I'm not a bot

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The license may not give you all of the permissions necessary for your intended use. For example, other rights such as publicity, privacy, or moral rights may limit how you use the material. The tundra is home to extraordinary life that is able to withstand the harsh, below zero temperatures of the wintery biome. Animals that live in the tundra have unique adaptations that help them survive. Although there are not nearly as many animal species in the tundra biome as others, there is still an abundance of life that thrives in the frigid environment. In this article, we'll discuss the different animal species that are able to make do with the tundra conditions. The tundra is the coldest biome and experiences harsh winter conditions with temperatures that drop below zero. During the summer, tundra biomes turn into boggy wetlands from melted ice and snow. The tundra biome typically receives no more than 10 inches (25 cm) of precipitation per year, which means the tundra is also considered a desert. Tundra soil is permafrost, which is a layer of frozen ground underneath the land that prevents plant and tree growth. Permafrost is caused by long-term below freezing temperatures that do not rise long enough for the underlying ground to thaw. Low-lying grasses and plants are able to grow in the tundra due to adaptations that allow them to sprout quickly in the short summer months and provide a source of food for many animal species. There are three types of tundra biomes. Arctic tundraAlpine tundraAntarctic tundra The Arctic tundra is located above the Arctic Circle in the northernmost part of the Earth. There are eight countries that have land within the Arctic Circle, including: CanadaUnited StatesGreenlandIcelandNorwaySwedenFinlandRussia Temperatures in the Arctic tundra can reach as low as -30 degrees Fahrenheit (-34 degrees Celsius). The tundra has a short growing season that only lasts around two months. Animals such as the Arctic fox, polar bears, Arctic wolves, lemmings, and Arctic bumblebees live in the Arctic tundra. The alpine tundra is fairly different from the Arctic tundra as the alpine tundra biome is located atop mountains at very high altitudes where temperatures drop dramatically. Smaller trees and other vegetation are more abundant in this biome. Animal species, such as the Himalayan Tahr and Snow Leopard, have adapted to the below-freezing temperatures and rugged terrain of the mountains in the alpine tundra. The continent of Antarctica and sub-Antarctic islands located between Antarctica and the coasts of Australia and New Zealand make up the Antarctic tundra. Although it is inhospitable to humans, scientists have set up research stations to study the area and wildlife. Despite its uninhabitable characteristics, various species of penguins, seals, birds, whales, and fish live in the Antarctic biome. Much of Antarctic wildlife depends on sea life for food as there are only two plant species, Antarctic hair grass and Antarctic pearlwort, that inhabit the biome due to permanent ice and snow coverage. You may also like: The 39 Animals You Can See on the Amazon Rainforest: Complete with Images, Facts, and More! animals in the tundra by Outforia RELATED 40 Different Types of Birds Across The World: Photos + Facts The majestic Arctic Wolf resides in the Arctic region of North America and Greenland. Older Arctic wolves are all-white in color with younger wolves having a smokey-gray and white coloration. Arctic wolves tend to be smaller than gray wolves, but can weigh up to 175 pounds (79.4 kilograms). They tend to be solitary animals, but may also live in packs. Since Arctic wolves cannot bury dens due to permafrost, they find caves, rock outcroppings, or depressions in the ground to give birth. Two to three pups can be born in one litter between the months of May and June. The Arctic wolf hunts and eats mammals that vary widely in size. Much of their diet consists of Arctic hares, seals, lemmings, caribou, and sometimes they may even take down a moose. One of the most famous tundra animals is the Polar Bear. They inhabit the Arctic tundra in Alaska, Canada, Russia, and Greenland. Polar bears have numerous adaptations that help them stay warm and camouflage in their snow-white environments. Their fur is white and hollow, which helps reflect sunlight, but underneath they have black skin. Below their skin, they have a layer of fat that helps maintain their body heat. Their paws are wide and flat to help with walking on the snow and their toes have webbing which makes them an effective swimmer. Polar bears hunt for seals that are near the surface of waters and look for seal dens to find seal pups for food. Unlike other bears, polar bears do not hibernate and females will only use dens when giving birth to keep the cubs warm. According to the International Union for Conservation of Nature (IUCN) Their conservation status is vulnerable as of 2015. Their habitat is threatened by melting sea ice due to climate change on top of human activity such as oil and gas drilling. Unlike their other squirrel family members found frolicking amongst forests, the Arctic Ground Squirrel inhabits the alpine and Arctic tundra biomes and resides in burrows. They are found in Alaska, Canada, Siberia, and northern British Columbia. Arctic ground squirrels dig burrows a few feet underground where they hide out in the winter months with their stored food from summer foraging. A colony can consist of hundreds of these critters. They are herbivores and mainly feed on grasses, mushrooms, willow leaves, seeds, and berries found by meadows, lakeshores, and river and sandbank. The Leopard Seal lives in the Antarctic tundra. These seal species inhabit the pack-ice that is formed by freezing seawater and may also be found on sub-Antarctic islands. Their layer of fat, called blubber, helps them withstand the ice-cold Antarctic sea temperatures. Leopard seals have slender bodies and long, sharp teeth that help them eat fish, penguins, squid, and crustaceans. They hunt by diving into the water to catch their prey. They are an apex predator of the Antarctic. Female leopard seals go through a 9-month gestation period and generally give birth in November. Their conservation status is of least concern and their only known predator is the killer whale. As their name states, the Himalayan Tahr is native to the high mountain tops of the Himalayas in Northern India to Bhutan. This makes the Himalayan Tahr a creature of the alpine tundra biome. Their winter coat consists of darker brown to red-brown colors with a lighter underside and when temperatures rise in the summer they form a shorter coat that is light brown. Baby Himalayan tahrs, called kids, are born between mid-April and mid-July following the breeding season, which occurs between October and January. Kids are able to walk in just three hours from birth. Himalayan tahrs are herbivores and feed on various herbs and shrubs of the alpine land. They can live up to 14 years in the wild. Their main predator is the snow leopard. Himalayan tahrs are near threatened on the International Union for Conservation of Nature (IUCN) Red List due to urbanization, tourism, and hunting. The Canada Lynx is a threatened species that live in the Arctic tundra. They can be spotted in Alaska, Canada, and northern U.S. states. The fur that surrounds their ears helps keep them warm in cold, arctic temperatures and fur located under their paws allows them to walk in the snow without freezing. Canada lynx have excellent night vision and are