

Pippins World
Journey to the Never-Ending Sea

The Nature of Pippins

Notes from the Author on the Pippins' Natural World

While I - the Pippins' imagineer/author/illustrator - lived in the Pacific Northwest, I explored my surroundings of forests, mountains and water. On foot, skis, kayaks, boats, bikes, trains, planes, and automobiles, I experienced the beauty of majestic trees, clear streams, abundant wildlife, and lakes, and pristine snowy slopes. I imagined a world of tiny people living amongst us, leaving small footprints of their lives but never showing themselves. And so the Pippins were born. In this Pippins story, the Pacific Northwest - which is not identified as such in the story - is shown in the detailed drawings, highlighting places, flora and fauna that I experienced and love. - ROBIN ROGERS

MAP

If you look at a map of the United States, can you identify the region shown on the Pippins' map?

The Pippins' map shows northwest Washington State, including Puget Sound also known as the Salish Sea.



In reality, Sweetwater Lake is Lake Washington; the channel that connects Sweetwater Lake and the Salty Sea is a series of cuts and bays, including Lake Union; the Salty Sea is Puget Sound or the Salish Sea; Clear Lake is Lake Crescent on the Olympic Peninsula; Snowy Vista is Hurricane Ridge; the Mossy Place is the Hoh Rain Forest; the Snowy Mountains are the Olympic Mountains; and the Neverending Sea is the Pacific Ocean. Many of these areas are within Olympic National Park, one of the most beautiful and inspiring places! As the illustrator, I have used some artistic license, of course, and the Pippins' map is not exactly to scale.



The point where the Pippins begin their journey is where I lived. It is a little knob of forested land that juts into Lake Washington called Holmes Point in Kirkland, Washington. The road where my house was located came to a dead end into 360-acre Saint Edward State Park that was filled with miles of trails through the forest, a school that was a former monastery, and a small beach. Airplanes flying into Seattle (SEATAC) would fly over this area so I could always find my

neighborhood from high in the sky as the plane descended towards the airport.

HOME



At my home on Holmes Point, there was a sort of swooping, twisted tree trunk that came out of the hillside. I could see it from my kitchen window and it looked like a safe place for little creatures to make a home, nestled in the roots of a young hemlock tree. Our property faced southwest, so there was sun most of the time, even though there were many trees that towered above us at about 100 feet on the north side of the house. The Pippins' home would also take advantage of the sun for light and warmth. All around us was abundant wildlife – animals, birds, trees, flowers.



St. John's Wort (*Hypericum perforatum*) thickly covered a roadside bank on our property. It flowered profusely with bright yellow blossoms.



Pacific Starflower (*Trientalis latifolia*) is one of my favorite plants with its delicate six-petal, pink-to-white flower. The entire plant is no more than about eight inches tall. In spring, the ground under the shade of our tallest trees was carpeted with sweet little starflowers and it was one of the loveliest sights!



Cascade Oregon Grape (*Mahonia nervosa*) is popular with wildlife and Pippins because of its tart, blue berry fruits. I love their waxy green leaves that remind me of holly, and their bright yellow flower spikes. The roots can be used as a yellow dye to make beargrass baskets. Berries are not shown because they arrive on the plants later in the summer.



Western Sword Fern (*Polystichum munitum*) were sprinkled around our whole yard, reaching their swords above the groundcovers and shining bright green when the sunshine penetrated the tall trees.



Raccoons (*Procyon lotor*) are well known for the black mask across their eyes and fluffy ring tails. They often make their homes inside hollows high in trees. Raccoons' front feet leave footprints in mud that look just like tiny human handprints. They are usually nocturnal but sometimes wander about during the day. The Pippins

must be careful because raccoons will occasionally eat small animals – like Pippins! The name “raccoon” is thought to have derived from the Powhatan Native American word “aroughcun” as used in the original Colony of Virginia in the early 1600s. They can be very naughty in the human world, but they are so cute!



Western Hemlock Trees are evergreen conifers that grow up to 150 feet tall. The wood of the tree is used for hand carving implements such as spoons, bowls and combs. It is also used for architectural millwork such as doors and windows. Its bark can be used for a red dye. The inner bark is edible and Native Americans bake it into cakes. Several illustrations in this book show the Pippins wearing hemlock cone hats.



