



Ice Worlds

Ice Worlds 1

What are two characteristics of the ice wildernesses found at the poles of our planet?

Answer: Largest wilderness on the planet, made of ice, no where else are seasonal changes so extreme.

What regulates the movement and behavior of life that live at the poles?

Answer: The cycle of ice.

The southern most tip of Earth is called?

Answer: Antarctica

What percentage of all the worlds ice is found in the Antarctica?

Answer: 90%

Ice Worlds 2

What are two types of penguins that live in Antarctica?

Answer: Adelie and Chinstrap penguins.

Why is rock such a commodity in the ice world?

Answer: Penguins and other sea birds can't lay their eggs on ice.

What are nunataks?

Answer: Raised mountain peaks buried in ice a mile deep.

What are snow petrels?

Answer: Sea birds that fly 300 miles to the nunataks to breed.

Ice Worlds 3

What is one of the third level consumer that feeds on the sea birds of the nunataks?

Answer: The South Skua

What is the largest percentage of the Antarctic land that is rock at the peak of summer?

Answer: 3%

How far do the Humpback whales travel to come to Antarctica?

Answer: 5,000 miles

Why do they travel to the Antarctic?

Answer: To feed on Krill, small shrimp.

Ice Worlds 4

What part do the krill play in the ecosystem of the ice worlds?

Answer: They reproduce in such large amounts that they can provide enough food to feed whales, large shoals of fish, and massive flocks of sea birds.

How do they whales hunt the krill?

Answer: They drive into krill swarms, and swirl around, while blowing air from their blow holes and making spirally bubbles which trap krill.

What illustrates the extreme seasonal changes in the Antarctica?

Answer: Ice grows two-and-a-half miles a day and in a matter of two weeks, this continent doubles in size.

Describe the life cycle of the Emperor Penguin.

Answer: During the winter, Emperor penguins leave ocean and head almost 100 miles inland to the breeding grounds. Females hand off eggs to males to be tucked into spiral pouch. Females return to the ocean alone. Males huddle close together in groups-they constantly change so that each take turns to get to the warmer middle. Sixty degrees below zero-birds@ edge battle 100 mile-an-hour winds.

Ice Worlds 5

The Arctic

How would you describe the ice world of the North Pole region?

Answer: A vast frozen sea surrounded by land.

How do the sun's rays change during the summer time?

Answer: They become more direct, making them stronger and hotter.

Describe the life cycle of the polar bear.

Answer: The mother polar bear comes out after five months under the snow. She has not eaten during that time and must find food before her milk dries out, starving her cubs.

Ice Worlds 6

What are the largest seals in the world?

Answer: Walruses which weigh can over a ton; their tusks are a meter long.

What is the Aurora australis and what causes it?

Answer: the aurora of the Southern Hemisphere; also called southern lights. Auroras are produced by the collision of charged particles from Earth's magnetosphere, mostly electrons, with atoms and molecules of Earth's upper atmosphere. The collisions in the atmosphere electronically excite atoms and molecules in the upper atmosphere. The excitation energy can be lost by light emission or collisions.

Ice Worlds 7 Frozen Seas

What are polynyas?

Answer: Patches of water that never freeze over because the water movement is so strong that ice can't form.

Why do Walruses spend the winter at these polynyas?

Answer: It is a place where they can get food during the winter months.

What risks are involved with depending on the polynyas?

Answer: If the walrus gets trapped in the current, it may not be able to get back up to the surface for air.

Describe how these "holes" are dangerous to whales.

Answer: They get trapped because the ice around them spans for miles and miles, leaving no opportunity to get air. They have to spend all winter living entirely on their surplus of fat.

Ice Worlds 8

Why are these polynyas particularly dangerous to the Beluga Whales?

Answer: Belugas have to keep the hole open by their continuous movement to breath, leaving them vulnerable to Polar Bear attacks.

What do Polar Bears use snow for and why?

Answer: Bears use snow like blotting paper to rid their fur of salt which can hinder their warmth.

How do Arctic foxes rely on Polar Bears?

Answer: The foxes scavenge the remains of the Polar Bears' prey.

What are Harp Seals born with that help to protect them?

Answer: White fur that blends in with snow to camouflage them.

Ice Worlds 9

How long do Harp Seal pups feed before going out on their own?

Answer: twelve days

What helps them to quickly develop the size they need to survive on their own?

Answer: milk that is forty-five percent fat.

What animal has the shortest nursing period of any mammal and how long is it?

Answer: Hooded Seals in only nurse in four days.

What do Ring Seals do to protect their pups from polar bears?

Answer: They hide their pups in little caves under the snow.

Ice Worlds 10

What heightened ability helps Polar Bears to find prey, including the Hooded Seal pups hidden under the snow?

Answer: Bears have extraordinary sense of smell and can detect seal pups hidden in snow from two kilometers away.

What adaptation have the Ring Seals made for the Polar Bears ability to smell them under the ice?

Answer: The Ring Seal uses several lairs so bears will have to break into several. Some lairs have escape holes that lead into the water.

During the summer, what makes the ocean more accessible?

Answer: The ice melts

What is fish is preferred “fish” food for Beluga whales?

Answer: Arctic Cod

Ice Worlds 11

What is the only whale that stays in the Arctic all year?

Answer: Narwhals

Narwhals are only large baleen Whales have a mouth the size of a small garage; the largest in the world. What does baleen mean?

Answer: They are whales that have elastic, horny material forming the fringed plates that hang from the upper jaw of baleen whales and strain plankton and other small organisms from the water.

What is the Narwhales food of choice?

Answer: Krill

About how far can a Polar Bear swim?

Answer: About a hundred miles.

Ice Worlds 12

How do Walruses take advantage of deeper waters?

Answer: They eat muscles found on the ocean floor and use the sand and shell on the floor to clean off old skin.

What do Beluga Whales do to help their young when they are learning to swim by themselves?

Answer: They let the babies ride on their backs so they can more easily get to the surface.

Why does the Whittle penguin stay in the Arctic during the winter?

Answer: Whittle penguins stay during the winter protected under the ice.

How do they keep the ice holes from closing that allow them to feed on fish?

Answer: They keep the breathing hole open with their teeth.

Ice Worlds 13

Why is the Arctic significantly colder and harsher than Antarctica?

Answer: The Arctic is 5,000 meters higher than Antarctica.

What is the life cycle of the krill?

Answer: Krill eat algae off the ice- shrink in size and revert to juvenile form to save energy. Little air bubbles form as ice melts and the algae grow on them which provides food for krill.

Why is Saradoshi Island is home to over two million penguins.

Answer: Saradoshi is also home to an extremely active volcano, making it warm enough that they can lay their eggs on the bare ground.

What is the center of the Arctic food web?

Answer: The Krill

Ice Worlds 14

How massive are the amounts of krill?

Answer: There are billions in a single swarm that stretches for miles.

Humpback Whales travel thousands of miles from their tropical breeding grounds during the summer to feed on Krill, how much do they eat?

Answer: Humpbacks eat hundreds of thousands in one mouthful. One Humpback Whale can consume two tons of krill in just twenty-four hours!