able to spot and hunt prey in the dark. Their diet consists mainly of the Snowshoe Hare, but if availability is scarce they turn to eating smaller mammals and grouse. Their conservation status is currently of least concern according to the IUCN Red List, but their population is threatened by urbanization, hunting and trapping, and logging. Snow leopards inhabit the high altitude terrain of the Himalayas, Siberian Mountains, and the Tibetan Plateau. They have a beautiful dark-spotted coat that is light tan to cream in color with long bushy tails that help keep them warm. Their diet largely consists of other mammals, such as sheep, pikas, hares, and birds. Due to the rising temperatures from climate change, other predators that feed on the same prey are increasing competition amongst food sources. The snow leopard is listed as a vulnerable species as of 2016 and their population is decreasing due to mining, tourism, urbanization, poaching, and climate change. One of the sea creatures that travels throughout the Arctic is the Beluga Whale. They have a distinct look with their bulbous forehead and round white bodies. They are known as the "canary of the sea" as they make various sounds by clicking, chirping, and whistling. Beluga whales feed on various sea life including salmon, shrimp, and mollusks. These whale species inhabit the Arctic sea until winter approaches and ice begins to form, causing them to migrate south in large groups called pods. Known as Caribou in North America and reindeer in Asia and northern Europe, these creatures live in the tundra and taiga biome. They are nomadic and travel long distances in herds. They have footpads that change with the seasons to accommodate for the soft, boggy grounds of tundra summers. The pads harden to help them trek through the snow and ice during winter. Caribou are herbivores and feed mainly on grasses, willows, mushrooms, sedges, and lichens. Lemmings are tiny rodents of the Arctic tundra. Various subspecies inhabit other biomes such as temperate forests, but the Norway Lemming, Lemmus lemmus, resides in the tundra and alpine region of Fennoscandia. This region includes Finland, the Scandinavian Peninsula, and a portion of Russia. Although small in nature, they have a mighty impact on their ecosystem. Lemmings are at the lower end of the food chain and give predators, such as Arctic foxes, snowy owls, and Arctic wolves, a source of food year-round since Lemmings do not hibernate. Their fur color changes with the seasons to help them hide from predators. In the summer, their fur is brown and in the winter it turns white. Lemmings live off of various seeds, plants, and berries throughout the year and tend to hide out in tunnels to keep warm once the cold season arrives. Arctic hares live in the Arctic tundra of northern Canada and can also be found on islands near the coast of Greenland. These speedy hares use their strong back legs to propel them up to 30 mph (48.2 kph) which helps them make great escapes from predators. They have several adaptations to defend themselves from predators and conquer tundra conditions. Their front teeth differ from other hares as they are longer and not as curved so they can uproot plants in tight rock crevices. arctic hare shedding its winter coat Their winter coat is white with black coloration on the tips of their ears and during the summer their coat turns grayish-brown. Arctic hares also have long claws that help them dig in snow. The Arctic Hare diet consists of berries, sedges, willow roots and twigs, and mosses. The Walrus has two subspecies, the Atlantic Walrus (Odobenus rosmarus rosmarus) and the Pacific Walrus (Odobenus rosmarus divergens). Both subspecies inhabit the Arctic and sub-Arctic tundra across the Northern Hemisphere. They lounge on sea ice and stick close to the coast. They use their long tusks for many things including helping themselves up onto sea ice and opening breathing holes in the ice. Walruses have a lot of blubber to keep them warm when diving into frigid ice waters. Their conservation status is vulnerable. Warming temperatures due to climate change is threatening their sea ice habitats. Last on the list for mammals in the tundra is the stealthy Arctic Fox. They live in the Arctic tundra all across the Northern Hemisphere stretching from Alaska and Canada to the coasts of Greenland and Russia. Arctic foxes mainly inhabit the grasslands of the Arctic tundra and feed on rodents, fish, birds, and sometimes vegetation if preferred food is scarce. They are also scavengers and will eat leftover meals from other predators. They have a white fur coat with gray coloration to blend in with their icy surroundings. They go through a molting process and shed their thick winter coat for the summer. Baby Arctic foxes are born with dark brown fur that lightens as they get older. You may also like: Check out the 23 Amazing Different Types of Foxes and Where You Can Find Them: Complete with Images, Facts, and More! RELATED 31+ Florida Turtles: ID Guide with Facts, Chart and Photos The elegant Emperor Penguin inhabits the Antarctic tundra. They are near threatened and their and their population is declining due to climate change melting the sea ice they travel on. Emperor penguins are the tallest living penguin species and can stand at almost 4 ft (1.2 m) tall. They have large white breasts, golden yellow coloration on the sides of their head, and a black face, flippers, and back. Unlike other birds, emperor penguins have special feathers that provide insulation. They also limit their activity in the winter and store body fat to keep them warm. These penguins stick together in colonies and huddle together to keep warm, especially males when incubating eggs during the winter. Snow petrels live in Antarctica and travel amongst the sub-Antarctic islands. They mainly reside close to the sea along cliffs where they build pebble-lined nests. Females lay only one egg at a time and tend to the baby chick for almost two months until it leaves the nest. Much of their diet consists of sea life such as fish, small squid, mollusks, euphausiids, and sometimes leftover carcasses of seals and penguins. Next on the list is the Snowy Owl of the Arctic tundra. Although they turn all white with age, snowy owls are born dark grayish-brown and form a speckled-gray or brown and white coloration later on. Snowy owls used to be of least concern, but due to their declining population threatened by human activity, they are now vulnerable as of 2021. Like other owl species, these birds have great eyesight and wait until they spot their prey before they snatch it with their talons. Snowy owls' favorite snack is the Lemming, but they also eat rabbits, fish, and other birds and rodents. Snowy owls can brave the tundra year-round, but may migrate to marshes and fields in other regions. Skuas, also called Arctic Jaegers, are highly aggressive and predatory seabirds that live in the Arctic tundra of the Northern Hemisphere. They can also be found in the Southern Hemisphere where they migrate for the winter. Other birds fall victim to skuas as they are kleptoparasitic, meaning they like to steal food out of the beaks and talons of birds carrying food back to their nests. They do so by attacking birds in flight until the food is dropped. Arctic jaegers hardly ever visit land except for breeding and spend most of their life out at sea. You may also like: Learn More About the 22 Amazing Hawk Species and Where to Spot Them: Complete with Images, Facts, and More! RELATED How Long Does Dry Ice Last? Essential Tips & Tricks! Bumblebees are found