Milkweed Pods (*Asclepias*) are used by Pippins as sleds that can be dragged over the ground or floated in water. Once the milkweed pods are mature and dried on the plant stalks, they are lightweight enough for the Pippins to carry. On the plant, the pods contain the milkweed seeds and silks. The Pippins use the soft silk to line their little beds.

BRIDGE



Belted Kingfishers (*Megaceryle alcyon*) glide over streams, rivers and lakes and dive straight down, headfirst to catch fish and other water creatures in their beaks. These birds excavate a “tunnel” up to 15 feet long, often into a stream bank, to make a nest for their eggs. The birds have a distinctive chattering or rattling call. Kingfishers perch on branches overlooking water to catch prey – including Pippins if they are not careful!



Bald Eagles (*Haliaeetus leucocephalus*) would suddenly, stealthily fly into our yard, probably because we had very large trees and we lived near the water – their favorite hunting ground. They nest in tall snags, or dead trees, and their nests are bigger than tractor tires! Even though their preferred prey is fish or waterfowl, they are opportunistic and will snatch other animals, including Pippins!



White-Tailed Deer (*Odocoileus virginianus*) roam the forests, nibbling on trees, shrubs, grasses, and herbaceous plants. They are good friends to Pippins, partly because they are vegetarians and help Pippins travel long distances. If you see a deer with antlers, it is a boy. If you see a small deer with spots, it is a fawn or juvenile deer. The underside of its tail is white – hence the name - and can be seen when the deer is running away as it swings its tail straight up like a flag.



Sockeye Salmon (*Oncorhynchus nerka*) can grow almost three feet long. Sockeye are red while living and spawning in freshwater, most eventually migrating to the ocean – the Neverending Sea. Sockeye salmon are blue and silver when they are in the saltwater ocean. They eat organisms in fresh and saltwater called zooplankton, which can be microscopic, or creatures such as jellyfish. They would probably eat Pippins, too, if given the chance.



Northern Red-Legged Frog (*Rana aurora*) is not much bigger than a Pippin and is a good jumper. Female frogs attach their eggs underwater to vegetation. In a little more than a month, the eggs metamorphose – change – into tadpoles, aka pollywogs. Tadpoles have a fat little body and a long tail. Eventually, the tadpole metamorphoses again, growing legs and losing the tail, and developing lungs so it can breathe air when it is a full frog.



Douglas Squirrels (*Tamiasciurus douglasii*) prefer living in coniferous forests whose seeds they devour along with berries, acorns and mushrooms. Evidence of these squirrels' eating habits are left on the ground where piles of cone scales are discarded after the squirrel peels the cone to get to the seed inside. These squirrels chatter loudly if threatened.



Western Wood Anemone (*Anemone lyallii*) is a five-petaled forest flower native to the Pacific Northwest. It grows to about twice the size of the Pippins or up to six inches. In our yard it was pinkish-purple, popping up every year.



Braided Bridge is modeled after living root bridges of northeast India. In India, these structures are made from rubber trees, can be up to 150 in length, and live for hundreds of years. Both India and the western Pacific Northwest are wet regions where vegetation flourishes. Basically, roots that are out of the ground on opposite stream banks are trained towards each other to cross water or a ravine. When the “aerial” roots reach the other side, they are then implanted into the soil. As these bridges grow, they become stronger.



Western Sword Ferns (*Polystichum munitum*) are ubiquitous throughout the Pacific Northwest, with ten species native to the region. On the backs of the fronds (their large upright leaves), there are two rows of polka dots on each leaflet. The dots are spore cases that are like the seeds of the fern; the spores drop into moist soil and germinate, to establish new plants. Did you know that fern plants are recorded in fossils from almost 400 million years ago, making them some of the oldest plants?



