

Polar Nights, Polar Days (or Polar Year or North Pole/South Pole)

Roxie Munro

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January, Arctic. At the top of the world, the North Pole, it is dark 24 hours a day. The coming of daylight is many weeks away. It's a quiet cold world. An **Arctic fox** listens for movement under the snow. He's ready to pounce. Dense fur, several inches thick, insulates his whole body. Even the soles of his feet have fur, making it easier to walk on the ice without sliding. He has the warmest pelt of any animal in the Arctic. A sound... He jumps straight up in the air and plunges head first through the ice to get his prey - maybe a ringed seal pup coming up to breathe.

January, Antarctica. At the South Pole, it's sunny out day and night. The sun never sets. It's summer. A **wandering albatross** may fly by. No **blue whales** live up in the Arctic, but down here you'll find them. They're the largest animals on earth - as big as a jumbo jet plane. Bigger than the largest dinosaur. These streamlined aquatic mammals can be more than 100 feet long, and weigh 300 tons. Their heart is the size of a small car, and their tongue can weigh as much as two cars. A human could crawl through its wide blood vessels. Blue whales sing loudly to each other. They can be heard for a hundred miles.

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February, Arctic. There may be flickering Northern lights, but it's still dark. The giant **bowhead whale**, found only in Arctic waters, doesn't have a dorsal (top) fin, so it swims easily under ice. It's named after the shape of its huge skull, used for breaking through ice up to 2 feet thick, in order to breathe. It has the biggest mouth of any animal and the thickest blubber (almost 20 inches thick) so is well prepared to make the Arctic its home. The bowhead can live more than 200 years, longer than any other whale, or mammal, on Earth.

TK *February, Antarctica.* In 24-hour daylight, **fur seals** are caring for their pups, born in November and December. Unlike many seals, fur seals have ears...

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March, Arctic. As the months pass, glimmers of light can be seen along the horizon for a few hours a day. The quiet is broken by the beginnings of animal activity. **Harp seal** babies are born. **Narwhales** spent the winter in the polar ice pack. Soon they'll migrate south to inland bays or fjords. They're big - up to 18 feet long. Their single giant hollow tusk grows throughout their life, up to nine feet long. These whales aren't fighting. They could be communicating with each other by rubbing tusks. Medieval Europe's unicorn legends may have come from seeing narwhales.

TK March, Antarctica. Humpback whales are famous for their long songs - one melodious song may last for 20 minutes, and they can sing continuously for hours at a time.

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April, Arctic. Now, there is no sunset at the North Pole. It is daylight 24 hours a day after mid-April. The **polar bear** mom has left her den, along with her two cubs (2/3rds of the time polar bears have twins). She's heading for the sea ice to prey on seals for the summer months. The cubs stay with their mom for two or three years. Polar bear skin is actually black beneath thick fur. Their fur is translucent, and appears white because it reflects visible light. Polar bears can live to be 30 years old or more, but most only live for 20 or less. Their only predators are humans.

April, Antarctica. Daylight hours are getting fewer and fewer down by the South Pole. As each week passes, darkness comes earlier. **Adelies**, the most widespread penguin species and one of the smallest in size, now migrate south many miles to get to their breeding ground to mate later. Males build nests of pebbles and rocks on ice-free slopes and islands. They want to attract the ladies, so they compete to make the fanciest nest, sometimes even stealing attractive rocks from other nests. The couple usually has twins. Parents will take turns incubating the eggs - usually alternating every 12 days or so for about 33 days. Both mom and dad take care of the babies.

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May, Arctic. At the North Pole, the sun never sets - it's out all day and all night. The summer has come. In the tundra, mosses appear, colorful lichen grows on rocks, and small Nordic flowers bloom. It's full of action. Migrant birds like **ivory gulls**, **snow geese**, and **Arctic terns** arrive to mate, nest and rear their young. The terns leave in July or August to fly down to Antarctica where they stay until February or March. It's the longest migration of any animal - up to 25,000 miles roundtrip. **Atlantic puffins** breed in large colonies. They have short wings for swimming, but can also beat them really fast for flying - 400 times a minute.

May, Antarctica. It's dark 24 hours a day now at the South Pole, except for stars and sometimes the moon. There are fierce hurricane-force winds. Imagine the incredible cold - temperatures can get to -76 degrees F. There are six kinds of seals in Antarctica - Weddell, crabeater, leopard, fur, Ross and elephant. **Weddell seals** are the most southern (closest to the Pole). They use their teeth to make breathing holes in the ice, so they can live in the water all winter to avoid blizzards. They can stay underwater up to an hour. With no light under the ice, they use their sensitive whiskers to feel fish swimming by, and then pounce.

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June, Arctic. In the Land of the Midnight Sun **walruses** are socializing - they like to flop around and play with each other on ice floes. They can grow to 12 feet long. Walruses have two tusks - big oversize canine teeth up to three feet long that keep growing as they age, like rodents' teeth.

They use them as giant "ice picks" to pull their big body up onto the ice, and as a defense. A lumbering walrus looks heavy and awkward (it can weigh as much as a car), but it can kill a speedy polar bear with its tusks, and can swim for over 100 miles without stopping.