all across the globe, even in the tundra. The Arctic Bumblebee, or Polar Bumblebee, inhabits the Arctic tundra of North America. Arctic bumblebees are able to keep warm by shivering to generate heat. They also manage to brave the cold by having thick fur and use flowers to bask in the sunlight on warmer days. As soon as spring comes in May, the queen bees begin buzzing around for nectar from freshly bloomed flowers. Worker bees don't appear until a month later. Arctic bumblebees rely on various berries, flowers, and shrubs for food including bog blueberries, Arctic willows, Arctic poppies, and alpine bearberries. A relative to the Woollybear caterpillar commonly spotted in the United States, the Arctic Woollybear Moth lives within the Arctic Circle in Canada and Greenland. These types of bees love to snack on the Arctic Willow, but spend much of their lives in a frozen state during the long winter season. Much like some frogs that live in cold northern regions, they produce an antifreeze from sugars that allow them to freeze and thaw once temperatures rise. Once they live out their life as a caterpillar, they wrap themselves in a cocoon and form into a gray moth by springtime. A large portion of their life is spent as a caterpillar because once they transform into a moth, they lack a mouth and their sole purpose is to reproduce before they die. Even pesky mosquitoes can be found in the tundra. Although they may be irritating to humans, mosquitos play an important role in the food chain for tundra birds. As the tundra warms up in the summer months, wetlands form and attract Arctic mosquitos. They feed on the abundant organic matter that forms in the bog-like conditions. These insects are a great source of food for birds and other larger insects. You may also like: How Long Do Squirrels Live? Longer Than You'd Think RELATED 15 Different Types of Terrain You Should Know About: Complete Guide The habitats of many tundra species are negatively affected by climate change. Some species may struggle to find food sources due to increased competition. Sea ice has been melting rapidly at 13% per decade. Species that depend on sea ice as their habitat are significantly affected by this. Another hefty issue of climate change is that rising temperatures melt the top layers of permafrost. Melting permafrost allows for plant matter to decompose and as a result, releases greenhouse gasses into the atmosphere. Beforehand, permafrost helped to trap greenhouse gasses since plant material could not decompose in the frozen soil. Antarctic Tundra Factors – Life is difficult in the tundra, the coldest type of climate on Earth. Brief summers, long winters, brutal winds, little precipitation and bone-chilling temperatures limit the plants and animals that can survive in the tundra, but those that do are ingeniously adapted to the harsh conditions. Each tundra form—Arctic, Antarctic and Alpine—is a unique ecosystem composed of biotic and abiotic factors, eking out existence in places few humans could endure. Types of Tundra Location defines the three types of tundra. Arctic tundra is found in the Northern Hemisphere across Alaska, northern Canada, Greenland, Scandinavia and Siberia. Antarctic tundra is confined to the Antarctic peninsula, the large finger of land jutting from Antarctica toward Chile, which features the continent's mildest climate. Alpine tundra is seen in mountain ranges above 11,000–11,500 feet; peaks in North America's Rocky Mountains, the Alps in Europe and the Andes in South America are a few examples of Alpine tundra.What are the biotic and abiotic factors in the tundra? – What are the biotic and abiotic factors in the tundra? What biotic things live in the tundra? What are 3 abiotic factors in a tundra? What are the biotic and abiotic factors of Arctic tundra? How are abiotic factors and biotic factors related? What kind of biome does the tundra have? Which is an example of an alpine tundra?Video advice: Biotic v. Abiotic FactorsBiotic v. Abiotic FactorsWhat are 5 abiotic factors in the tundra?The permanently frozen ground is called permafrost. Abiotic factors are the non-living parts of an ecosystem, and these include temperature, precipitation, wind, sunlight, and weather.Abiotic factors would be the non-living areas of an atmosphere. Included in this are items like sunlight, temperature, wind, water, soil not to mention occurring occasions for example storms, fires and volcanic eruptions. Biotic factors would be the living areas of an atmosphere, for example plants, creatures and micro-microorganisms.What are 5 abiotic factors in the tundra? What are 3 abiotic factors in the tundra? What are examples of nonliving factors? What are abiotic factors in the Arctic? What are 10 abiotic factors in a tundra biome? What are 10 biotic factors in the tundra? Is soil pH abiotic or biotic? What are the examples of abiotic? What is another name for abiotic? Which is not abiotic component? Is wind a abiotic factor? Is wind speed biotic or abiotic? Is wind a biotic or abiotic factor? Is Rocks biotic or abiotic? Why a rock is abiotic?Biotic and Abiotic Factors of an Ecosystem Flashcards – Start studying Biotic and Abiotic Factors of an Ecosystem. Learn vocabulary, terms, and more with flashcards, games, and other study tools.Recommended textbook explanationsTexas Science Fusion: Grade 7562 explanationsBiologyKenneth R. Miller, Levine2,591 explanationsNelson Science Perspectives 10Christy C. Hayhoe, Doug Hayhoe, Jeff Major, Maurice DiGiuseppe1,359 explanationsBiology The Dynamics of LifeBiggs, Gregg, Hagins778 explanations.what are some abiotic factors in the tundra – Tundra is characterized by very cold temperatures and low rainfall, creating a very cold desert. The permanently frozen ground is called permafrost. Abiotic.Examples of abiotic factors are water, air, soil, sunlight, and minerals. Biotic factors are living or once-living organisms in the ecosystem. These are obtained from the biosphere and are capable of reproduction. Examples of biotic factors are animals, birds, plants, fungi, and other similar organisms.What are 3 abiotic factors in the tundra?Biotic factors, or elements that are living, include fungi, mosses, shrubs, insects, fish, birds and mammals. Abiotic factors, or nonliving parts of the system, include temperature, wind, rain, snow, sunlight, soil, rocks and permafrost. The biotic factors depend on the abiotic factors and each other for survival.Aimane VanderstegenCierra ZingrafIlonka MrudayaAssa PresenciaFlorene MijancasMadani JohanssonPrimiano RibeiraPhilipp IbaetaAuixa SarachoWenli EscaroupaRuthe BalenciagaAdaline ClementzAbiotic factors, or nonliving parts of the system, include temperature, wind, rain, snow, sunlight, soil, rocks and permafrost. Some abiotic factors of the tundra are: 1. ) Permafrost. Permafrost. 2. ) Strong and Cold Winds. Wind. 3. ) A Small Amount of Precipitation. Rain. 4. ) A Little Amount of Sunlight. A Small Amount of Sunlight. 