Evergreen Coniferous Forests in the Pacific Northwest are part of the region's temperate rain forests, meaning they are in a temperate zone and receive a lot of precipitation, mostly during winter in the form of snow. Temperate zones on Earth are characterized by a climate that is moderate in spring and fall, cold in winter, and warm in summer. Evergreen conifer trees in the Pacific Northwest rainforests include Coast Douglas Fir (*Pseudotsuga menziesii* var. *menziesii*), Sitka Spruce (*Picea sitchensis*), Western Hemlock (*Tsuga heterophylla*) and Western redcedar (*Thuja plicata*). Many of the Pacific Northwest temperate forests also include understories of broadleaved trees and shrubs such as maple, oak, ash, hawthorn, aspen, and alder. Evergreen trees keep their leaves or needles all year long; conifers bear cones to house the tree seeds instead of flowers. (yes, there are some cone-bearing trees that are not evergreens!)

SEA TURTLE

My friend next door, a talented encaustic artist who grew up in Seattle, drove me to some of her favorite places around the region to help inspire this book. One of her secret places lies just north of Shilshole Marina where starfish and rockweed – a type of seaweed – lay among the rocks as we poked around all the nooks and crannies of the shore. Another good friend introduced me to nearby Golden Gardens, home of sun, sand and surf. He is the inspiration for Corri the Seaturtle, and they are both charming, helpful, smart, magnanimous creatures.



Green Sea Turtles (*Chelonia mydas*) are herbivores (they eat plants) as adults and travel long distances (up to 1,600 miles!) to lay their eggs on a beach. They can grow to be five feet long and can swim at almost two miles per hour! The Pippins had to meet Corri at the Golden Gardens because sea turtles prefer saltwater (*The Salty Sea*) and therefore he would not travel to Sweetwater Lake. Sea turtles are conservationists: they feed only on seagrass tops, leaving the roots of the plants established so that the plants don't die from the turtles' grazing.



Kelp (*Macrocystis pyrifera*) is a seaweed that grows in the rocky Puget Sound region in shallow tidal habitats (less than 30 meters). Kelps form underwater forests that provide food for herbivores such as green sea turtles and hunting grounds for predators such as otters. The kelp anchors itself to the rocky substrates, with its plants growing upward towards the water's surface. Kelp forests are tiered like terrestrial (land-based) forests with an upper canopy and several understories. The upper parts of the plants stay afloat with small bulbs of air.



River Otters (*Lutra canadensis*) often hang out in and along rivers but they like salty Puget Sound, too! They live on land but love to swim away from shore to catch fish – or Pippins. They can dive down to 60 feet and can stay underwater for eight minutes.



Starfish (*Pisaster ochraceus*) can be found all along the rocky shores of Puget Sound in intertidal zones. An intertidal zone is the area above water level at low tide and underwater at high tide. Also known as a sea star, this echinoderm has five rays to its star. Sand dollars, sea cucumbers and sea urchins are other echinoderms - all are invertebrates meaning they do not have a spine. These animals have little tube feet that allow them to attach themselves to the sea floor or rocks. They are bright colors such as orange, red, blue or purple.



Giant Pacific Octopus (*Enteroctopus dofleini*) can grow to be 20 feet long! They are considered to be the smartest of the invertebrates (Remember? No spine!) and those in captivity can recognize the humans who regularly come in contact with them. They have been known to open bottles, use tools and even solve puzzles. They live exclusively in saltwater and have a head and tentacles. So how many arms does an OCTOpus have?



Wolf Eel (*Anarrhichthys ocellatus*) might look a little scary but they are generally considered to be quite friendly. They grow to more than seven feet long. A wolf eel chows down on clams, crabs and mussels, smashing their prey in powerful jaws. These fish mate for life and share a home (cave) together.



Daylilies (*Hemerocallis*) are used by the Pippins in many ways – usually to eat because they love the flower buds, the tubers that are similar to our potatoes, the young green shoots, and the flowers themselves. After the daylily plant has flowered, the Pippins gather the green, puffy, wrinkly bulbs that are actually seed pods. They tie the bulbs onto either end of a balance bar to help stabilize their little sled on water so it doesn't tip over.



