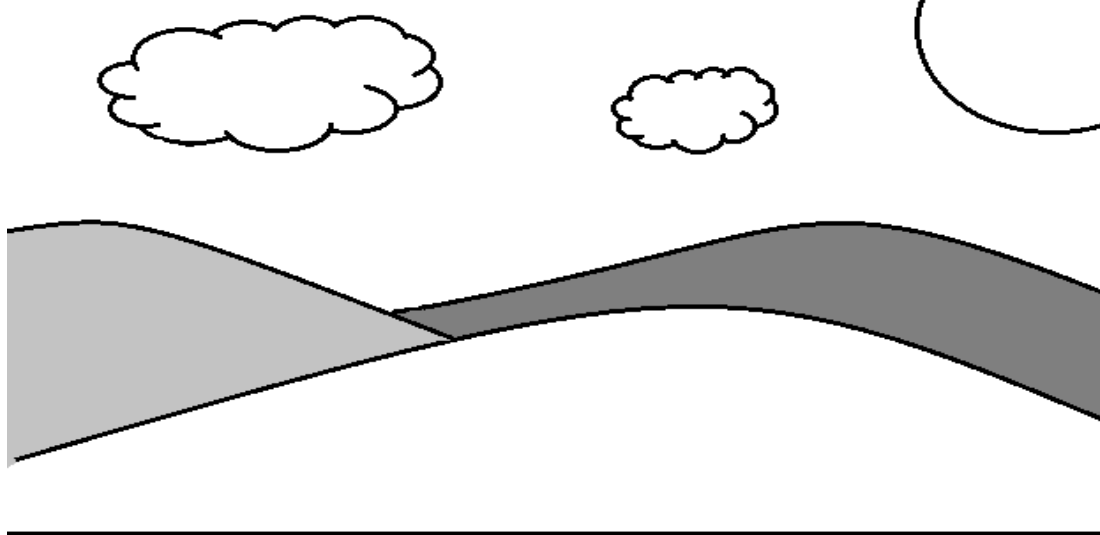
Species	Horned Puffin	Parakeet Auklet	Thick Billed Murre
Amount			
Description			



## Next Area is Arctic Fox!

The arctic fox's adaptations to its subzero habitat include a compact body with short legs, short ears, dense fur, and thickly haired foot pads, which insulate against the cold and provide traction on ice. Not only does the arctic fox have fur covering its entire body (even the bottom of its feet) they have the warmest pelt of any animal in the Arctic. They live in the tundra and on sea ice and are found in the northern polar regions of Alaska and northern Canada. Arctic fox habitats are tied closely to populations of prey animals. Arctic foxes eat birds, bird eggs and the remains of food that other animals, such as polar bears, have left behind. Over the winter, the arctic fox has a heavy white coat, but during May, when the snow begins to melt, this coat is shed for a thinner, two-tone brown one. Their coat changes color from summer to winter in order to help with

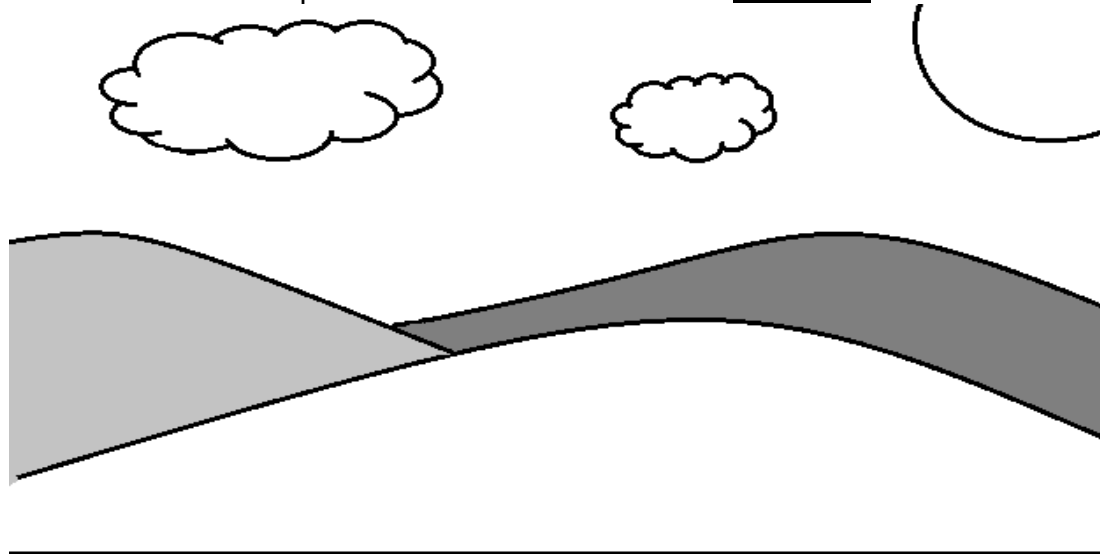
Draw and Color a picture of an Arctic Fox in its **SUMMER** environment:



camouflage which helps them both hide from predators and better their ability to hunt.

Students should draw their representation of what an arctic fox looks like in the summer versus the winter.

Draw and Color a picture of an Arctic Fox in its **WINTER** environment:



Then, students should write a word, sentence, or paragraph about what our arctic foxes look like, where they think they are in their coat cycle (full, thinnest, in the middle)

## Last Stop, Polar Bears!

When you think of the Arctic, what is the one animal that you think of? Polar Bears! Polar bears are carnivores and are the largest member of the bear family. They can weigh anywhere between 900 to 1600 lbs. Their entire body is well adapted to the cold tundra of the Arctic, from their thick fur to the streamlined shape of their heads that allow them to swim faster for their prey. Polar Bears primarily eat seal in order to obtain the blubber necessary to survive such harsh environments. Though seals do not primarily stay on land, Polar Bears have one of the best senses of smell in the animal kingdom. Their nose is so powerful it can smell a seal on the ice 20 miles away, and they can smell up to a mile down into the ice as well. They live in the Arctic region near the North Pole, where they spend most of their time on ice floes. Their thick claws help the polar bear catch prey and give the bear traction on the ice. Polar bears live in very cold temperatures, and so have lots of adaptations that help them to keep warm. Polar bear fur helps keep the bear warm as it is translucent and hollow to trap air, also they have black skin to attract heat from the sun. Polar bears are specifically adapted to their habitat, surviving extreme arctic conditions, but there is currently a lot of concern that these amazing animals may not survive much longer. Does anyone know why? The polar bear faces the loss of the frozen habitat it needs to hunt ringed seals, its primary prey. As the climate gets warmer, the sea ice could break up several weeks earlier than it now does in the spring, reducing the time in which the bears can fatten up prior to the summer, when they usually fast. Unseasonably warm weather could also cause the snow dens of ringed seals to collapse, reducing the seal pups chance of survival and reducing available food for polar bears.

- Our Polar Bears
  - Nikita, male – around 1,000 pounds (highest was 1,200) and has a more angular face, larger and more yellow looking fur. He swims a lot, especially when it is hot. Was born in November of 2006 which means he turns 12 this year. He came here from the Kansas City Zoo in 2016 when the new habitat was finished.
  - Anana, female – around 600 pounds and has more white looking fur. She was born in November 1999 which means she turns 19 this year. She came from Lincoln Park Zoo in 2016 when the new habitat was finished.
- Be a Climate Action Hero
  - Students try their hand at being a Climate Action Hero
    - Click on the home button and press the How you Can Help button. Have student look at the large screen above you and think of ways they can be a Climate Action Hero at each location (home, greenway, school, etc.). Then read the ways the zoo thinks people can help.
    - Whether alone, in groups, or everyone tries together, see if you can beat 90%. Have kids go against each other for a little friendly competition
    - Younger kids can play the ice match game as well.
- Other fun to do
  - Climb in the cave and measure yourself to a polar bear near the first underwater viewing
  - Find a picture that shows a bear sniffing for food
  - Find a picture that talks about why polar bear's feet help them.
  - Stop by the smart cart (usually open in early fall and late spring)