5. ) Pools of Water on the Surface in the Summer. Pools of Water in the Tundra. Additionally, what are the 5 abiotic factors? Social factors include how the land is being used and water resources in the area. Five common abiotic factors are atmosphere, chemical elements, sunlight/temperature, wind and water. what are 10 biotic factors in the tundra? Biotic Factors: Low Shrubs (sedges, reindeer mosses, liverworts, and grasses), Crustose and Foliose Lichen, Herbivores (lemmings, voles, caribou), Carnivores (arctic foxes, wolves, polar bears), Migratory Birds (ravens, snow buntings, falcons, loons), Insects (mosquitoes, flies, moths, grasshoppers), Fish (cod,What is the most important abiotic factor that limits distribution of the tundra biome?Video advice: Biotic and Abiotic Factors – p67Arctic Foxes & Their Abiotic NeedsThe several adaptations of arctic foxes (Vulpes lagopus) have allowed them to play an integral role in the tundra biome. These small predators rely heavily on both abiotic and biotic factors in their harsh environment; changes to either would greatly impact the arctic fox's behavior and, ...Abiotic Vs. Biotic Factors – The number of adaptations of arctic foxes (Vulpes lagopus) have permitted these to play an important role within the tundra biome. These small predators depend heavily on abiotic and biotic factors within their harsh atmosphere changes either to would greatly change up the arctic fox's behavior and, possibly, the species' survival. Abiotic Versus. Biotic FactorsAn ecosystem is created inside a biome in line with the relationship from the abiotic and biotic factors inside the area. Abiotic factors are non-living factors within an atmosphere. Light, temperature, water and nutrients are abiotic factors that greatly affect each ecosystem. Biotic factors, however, would be the living factors within an ecosystem: creatures and plants. With no abiotic factors like the soil and sun, the plants and creatures would cease to reside. Camouflaged FoxesArctic foxes depend around the abiotic factors of the atmosphere to camouflage themselves in various seasons. Throughout the winter, the tundra is included with ice and snow and also the wind whips through at high speeds.Alpine Tundra Factors – Life is difficult in the tundra, the coldest type of climate on Earth. Brief summers, long winters, brutal winds, little precipitation and bone-chilling temperatures limit the plants and animals that can survive in the tundra, but those that do are ingeniously adapted to the harsh conditions. Each tundra form—Arctic, Antarctic and Alpine—is a unique ecosystem composed of biotic and abiotic factors, eking out existence in places few humans could endure. Types of Tundra Location defines the three types of tundra. Arctic tundra is found in the Northern Hemisphere across Alaska, northern Canada, Greenland, Scandinavia and Siberia. Antarctic tundra is confined to the Antarctic peninsula, the large finger of land jutting from Antarctica toward Chile, which features the continent's mildest climate. Alpine tundra is seen in mountain ranges above 11,000–11,500 feet; peaks in North America's Rocky Mountains, the Alps in Europe and the Andes in South America are a few examples of Alpine tundra. Abiotic and Biotic Factors The tundra, like all ecosystems, features biotic and abiotic factors in a complex web of existence.What are the biotic and abiotic factors of arctic class 12 biology CBSEWhat are the biotic and abiotic factors of arctic tundra.Hint: Tundra is characterised by very frigid temperatures and minimal precipitation, similar to what desert. Permafrost is the word for the frozen earth beneath the top of tundra. Since the frozen earth causes it to be hard for plants to develop, the plant life that thrives there has to be exceedingly resilientComplete answer:You will find both biotic and abiotic factors that influence an ecosystem. All living entities within an ecosystem, including plants, creatures, fungi, protists, and bacteria, are known as biotic factors. Temperature, pressure, wind, sunlight, and weather systems are types of abiotic variables, that are non-living aspects of an ecosystem. Living species rely on one another as well as on the abiotic aspects of the atmosphere, and so the biotic and abiotic forces within an ecosystem interact constantly. Climate and Weather within the Arctic Tundra-Although climate and weather are carefully related, they're distinct concepts. The elements of the location refers back to the current atmospheric conditions on the specific day.Abiotic Factors In The Arctic Tundra BiomeThe Arctic Tundra is the biome where the Polar bear, Ursus maritimus, or the sea bear live. The climate over there is in the Arctic and is Earth's coldest, where it is treeless and covered with piles of snow and ice for the whole year until summer when it brings wildflowers. On the top of the mountain it is colder, windy, and rainfall is scant.The term Tundra originates from the Finnish word Tunturia meaning treeless plain. There is no plant life due to the extreme climate conditions. It can be found near its northern border pole and in addition it covers a fifth from the earth's surface. Whether it's freezing not plant life can grow due to the ice caps not melting, whether it will get just a little warmer than maybe roots can grow. The arctic tundra has two seasons winter and summer time, however the sun only gets hotter the tundra to three levels celsius to 12 levels celsius. Once the sun cannot rise temperatures drop to cold conditions around -70 levels celsius as the climate is -28 levels celsius. The rain levels within the tundra are six to ten inches annually since most from it falls as snow rather. It's essentially a really cold desert. ...show more content...Abiotic factors from the arctic tundra are strong winds, little precipitation. Extremely short summer time days, rather you will find very lengthy and cold winters. There's poor soil along with a permafrost that is a layer of permanently frozen subsoil.Video advice: Biology 01-2 Ecosystems – Biotic and Abiotic FactorsThis video covers the biotic and abiotic factors that influence most ecosystems, and introduces key vocabulary relevant to ecology.[FAQ] Biotic Factors: Low Shrubs (sedges, reindeer mosses, liverworts, and grasses), Crustose and Foliose Lichen, Herbivores (lemmings, voles, caribou), Carnivores (arctic foxes, wolves, polar bears), Migratory Birds (ravens, snow buntings, falcons, loons), Insects (mosquitoes, flies, moths, grasshoppers), Fish (cod, ... Biotic: Low shrubs such as grass and sedges. Mosses such as lichen. Carnivorous organisms - arctic foxes/ wolves/ polar bears. Abiotic factors, or nonliving parts of the system, include:temperature.wind.rain.snow.sunlight.soil.rocks.permafrost. The most important abiotic factors for plants are light, carbon dioxide, water, temperature, nutrients, and salinity. Biotic factors are living things within an ecosystem ; such as plants, animals, and bacteria, while abiotic are non-living components; such as water, soil and atmosphere. The tundra is a biome that does not have many trees because of short growing seasons and low temperatures. The three types of tundra on the Earth are the Arctic tundra, alpine tundra and Antarctic tundra. There are a variety of biotic factors that are characteristic of each type of tundra. Various bacteria and fungi are important biotic factors that are common in all tundra biomes. Polar bears are one of the most recognizable animals on the Arctic tundra. Other animals include the Arctic fox, the Arctic wolf, reindeer, musk ox, seals, the Arctic hare, the snowy owl and lemmings that live underneath the snow. Peat soils, cotton grass, rushes and mosses like Sphagnum are typical of this area as are willow trees and sunflowers. There are some species of Arctic insects like black flies and mosquitos as well as spiders that have evolved and adapted to the freezing conditions. The image above shows a mother polar bear Ursus maritimus with her offspring. Polar bears live in the Arctic tundra within the Arctic Circle. Resident mammals in the alpine tundra include mountain sheep, mountain goats, ibex, chamois, wildcats, marmots, ground squirrels, jumping mice, pikas, rabbits and birds