The Olympic Mountains form a range on the Olympic Peninsula of Washington State, surrounded on three sides by water. On the western slopes of these mountains, facing the Pacific Ocean (the Never-Ending Sea!), we find the wettest environment in the United States, except for Alaska and Hawaii. The tallest peak here is Mount Olympus at 7,980 feet and it receives up to 240 inches of snow and rain annually! Even though these mountains are close to volcanoes and are within the Rim of Fire, they are not volcanic and do not contain native granite; the small amounts of granite in some areas probably came from glacial deposits. Most of the rocks here comprise oceanic crust. Basalt, a volcanic rock, is found at lower elevations and originated from underwater volcanoes. Most of this mountain

range is within Olympic National Park. Depending on the snowpack, these mountains *could* be visibly snow-capped in summer as viewed from Puget Sound. The Olympic Peninsula has as many plants as the entire British Isles which is 30 times larger!



Olympic National Park is located on the Olympic Peninsula in Northwestern Washington State. It is almost one million acres, most of which is wilderness area. There are 3,000 miles of rivers and streams, and 200 peaks and summits. It is home to the Hoh Rainforest – one of the few temperate rainforests in the world that receives about 12 feet of rain every year. There are also tidepools, lakes, beaches, glaciers, hot springs, and more. And, you can adopt a fish as part of the radiotracking of salmon after the dam removal on the Elwha River. <https://home.nps.gov/olym/learn/nature/adopt-a-fish.htm>



Golden Gardens is a popular park in Seattle, with hiking trails, wetlands, beaches, picnic spots, fire pits, volleyball courts, and more. The views of Puget Sound and the Olympic Mountains are exceptional from here.



Puget Sound is an inlet of the Pacific Ocean – the largest ocean in the world - and forms part of the **Salish Sea**. The Salish Sea is a network of coastal waterways that runs from British Columbia in Canada to the Northwestern area of Washington State in the United States. Puget Sound is an estuarine system – the third largest in the United States. An estuary is a partially enclosed coastal body of brackish or saltwater with one or more rivers or streams flowing into it, and with a free connection to the open sea. Puget Sound provides habitat for 100 species of sea birds, 211 fish species, and 13 marine mammals. There are about 2,500 miles of shoreline hugging more than 1,000 square miles of water.

CHIPMUNK



Olympic Chipmunks (*Tamias amoenus caurinus*) are found nowhere else in the world but the Olympic Peninsula of Washington State. Like the Pippins, they eat leaves, buds, nuts, berries, and seeds, and sometimes mushrooms. Unlike the Pippins they occasionally eat insects and worms. Chipmunk dens are underground with a central nest lined with soft leaves atop food. There are typically several entrances to get outside (or inside) and several storage areas for hoarding seeds and nuts for food. They are a bit bigger than Pippins.



Banana Slugs can be brilliant yellow, looking very much like a banana that has crawled out of its kitchen bowl and onto the ground – although they can climb trees, too. They can also be green or brown and spotted. Seven to 10 inches long, these creatures function as composters in the soil as they consume organic material and vegetation and then poop it back into the soil as a fertilizer.



Moss is an epiphyte meaning that it lives on other plants for support, without damaging its host plant. Epiphytes derive their nutrients and moisture from the air, rain, fog, and debris that accumulates around them.



Sitka Spruce is a dominant very large tree on the Olympic Peninsula, along with western hemlock, west red cedar, Douglas fir, and bigleaf and vine maple. Some of these trees reach a height of 200 to 300 feet!



Salal (*Gaultheria shallon*) is tucked behind the right side of the tree in the chipmunk den illustration. There was abundant salal forming an evergreen understory in my yard. It flowered with tiny little pinkish-white dangling bells that later became sweet purple berries.

SNOW



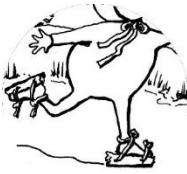
Hurricane Ridge in Olympic National Park provides a sweeping vista of the Olympic Mountains, along with trails for hiking, snowshoeing and cross-country skiing. Just short of one mile high, a visitor center is open year-round. Can you guess that its name comes from very windy conditions? Winds have been routinely measured at 80 miles per hour (MPH) – to be classified as hurricane, winds must be at least 74 MPH. Also, Hurricane Ridge can experience snow at any time of year, receiving around 400 inches per year. Mount Olympus, the highest summit in the Park, can be seen from here.