June, Antarctica. It's deep in the polar night. There's no sun out at all now. The only warm-blooded animals that stay in the Antarctic throughout the winter are big 4-foot tall **Emperor penguins**. While the moms go to the sea to feed after laying an egg, the fathers stay and incubate it for 65 days balanced on their blood-warmed feet and covered with their fat feathered tummy. They don't move for fear of dropping the egg on the ice, so they can't look for food to eat. They lose up to 60% of their body weight. Finally, when the moms come back to take over, the dads can travel to the faraway coast to look for their dinner.

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July, Arctic. It's bright and sunny in July at the North Pole. **Beluga whales** are hanging out together. Called the "canaries of the sea," they're noisy and vocal, making sounds like whistles, clicks, squeals, and chirps. Darkish at birth, by adulthood they've turned white, easier to hide from sea ice predators. They're small whales, with a prominent forehead. They don't really sleep. Half their brain is awake all the time to regulate breathing. The eye on the brain's awake side stays open; the other eye, like ours when we sleep, closes. They get about as much sleep as humans do - maybe eight hours a day.

July, Antarctica. It's winter - dark and cold at the South Pole. Unlike most other seal species, big aggressive spotted **leopard seals** are loners - they don't hang out in groups. They're known for making all sorts of sounds under water with calling patterns like birds. They have distinctive individual vocalizations, like personal songs. This 12-foot long mammal preys upon penguins and other seals, including **crabeaters**. They can swim really fast, and rapidly launch themselves out of the water to get dinner. They've even been known to chase a human!

P. 18-19

August, Arctic. It's still daylight at the top of the Earth. **Snowy owls** (and arctic wolves and polar bears) stay white all year, but some northern animals, like the **Arctic hare** and **lemmings**, are brown or gray during the summer and turn totally white in the winter, to blend in with the snow. Hares that live in the colder areas with short summers, closer to the North Pole, stay white all year around. Other animals that turn white in colder weather include certain weasels, some reindeer (called caribou in North America), ptarmigans (birds related to grouse, chickens, and pheasants), Siberian hamsters, and Arctic foxes.

August, Antarctica. This month has the coldest days of the year at the South Pole, and it's still pitch black 24 hours a day. Dramatic-looking black and white **orcas** aren't whales - they're dolphins, but are often called "killer whales" because they are so fierce. They have 40 or 50 sharp teeth for tearing at big prey, but they don't chew. A small seal or sea lion can be gulped

down in one big swallow. Orcas live in large groups, called pods, of up to 150 members, and hunt together in teams, like gray wolves and some humans do. A gang of orcas will chase prey, like a lone whale, and wear it out, or surround a seal on an ice floe.

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September, Arctic. The light is changing. Daylight hours noticeably decrease as each day passes. The Arctic night is coming. **Reindeer** (caribou) are on the move through the southern arctic and tundra ecosystems, in Alaska and Canada, Greenland, and Scandinavia, and throughout vast Russia. They are migrating south in huge herds of up to half a million. They have longest migrations of any land mammal - up to 3,000 miles a year. They are strong swimmers and fast runners with wide hooves that act like snowshoes in the winter. Their broad muzzle warms the air before it gets to their lungs so it's not so cold.

TK *September, Antarctica.*

Chinstrap penguins

P. 22-23

October, Arctic. Now it is totally dark again above the Arctic Circle. The long cold winter has arrived. There will be no light, no sun for many months. A **bearded seal's** main distinguishing feature is the long bristles from its muzzle. These whiskers are very sensitive and help the seal find food, acting like "feelers" on the shallow ocean floor to locate shrimp, crabs, clams, squid, and some fish. It's the largest Arctic seal. Females are bigger than males, growing to almost 9 feet long (2.7 meters). Males "sing" during the mating season to attract females and establish territory - a long (up to a minute) "trill," ending in kind of a moan.

TK *October, Antarctica.*

Sperm whale

P. 24-25

November, Arctic. A lone female **polar bear** is getting ready for winter. She is making a den, which usually faces south. The den may have several rooms or compartments, and stays up to 40 degrees warmer than the outside. Soon, the baby polar bears, often twins, will be born. The mom ate a lot of food over the summer. She had to gain 450 pounds to survive the winter holed up in her den and be able to nurse her babies. She and the cubs don't leave the den for months - not to urinate, poop, or eat. They wait for the light.

TK *November, Antarctica.*

snow petrel and arctic tern

P. 26-27

December, Arctic. At the North Pole up at the top of the Earth, the Arctic Ocean is frozen over with ice. It is a dark, silent, cold place. Birds have migrated south. There are a few male polar bears - they have layers of fur and fat to help keep warm, like walrus and seals. Arctic water is warmer than the air. Many seals stay under a sheet of ice and come up to breathe through holes in the ice. Most whales head for warmer waters. Some animals, like lemmings and Arctic squirrels, burrow into the snow or ground. Certain fish have a kind of an "antifreeze" protein in their blood. The creatures who stay during the cold winter have protections.

December, Antarctica. It's summer down south. The Antarctic has come alive. In the clear bright cold air there's a sharp crack. It's a glacier "calving" - breaking loose and falling into the sea, making an iceberg. Big knobby-headed **humpback whales** arrive and frolic. **Seal** babies are born. **Penguin** chicks are hatching all over. It's too dark and cold for humans most of the time, but now in the summer, like the migratory birds, whales, and other creatures, the Antarctic is visited by **human** travelers fascinated with its beauty, and by scientists eager to learn more about this unique ecosystem.