like the snow goose, the ptarmigan and owls. The alpine tundra has few, if any, trees because the altitude and soils do not support their growth. The few spruce, fir, pine and willow that live in the transitional area (about 330 feet higher than the lower forest areas) are stunted in their growth and scattered around. Other plants in the alpine tundra are cotton grass, lousewort and various shrubs. Alpine insects include black flies and mosquitos. The image above shows the alpine tundra area of Glarus, Switzerland. Seals are one of the few mammals that live on the Antarctic tundra due to the physical isolation of the area that has occurred over millions of years. Adélie and Emperor penguins and seabirds like petrels, terns and gulls populate the area. Survival is challenging for plants on the Antarctic tundra, but there are close to 400 species of lichens, 25 liverworts, 100 mosses, about 700 species of algae and two species of flowering plants (Antarctic hair grass and Antarctic pearlwort) that have adapted to live in the rockier areas of the biome. The Antarctic midge is the only insect that lives on the continent. The image above shows Emperor Penguins Aptenodytes forsteri on the Antarctic tundra. References Tundra. (n.d.). In Wikipedia. Retrieved July 11, 2017 from Tundra. (2017, July 11). In Encyclopedia Britannica online. Retrieved from Life is difficult in the tundra, the coldest type of climate on Earth. Brief summers, long winters, brutal winds, little precipitation and bone-chilling temperatures limit the plants and animals that can survive in the tundra, but those that do are ingeniously adapted to the harsh conditions. Each tundra form—Arctic, Antarctic and Alpine—is a unique ecosystem composed of biotic and abiotic factors, eking out existence in places few humans could endure. Types of Tundra Location defines the three types of tundra. Arctic tundra is found in the Northern Hemisphere across Alaska, northern Canada, Greenland, Scandinavia and Siberia. Antarctic tundra is confined to the Antarctic peninsula, the large finger of land jutting from Antarctica toward Chile, which features the continent's mildest climate. Alpine tundra is seen in mountain ranges above 11,000–11,500 feet; peaks in North America's Rocky Mountains, the Alps in Europe and the Andes in South America are a few examples of Alpine tundra. Abiotic and Biotic Factors The tundra, like all ecosystems, features biotic and abiotic factors in a complex web of existence. Biotic factors, or elements that are living, include: • fungi• mosses• shrubs• insects• fish• birds• mammals Abiotic factors, or nonliving parts of the system, include: • temperature• wind• rain• snow• sunlight• soil• rocks• permafrost The biotic factors depend on the abiotic factors and each other for survival. Changes in the abiotic factors can drastically affect the health of the living organisms. Arctic Tundra Factors Permafrost is the most significant abiotic factor in the Arctic tundra. In the summer, the top layer of this permanent underground ice sheet melts, creating streams and rivers that nourish biotic factors such as salmon and Arctic char. The permafrost prevents larger plants and trees from gaining a foothold, so lichens, mosses, sedges and willow shrubs grow close to the ground. These plants in turn provide cover for nesting snow geese, red-necked loons and ptarmigan, as well as food for Dall sheep, caribou and musk oxen. The top Arctic predators, wolves and brown bears, prey on these herbivores. See also What Are the Names of the Four Innermost Planets?Alpine Tundra Factors Alpine tundra lacks permafrost—strong winds, thin air and scarce precipitation are the primary abiotic factors that affect life here. Lichens, moss-like cushion plants, grasses, willow shrubs and wildflowers with long taproots for finding nutrients in poor soil characterize the landscape above the treeline. Species of mouse, weasel and rabbit burrow among rocks and roots. Herbivores such as elk and bighorn sheep in North America, chamois in the Alps and alpacas in the Andes have adapted to the limited diet of grass and woody plants. Antarctic Tundra Factors The Antarctic tundra, a variation of the Arctic tundra, features similar abiotic factors as the Arctic tundra yet supports far fewer biotic factors. As Antarctica's only region without permanent ice cover, the Antarctic peninsula reveals an arid, rocky landscape in its short summer that is capable of nurturing only two species of flowering plants: Antarctic hair grass and Antarctic pearlwort. Lichens, mosses and algae form the bulk of the flora. Although Antarctica has no native land animals, marine animals such as penguins, seals and seabirds form gigantic, seasonal colonies on the coastal tundra. Discover the different types of seal with this complete list of seal species, with pictures and facts.Read more The brown fur seal, also known as the Afro-Australian Fur Seal, is a marine mammal found along the coasts of southern Africa and Australia. It is the largest and most robust fur seal species.Brown fur seals have a thick layer of brown fur and a strong, streamlined body adapted for swimming. They feed primarily on fish, squid, and crustaceans, diving deep to hunt.These marine mammals live in large colonies and are known for their loud, social behavior. Despite past threats from hunting, their populations have largely recovered due to protection.Read on to discover more about the brown fur seal…Read more Discover incredible facts about the universe, stars, galaxies and the Solar System.The music video below introduces some key points that we explore further in the article! Read more Christmas animals – a list of animals associated with Christmas, with pictures and facts.Download the FREE printable Christmas Animals Quiz to test your knowledge!Read more On this page is a list of common squirrel species found in North America.Read more Wild horses are members of the horse family Equidae that have not been domesticated. The term is also used to describe feral horses – animals that live in the wild, but which are descended from domestic horses.On this page is a list of all living wild horses, including asses and zebras. The list also includes domestic species such as the domestic horse and donkey.Read more A list of the world's scariest animals! On this page, you'll find pictures and information on creepy creatures from around the world, including mammals that drink blood, reptiles with venomous saliva, birds with terrifying calls, lizards that squirt blood from their eyes, and arachnids with freakishly large mouthparts!Read more A list of ten halloween animals with fascinating facts on each. Scroll down to view the animals, or watch the video below! Read more The Galápagos Islands are located in the Pacific Ocean, about 600 miles (970 kilometers) west of mainland Ecuador.Due to their remote location, the Galapagos Islands are home to a large number of endemic animals; animals that are found nowhere else on Earth.During his visit to the Galápagos Islands in 1835, naturalist Charles Darwin studied the islands' unique animals, which provided inspiration for his groundbreaking theory of natural selection.Today, the islands' wildlife attracts a large number of visitors. Income from ecotourism is an important part of the local economy.On this page, we explore some of the Galápagos Islands' most iconic species. All of the animals featured on this page are endemic to the islands unless specified.Watch the video below to see some of the amazing endemic species of the Galápagos Islands: Read more List of cool dinosaurs with