Snowshoe Hares (*Lepus americanus*) are thought of as molting from brown to white coats in the winter. However, snowshoe hares in the Olympic Mountains stay brown over the winter, making them unique! These big bunnies (they are not rabbits) have large hindfeet, hence the “snowshoe” moniker. Usually nocturnal, snowshoe hares run their food through twice, which means, ummm, that they eat their own poop. No judgment.



Skiing has been around for more than 8,000 years! While excavating a site near Lake Sindor, Russia, a set of wooden skis was found along with sled runners, carbon-dated to 6,000 BCE. Skis had an elk head carved into one end that researchers speculate could have been a sort of brake. Rock paintings dating to 5,000 years ago have been found depicting a skier. I love to ski and was a certified ski instructor teaching beginner skiers at two small resorts in the East; I've also mostly skied at places near the Pippins in this story including Mount Baker, Mount Rainier, Stevens Pass, Whistler and many others in the Western United States.



Ice Skating was believed to have been developed in Scandinavia around 5,000 years ago. Skaters pierced holes through bone – horse or cattle leg bones – and fitted them with leather straps to attach the bone to their feet, thus enabling travel in winter on frozen rivers and canals in the region. They used poles to propel themselves along. The earliest depiction of such ice skaters is on a 1538 map of Scandinavia. Later “modern” ice skates were constructed in the 13th century of a piece of wood with an embedded metal blade.



Lupines (*Lupinus latifolius*), also known as Bigleaf Lupines, are flowers native to North America and can be seen all over Olympic National Park. On Hurricane Ridge, snow melt drains quickly from the thin soil and a few inches of early summer snow won't usually harm the flowers of this member of the pea family. Lupines convert nitrogen into minerals which act as a natural fertilizer for other plants, too.



Evergreen Conifers are the predominant tree in this rarefied atmosphere. As we ascend to Hurricane Ridge, the forests change from a mix of broadleaf deciduous (shed their leaves) trees and conifers (cone-bearing) to almost exclusively evergreen conifers (cone-bearing that retain their foliage) mixed with alpine meadows such as where the Pippins are skiing.



Snow-Capped Peaks of the Olympic Mountains are usually visible from Hurricane Ridge, even in summer. From Hurricane Ridge, the snow we see is typically glaciers which are thickened ice masses comprising snow that has compressed over many years. Glaciers flow, like very, very sloooow rivers! Maybe harder to believe is that of all the world's land area, about ten percent is occupied by glaciers.

GOAT



Lake Crescent's waters are so pristine and crystal clear that you can see more than 60 feet down into the lake. The clarity is the result of a lack of nitrogen in the water which inhibits the growth of algae. Combined with the reflectivity, the clarity also gives the lake its brilliant blue color. This eight-square-mile lake was formed when glaciers carved valleys during the last ice age, a minimum of 12,000 years ago. Then, about 7,000 years ago, there was a landslide that dammed a creek, allowing the valley to fill with water, eventually becoming the 624-foot deep Lake Crescent and the adjacent Lake Sutherland. Two species of trout in the lake became genetically isolated and are uniquely adapted now to their Lake Crescent environment.



Woodland Skippers (*Ochlodes sylvanoides*) are common butterflies in open areas all around the Olympic Peninsula. These small butterflies have an unusual landing stance: their forewings don't open all the way and the hindwing opens flat. They gather nectar for food from many different flowers such as oxeye daisy, sage, lavender, black-eyed Susan, dandelion, oregano, and many more.



Mountain Goats (*Oreamnos americanus*) are not native to Olympic National Park. About a dozen of these ruminants were released into the Olympic Peninsula, near Lake Crescent, between 1925 and 1929. Because the Olympic Mountains are geographically isolated, these goats that were native to the North Cascade mountain range could probably never have populated or colonized the peninsula naturally. While friendly to Pippins, the mountain goats pose a safety hazard to humans and they also damage unique, native vegetation in the Olympic Mountains. Beginning in 2018, a removal program has been humanely resettling (by helicopter) hundreds of goats into the Cascades.



