

POLAR BEAR

TASK #1

ANIMAL RESEARCH

Climate	<ul style="list-style-type: none"> • Harsh climates of snow and ice • Winter temperatures drop below -30°F • Summer temperatures can reach 90°F • Ocean temperatures can reach 28°F
What covers their body? How is this helpful?	<ul style="list-style-type: none"> • Fur is transparent, oily, and has anti-icing properties • Fur is hollow and pigment free to help absorb heat from the sun and direct sunlight to their black skin
Social Dynamic	<ul style="list-style-type: none"> • Adults are solitary. They hunt and live alone, except mothers with cubs • Some groups can live together for a period in the summer when food is plentiful
Appearance	<ul style="list-style-type: none"> • White appearing fur with black skin and thick fat • Large paws with webbed toes / short non-retractable claws • Long necks, small heads, and short tails • Males are larger than females • Males: Height: 8-10 ft. long / Weight: 600-1,200 lbs. • Females: Height: 6-8 ft. long / Weight: 400-700 lbs.
How do they move? How would that help them in their habitat?	<ul style="list-style-type: none"> • Walks using large paws for balance • Runs short distances • Swims using front paws to propel through water. Hind feet and legs are held flat and used as rudders
How do they care for their young?	<ul style="list-style-type: none"> • Mothers give birth in dens in the winter • Mothers nurse and care for their cubs for two years • Mother teaches cubs how to hunt, feed, swim, and protect themselves
What do they eat? What adaptations do they have to support their diet?	<ul style="list-style-type: none"> • Carnivore; feeds mainly on marine mammals • Catches food by stalking and pouncing on prey • Waits next to a hole in the ice until seal surfaces for air • Breaks through and smell through several layers of ice
Habitat	<ul style="list-style-type: none"> • Arctic • Sea ice, coastal areas, and islands



TASK #2

POLAR BEAR NEEDS IN A ZOO

After learning about what polar bears need in the wild, students are prompted to write things that polar bears would need in a zoo. Below are suggested answers but students are encouraged to be creative.

- Temperature controlled housing
- Temperature controlled pool
- Shade structure(s)
- Areas/items that can be used for bedding
- Different substrates to walk on or dig in (sand, grass, rocks)
- Denning areas away from public view
- If housing more than one polar bear, additional space is needed
- If housing a breeding group, you must have at least to outside yards available
- Ice machine or ability to bring in ice

POLAR BEAR ENRICHMENT

Suggested Enrichment:

- **Environmental Enrichment-** Trees or logs (Willow, Mulberry, Box Elder, or Ash), Alder bark chips, cedar mulch, straw, chipped pine trees, wood wool
- **Food Enrichment-** Honey, peanuts, flowers, eggs, peanut butter, applesauce, flavored and natural rawhides, fruits and vegetables (grapes, blueberries, watermelon, and pumpkin), other seasonal fruit, crayfish, live fish, kelp, and ice treats
- **Manipulative Enrichment-** Plastic barrels, tubs and buckets, cardboard boxes and tubes, canvas bags and hoses, traffic cones, outdoor play equipment without hardware, balls and paper mache
- **Sensory Enrichment-** Any cologne or perfume, catnip, spices, and hooved animal hair
- **Social Enrichment-** Training medical behaviors with animal care staff

Things to avoid:

- Continuous use of the same form of enrichment
- Items that may damage the habitat walls, pool, and glass
- Small enrichment or small pieces that could be ingested (string, screws, soft plastics)



TASK #3

POLAR BEAR CONSERVATION STATUS

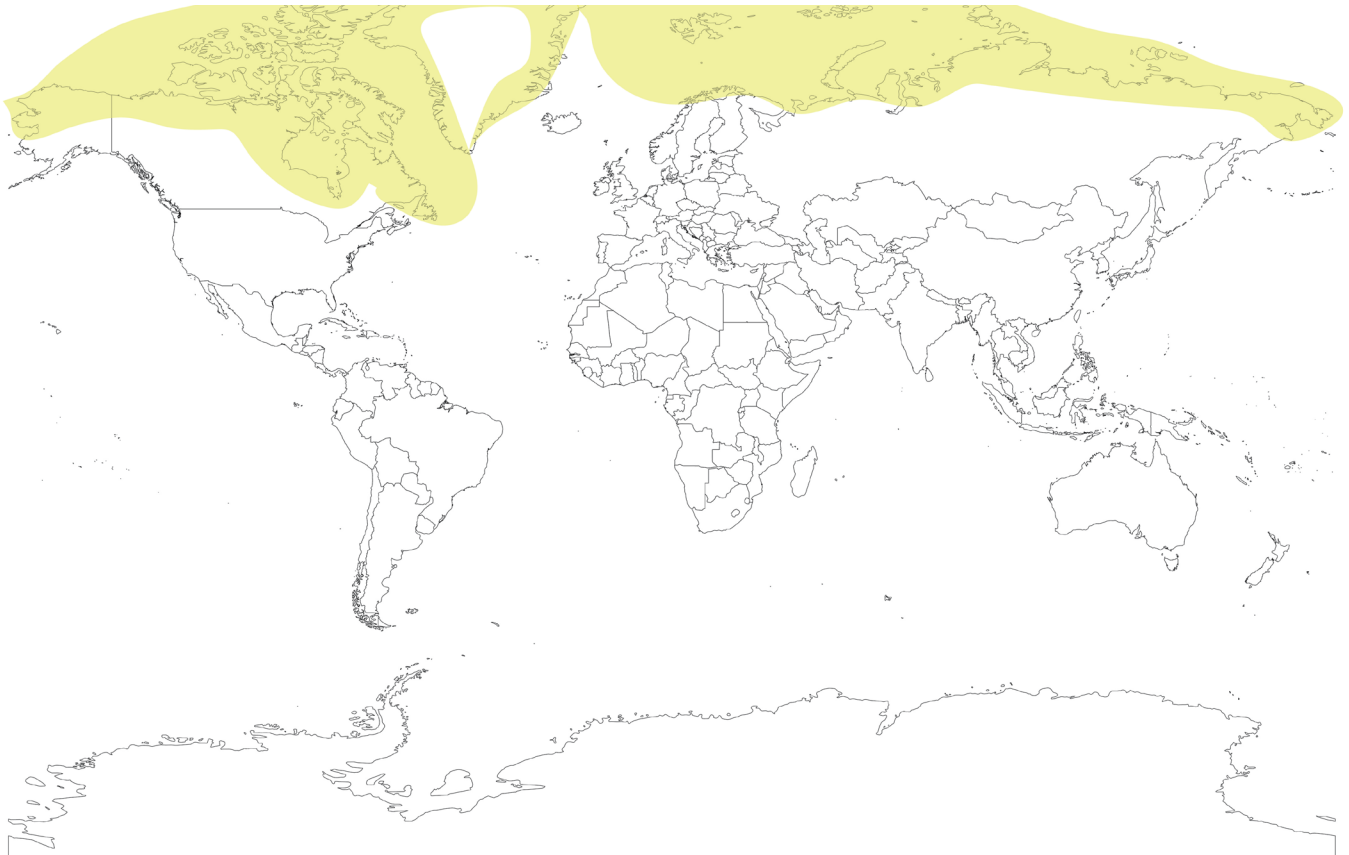
Conservation Status: Polar bears are listed as a Vulnerable Species by the IUCN.