pictures and facts. Discover the coolest dinosaurs of the Mesozoic Era!Watch the video below to meet the world's coolest dinosaurs! Read more Many different types of dinosaurs have been discovered, but only a relatively small number of these have become household names. On this page, we provide a list of the most popular dinosaurs.Watch the video below to find out about some of the dinosaurs on the list: Read more Tundra biomes are one of the most inhospitable climates on Earth. These areas of our planet have very short summer, and exceptionally long winters. Cold winds and below freezing temperatures are very common occurrences here. Some of the biotic and abiotic factors found in the tundra are found only in these areas of the planet. While the majority of the tundra areas are located near the north pole, there are also tundra biomes in the mountains and highlands of other regions all around our planet. About 3% of the land mass on Earth is considered a tundra. Areas that classify as a tundra exist mostly north of the 70°N latitude line. As you might imagine based on their location, life in the tundra can be quite cold. You are right, in the tundra you will find a range in temperature throughout the year, but can have average monthly temperatures of -27° Celsius (-17° Fahrenheit)! The summer months however, are less brutal, toping out at average monthly temperatures of 10°-14° Celsius (50°-58° Fahrenheit). Don't plan on sun bathing in the tundra, bring the warm winter gear. One unique factors of tundra biomes is the low precipitation rate. Despite being very cold, they do not get a lot of rain or snow. Most tundra areas will see less than 300mm (12 inches) of precipitation each year. To give you some perspective, New York gets about 73 inches of precipitation in a year, and Los Angeles gets about 22 inches per year. This can present challenges for life in the tundra, as they have to work hard for their water source. In a tundra biome you will often find large areas of exposed rock, or bare ground. Small plants, mosses, lichens, and shrubs will spot the landscape. A distinguishing characteristic of a tundra is that the soil is permanently frozen, also know as permafrost. This makes it difficult for large vegetation to take root and survive. Tundra ecosystems will have very few tees and larger plants, as only plants with shallow root structures can survive in the harsh conditions. Despite the harsh conditions however there are many species that thrive in the tundra. Any living thing, be it plant, animal, fungi, bacteria, or protist is considered a BIOTIC FACTOR. Biotic factors are simply living things that shape their environment (as all living things do). The tundra is going to have greatly different biotic factors than a rainforest or desert. While a cactus and woodpecker may greatly shape the desert biome, in the tundra we see very different forms of life. Photo by Chait Goli on Pexels.com You only want ten? Well don't worry there are plenty to be had. Check out the list below. You can see that there is a wide variety of life that live in the tundra biomes around the world. Biotic factors are parts of a biome that are alive. This will include any living plants, animals, fungi, and even the little tiny bacteria that we forget are there. In every ecosystem there are producers, consumers and decomposers that all play vital roles. If they don't stay in balance with one another, the results could be disastrous. This is one of the many reasons that humans must tread carefully when entering an ecosystem. Us humans have a habit of throwing things out of wack. They must n the tundra biomes around the world, there are many living things despite its harsh climate. Take a look below at the wide array of life you can find. Low ShrubsMossesCushion PlantsLiverwortsAlgaeLichenCottongrassCranberry Plants Arctic HarePolar BearGrey WolfArctic FoxCaribouYakMountain GoatSnowy Owl ReindeerGround SquirrelsMarmotLemmingKea ParrotPikaMosquito Black Fly Photo by Julia Barrantes on Pexels.com Abiotic factors are the pieces and parts of an ecosystem that are not living. Think about all the other stuff besides the living things. This will include traits of the area, such a temperature and humidity levels, but also objects that are not alive. Here are some examples of abiotic factor in tundra ecosystems. Temperature PrecipitationWind Do you ever think about how the types of rocks might change a biome? Rocks have different types of minerals and weather differently depending on what they are made of and how they are formed. The traits of the ground will determine what type of plants can take root and what type of animals will be able to thrive in that area. As you can see, abiotic factors can make big changes in an environment. Now that you know about these abiotic factors. Think about how they effect the biotic factors in the tundra ecosystem. The combination of the biotic an abiotic factors of any biome, work together to make up its characteristics. For example, you would never find a polar bear in the desert, and you most certainly will not find a prickly pear cactus in the tundra. Photo by Greg Garnhart on UnSplash.com I hope you can see that there is a lot to learn about each of the the world's biomes, but the tundra is one of the most unique. While not often a place with many humans around, the tundra can support a unique array of life, including plants and animals. Learning about the biomes of the world can be a lot of fun. As you can see, each biome has both biotic (living) and some abiotic (non-living) factors that make up its unique characteristics. Let me try to convince you that the products I'm offering are worth your hard earned cash. (Or you can always apply for reimbursement through your school.) I work hard so you don't have to. Finding useful resources for your lesson is a lot of work. Making them is even more work. Whenever I can, I always trade money for time. A couple dollars to reimburse another classroom teacher for their efforts in creating valuable resources is seen as a fair trade according to thousands of positive reviews. My resources are high quality. Most of my resources come in both PDF and digital format to support you in face to face, virtual, or hybrid learning models. Having multiple representations is always useful for differentiation. As always, my resources also include an easy to use answer key and high quality image, graphics, and explanations where needed. All of my resources are guaranteed. That means that if you're unhappy with your purchase, I will fully refund you. Please reach out if you need anything. My email is listed on the last page of every resource. All you have to do is send me a quick note about your experience and I can resolve the issue or refund you.. Continue the discussion in my Facebook Group for Middle School Science Teachers or my Classroom Management Facebook Group. Or get free science resources delivered straight to your inbox by signing up for my newsletter! I promise to never be spammy. I'm just a regular teacher who likes helping teachers teach and students learn. A frozen land in which few trees grow and whose animal inhabitants must have special adaptations in order to survive. Welcome to the tundra, the world's coldest, most unforgiving biome…Page IndexWhat is a biome? What are the different types of biomes? Find out on this page: BiomesWhat Is The Tundra Biome?The tundra biome is a region in which freezing temperatures and scarce rainfall make the growth of veg

nutrients to the soil. Here are 7 abiotic factors of tundra ecosystem: Extreme cold temperatures define the tundra, influencing the distribution and behavior of organisms. Limited rainfall and snowfall restrict the availability of water, impacting the water-dependent organisms. Rocky terrain is prevalent in the tundra, influencing habitat availability and providing shelter for organisms. The tundra experiences long winters with limited sunlight and short summers with extended daylight, influencing the growth and activity patterns of plants and animals. The tundra soil is characterized by a layer of permanently frozen ground, affecting water drainage and nutrient availability. The permanently frozen ground of permafrost impacts plant roots, limits water infiltration, and influences ecosystem processes. Strong winds are common in the tundra, affecting plant growth and influencing the movement of animals. Multiple ecosystems and hundreds of plant and animal species exist in the tundra biome. It encompasses both arctic and alpine tundra. The arctic tundra resembles a snowy desert surrounding the North Pole, while the alpine tundra is located in the cold high altitudes of tall mountain ranges. The species that live in these regions are limited to those that can survive, given the harsh abiotic, or non-living, factors involved. Temperature is a significant abiotic factor in the tundra region, and it severely limits the types of species that can live there. Temperatures during the arctic winter drop to averages of minus 30 degrees Fahrenheit and only reach an average of plus 50 degrees in the summer. The warmer temperatures in the summer months are the only reason that any life can survive in the arctic. The alpine tundra is also cold, but not nearly as cold as the arctic. Temperatures at night are almost always below freezing, but daytime temperatures still permit plant growth for about half the year. However, the high altitude limits the species of plants that can grow in this region, and the species that live here are similar to those living in the arctic. Both alpine and arctic tundra are extremely windy biomes and have small amounts of rainfall. The high winds make it difficult for any large plant species to survive, and only shrubby, small vegetation inhabits these regions. The average rainfall in the arctic tundra is only six to 10 inches, and this includes the melting snow in the summer months. Despite the low rainfall, the arctic has high humidity, because water is slow to evaporate. The average rainfall varies in the alpine regions. It's limited by altitude and wind; the windier sides of mountains have higher rainfall. The precipitation level in both regions is similar enough to classify them as part of the same biome. Another abiotic factor in both the alpine and arctic tundra is permafrost, a layer of subsoil that has been frozen for least two years. The depth of the permafrost varies throughout the seasons and regions, but it is ever-present in almost all areas of the tundra. If the permafrost melts, it alters the temperature and topography of a region, which threatens the existence of many species living in the tundra. On top of the permafrost is an active layer of soil that thaws in the summer months. The thawing of this small layer allows vegetation to grow and enables the chemical processes necessary for sustaining life to occur. Kang, Starr. "Tundra Biomes & Abiotic Factors" sciencing.com, . 22 November 2019. APA Kang, Starr. (2019, November 22). Tundra Biomes & Abiotic Factors. sciencing.com. Retrieved from Chicago Kang, Starr. Tundra Biomes & Abiotic Factors last modified March 24, 2022. Biome where plant growth is hindered by frigid temperatures For other uses, see Tundra (disambiguation). TundraTundra in Greenland extent of the Arctic tundraGeographyArea11,563,300[1] km2 (4,464,600 sq mi)Climate typeET In physical geography, a tundra (/ˈtʌndrə, ˈtʊn-/) is a type of biome where tree growth is hindered by frigid temperatures and short growing seasons. There are three regions and associated types of tundra: Arctic,[2] Alpine,[2] and Antarctic.[3] Tundra vegetation is composed of dwarf shrubs, sedges, grasses, mosses, and lichens. Scattered trees grow in some tundra regions. The ecotone (or ecological boundary region) between the tundra and the forest is known as the tree line or timberline. The tundra soil is rich in nitrogen and phosphorus.[2] The soil also contains large amounts of biomass and decomposed biomass that has been stored as methane and carbon dioxide in the permafrost, making the tundra soil a carbon sink. As global warming heats the ecosystem and causes soil thawing, the permafrost carbon cycle accelerates and releases much of these soil-contained greenhouse gases into the atmosphere, creating a feedback cycle that contributes to global warming. The term is a Russian word adapted from the Sámi languages,[4] specifically from the Kildin Sámi word tündâr, meaning "treeless plain". See also: Arctic vegetation Arctic tundra occurs in the far Northern Hemisphere, north of the taiga belt. The word "tundra" usually refers only to the areas where the subsoil is permafrost, or permanently frozen soil. (It may also refer to the treeless plain in general so that northern Sápmi would be included.) Permafrost tundra includes vast areas of northern Russia and Canada.[2] The polar tundra is home to several peoples who are mostly nomadic reindeer herders, such as the Nganasan and Nenets in the permafrost area (and the Sami in Sápmi). Tundra in Siberia Arctic tundra contains areas of stark landscape and is frozen for much of the year.[5] The soil there is frozen from 25 to 90 cm (10 to 35 in) down, making it impossible for trees to grow there. Instead, bare and sometimes rocky land can only support certain kinds of Arctic vegetation, low-growing plants such as moss, heath (Ericaceae varieties such as crowberry and black bearberry), and lichen.[6][7] There are two main seasons, winter and summer, in the polar tundra areas. During the winter it is very cold, dark, and windy with the average temperature around −28 °C (−18 °F), sometimes dipping as low as −50 °C (−58 °F). However, extreme cold temperatures on the tundra generally do not drop as low as those experienced in taiga areas further south (for example, Russia's, Canada's, and Alaska's lowest temperatures were recorded in locations south of the tree line). During the summer, temperatures rise somewhat, and the top layer of seasonally-frozen soil melts, leaving the ground very soggy. The tundra is covered in marshes, lakes, bogs, and streams during the warm months. Generally daytime temperatures during the summer rise to about 12 °C (54 °F) but can often drop to 3 °C (37 °F) or even below freezing. Arctic tundras are sometimes the subject of habitat conservation programs. In Canada and Russia, many of these areas are protected through a national Biodiversity Action Plan. Vuntut National Park in Canada Tundra tends to be windy, with winds often blowing upwards of 50–100 km/h (31–62 mph). However, it is desert-like, with only about 150–250 mm (6–10 in) of precipitation falling per year (the summer is typically the season of maximum precipitation). Although precipitation is light, evaporation is also relatively minimal. During the summer, the permafrost thaws just enough to let plants grow and reproduce, but because the ground below this is frozen, the water cannot sink any lower, so the water forms the lakes and marshes found during the summer months. There is a natural pattern of accumulation of fuel and wildfire which varies depending on the nature of vegetation and terrain. Research in Alaska has shown fire-event return intervals (FRIs) that typically vary from 150 to 200 years, with dryer lowland areas burning more frequently than wetter highland areas.