Countries found: Polar bears live in Arctic regions like Canada, Alaska, Russia, Greenland and Norway.

Has the animal's range changed over time? The range of polar bears fluctuates with the amount of available sea ice. With sea ice reduction over the past several decades, the range of polar bears has been reduced.

Did your animal's population change? Yes, it has decreased.

Threats: Climate change, habitat loss, human interference, and pollution are the main threats contributing to the polar bear's population decline.



HISTORICAL / CURRENT RANGE: The range of polar bears has not changed significantly over time. However, the polar bear population and available sea ice have decreased.



TASK #4

POLAR BEAR DIET

Polar bears are primarily carnivores, although they may occasionally eat things that are not meat. In the wild, most of their diet consists of seals. When they can't catch seals, they eat fish and carrion. At the Zoo, polar bears receive ground beef and lard to mimic the nutrients they would get from seals. When it comes to fish, our polar bear receives a wide variety. They also enjoy produce as enrichment. Students will be able to plan out the fish and produce that their polar bear will look forward to each day!

EXTENSION ACTIVITY

Students can use the extension on page 45 to create a diet plan for an entire week, and answer some questions about how the polar bear diet might change during the winter.

TASK #5

HABITAT DESIGN

Students are encouraged to design a zoo habitat that satisfies the natural behaviors of polar bears. Below are a few suggestions.

Natural Behaviors: Swimming, hunting, digging, living alone, roaming, exploring, hiding, resting, foraging, climbing, playing, scratching, tearing, pouncing

- All areas should contain structural features such as resting platforms, water features, and denning sites.
- Pools should be at least 9 ft. deep and 760 sq. ft., featuring an irregular shape and containing both deep and shallow areas. Saltwater pools can be designed to include, smooth walls and ledges, an island, waterfalls, or a wave machine. It is also important to provide a separate freshwater source.
- Barriers can be a combination of glass, stone, or heavy mesh. Adequate space must be given to protect staff and the public.
- The landscape should be naturalistic and include grass, bushes, or trees for shade. Their ability and motivation to climb and to claw open trees should be carefully considered.
- Areas for nesting polar bears must include at least 1,350 sq. ft. that is covered by appropriate nesting materials such as hay, straw, wood wool, mulch, and bark chips.
- When caring for multiple polar bears, adequate additional space must be provided. This allows them to avoid each other and the public.
- Spaces should be designed to provide walking and running opportunities. 1-2 bears must be given access to 5,400 sq. ft. of dry land. With each additional polar bear, 1,650 sq. ft. of land must be added.

Polar Bear Diet Extension Activity



Now that you've created the polar bear's diet for three days, you can plan the diet for the remainder of the week. Use the charts in the student guide to find the correct amounts of fish and produce needed each day. Remember, animals love variety!

This diet plan is designed for polar bears in the summer. Just before, and during the winter months, polar bears instinctually eat more food to help stay warm in the cold Arctic tundra. In human care, we adjust their diet in the winter by **doubling** the daily calories.

When planning the diet for the polar bear, remember the following:

- Each day must have a different combination of fish.
- Each day can have a *maximum* of three kinds of fish.
- Each day must equal between 10,000-12,000 calories.
- In addition to fish, the polar bear receives a variety of fruits and vegetables daily.

Choose 3 different produce items per day, making sure no day is the same.

Diet	Day 5	Day 6	Day 7
Fish (Between 10,000-12,000 calories each day)	Total Calories:	Total Calories:	Total Calories:
Produce (3 kinds, different combo each day)			

How many calories of fish would the polar bear eat each day in the winter?

How many kilograms (kg) of ground meat would the polar bear eat each day in the winter?

What is the new range, in kilograms (kg), for daily lard (cooking fat) for the polar bear?