[8] A small herd of muskoxen in the Kakagrak Hills, Alaska The biodiversity of tundras is low: 1,700 species of vascular plants and only 48 species of land mammals can be found, although millions of birds migrate there each year for the marshes.[9] There are also a few fish species. There are few species with large populations. Notable plants in the Arctic tundra include blueberry (Vaccinium uliginosum), crowberry (Empetrum nigrum), reindeer lichen (Cladonia rangiferina), lingonberry (Vaccinium vitis-idaea), and Labrador tea (Rhododendron groenlandicum).[10] Notable animals include reindeer (caribou), musk ox, Arctic hare, Arctic fox, snowy owl, ptarmigan, northern red-backed voles, lemmings, the mosquito,[11] and even polar bears near the ocean.[10][12] Tundra is largely devoid of poikilotherms such as frogs or lizards. Due to the harsh climate of Arctic tundra, regions of this kind have seen little human activity, even though they are sometimes rich in natural resources such as petroleum, natural gas, and uranium. In recent times this has begun to change in Alaska, Russia, and some other parts of the world: for example, the Yamalo-Nenets Autonomous Okrug produces 90% of Russia's natural gas. See also: Permafrost carbon cycle § Carbon release from the permafrost Permafrost thawing can cause slumping in the landscape A severe threat to tundra is global warming, which causes permafrost to thaw. The thawing of the permafrost in a given area on human time scales (decades or centuries) could radically change which species can survive there.[13] It also represents a significant risk to infrastructure built on top of permafrost, such as roads and pipelines. In locations where dead vegetation and peat have accumulated, there is a risk of wildfire, such as the 1,039 km2 (401 sq mi) of tundra which burned in 2007 on the north slope of the Brooks Range in Alaska.[14] Such events may both result from and contribute to global warming.[15] Carbon emissions from permafrost thaw contribute to the same warming which facilitates the thaw, making it a positive climate change feedback. The warming also intensifies Arctic water cycle, and the increased amounts of warmer rain are another factor which increases permafrost thaw depths.[16] The IPCC Sixth Assessment Report estimates that carbon dioxide and methane released from permafrost could amount to the equivalent of 14–175 billion tonnes of carbon dioxide per 1 °C (1.8 °F) of warming.[17] For comparison, by 2019, annual anthropogenic emission of carbon dioxide alone stood around 40 billion tonnes.[17] A 2018 perspectives article discussing tipping points in the climate system activated around 2 °C (3.6 °F) of global warming suggested that at this threshold, permafrost thaw would add a further 0.09 °C (0.16 °F) to global temperatures by 2100, with a range of 0.04–0.16 °C (0.07–0.29 °F)[18] Tundra on the Kerguelen Islands. Antarctic tundra occurs on Antarctica and on several Antarctic and subantarctic islands, including South Georgia and the South Sandwich Islands and the Kerguelen Islands. Most of Antarctica is too cold and dry to support vegetation, and most of the continent is covered by ice fields or cold deserts. However, some portions of the continent, particularly the Antarctic Peninsula, have areas of rocky soil that support plant life. The flora presently consists of around 300–400 species of lichens, 100 mosses, 25 liverworts, and around 700 terrestrial and aquatic algae species, which live on the areas of exposed rock and soil around the shore of the continent. Antarctica's two flowering plant species, the Antarctic hair grass (Deschampsia antarctica) and Antarctic pearlwort (Colobanthus quitensis), are found on the northern and western parts of the Antarctic Peninsula.[19] In contrast with the Arctic tundra, the Antarctic tundra lacks a large mammal fauna, mostly due to its physical isolation from the other continents. Sea mammals and sea birds, including seals and penguins, inhabit areas near the shore, and some small mammals, like rabbits and cats, have been introduced by humans to some of the subantarctic islands. The Antipodes Subantarctic Islands tundra ecoregion includes the Bounty Islands, Auckland Islands, Antipodes Islands, the Campbell Island group, and Macquarie Island.[20] Species endemic to this ecoregion include Corybas dienemus and Corybas sulcatus, the only subantarctic orchids; the royal penguin; and the Antipodean albatross.[20] There is some ambiguity on whether Magellanic moorland, on the west coast of Patagonia, should be considered tundra or not.[21] Phytogeographer Edmundo Pisano called it tundra (Spanish: tundra Magallánica) since he considered the low temperatures key to restrict plant growth.[21] More recent approaches have since recognized it as a temperate grassland, restricting southern tundra to coastal Antarctica and its islands.[22][23][24] The flora and fauna of Antarctica and the Antarctic Islands (south of 60° south latitude) are protected by the Antarctic Treaty.[25] Main article: Alpine tundra Alpine tundra in the North Cascades of Washington, United States Alpine tundra does not contain trees because the climate and soils at high altitude block tree growth.[26]:51 The cold climate of the alpine tundra is caused by the low air temperatures, and is similar to polar climate. Alpine tundra is generally better drained than arctic soils.[7] Alpine tundra transitions to subalpine forests below the tree line; stunted forests occurring at the forest-tundra ecotone (the treeline) are known as Krummholz. Alpine tundra can be affected by woody plant encroachment.[27] Alpine tundra occurs in mountains worldwide. The flora of the alpine tundra is characterized by plants that grow close to the ground, including perennial grasses, sedges, forbs, cushion plants, mosses, and lichens.[28] The flora is adapted to the harsh conditions of the alpine environment, which include low temperatures, dryness, ultraviolet radiation, and a short growing season. Main articles: Tundra climate and Alpine climate Tundra region with fjords, glaciers and mountains. Kongsfjorden, Spitsbergen. Tundra climates ordinarily fit the Köppen climate classification ET, signifying a local climate in which at least one month has an average temperature high enough to melt snow (0 °C (32 °F)), but no month with an average temperature in excess of 10 °C (50 °F).[29] The cold limit generally meets the EF climates of permanent ice and snows; the warm-summer limit generally corresponds with the poleward or altitudinal limit of trees,[30] where they grade into the subarctic climates designated Dfd, Dwd and Dsd (extreme winters as in parts of Siberia), Dfc typical in Alaska, Canada, mountain areas of Scandinavia, European Russia, and Western Siberia (cold winters with months of freezing).[31] Despite the potential diversity of climates in the ET category involving precipitation, extreme temperatures, and relative wet and dry seasons, this category is rarely subdivided. Rainfall and snowfall are generally slight due to the low vapor pressure of water in the chilly atmosphere, but as a rule potential evapotranspiration is extremely low, allowing soggy terrain of swamps and bogs even in places that get precipitation typical of deserts of lower and middle latitudes.[6] The amount of native tundra biomass depends more on the local temperature than the amount of precipitation.[32] Alas Fellfield

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