Clouds filled with moisture move inland from the Pacific Ocean and run into the foothills of the Olympic Mountains. When the clouds bump into the mountains, they are forced upwards, where they cannot hold as much water in the colder, lower pressure air. Moisture is released, falling from the clouds as rain in the lowlands and snow in the high country. The clouds constantly change shape and sometimes look like animals to the discerning eye.

COYOTE



Hoh Rainforest in Olympic National Park is one of a few temperate rain forests in the United States. Temperate rainforests generally experience more than 55 inches of precipitation annually and temperatures year-round above freezing, between 30 and 54 degrees. However, Hoh Rainforest receives more than 12 feet (144 inches-yowzah)! of rain per year, making it one of the wettest places in the lower 48 states if not the wettest. Even though there is not much rain in the summer, the abundant summer fog provides additional moisture – up to about 30 inches annually. Within the Hoh Rainforest, plant life (plus lichens and fungi) blankets everything – from the moss-covered ground and fallen tree trunks to tree-top canopies, with mosses literally dripping from tree branches. Amid this enchanting environment sits a visitor center open year-round to provide information on hiking trails, campgrounds and the natural environment.



Olympic Marmots (*Marmota olympus*) are social animals found nowhere but the Olympic Peninsula. In the 1990s and early 2000s, Olympic marmot populations declined sharply, partly due to predation by invasive coyotes. A member of the squirrel family, Olympic marmots typically live higher in the mountains, but Rudi likes living in the lush forest at lower elevations where there's plenty of food. Marmots are herbivores that eat plants and roots, especially flowers. They live in burrows, usually as part of a colony.



Coyotes (*Canis latrans*) are not native to the Olympic Peninsula, but they have adapted well to the Pacific Northwest. They also inhabit all 48 lower states and Alaska. Unfortunately for the Olympic marmot, coyotes prefer to eat them; predation by coyotes caused their significant population decline in Olympic National Park in the 1990s and early 2000s. We know this because researchers analyzed coyote poop on the Olympic Peninsula and found a lot of marmot remains in the coyote scat (another name for poop).



Northern Spotted Owl (*Strix occidentalis caurina*) has a wingspan of almost four feet and it preys on small mammals—posing a threat to little Pippins! They make their homes inside the hollows of trunks of old trees and feed off the abundant plants and small creatures of the diverse forest. And they do “hoot” with a series of hoots that sound more like barking to me.



Amanita Toadstool or Mushroom (*Amanita muscaria*), also known as fly amanita, is a colorful and usually poisonous fungus that grows all over the world. These are neither plant nor animal. Like the banana slug, fungi (the plural of fungus) are decomposers that help break down dead or decaying organisms.



Douglas Fir Trees (*Pseudotsuga menziesii*) are evergreen conifers and the premier tree species of the Pacific Northwest. They used to be the tallest trees and now rank second tallest in the world. They can reach 300 feet tall, or about the height of the Statue of Liberty or as tall as a football field is long. The oldest Douglas fir is just north of the Olympic Peninsula on Vancouver Island, British Columbia, Canada, and is between 1,300 and 1,400 years old. The Doug fir roots act as a giant water pump, drawing up water from the ground, into its thin tubes that are protected by deeply furrowed bark; hair thin fibers transport water skyward to reach the needles at the top of the tree. A fallen Doug fir may take several centuries to decompose (rot) on the forest floor.



Rough-Skin Newt (*Taricha granulosa*) is poisonous so don't touch its skin – unless you're a garter snake! Garter snakes appear to have resistance to the newt's toxins. This is what is considered an example of co-evolution. Coevolution is when two or more species reciprocally influence each other's evolution.



Nurse Logs allow seedlings to germinate on fallen, decaying trees, often stretched across the forest floor. The ground is densely covered, and as the seedlings grow on nurse logs their roots reach towards the ground. Eventually the log rots away and a row of trees remains on stilt-like roots.

MUD



Painted Turtles (*Chrysemys picta*) are the most widespread native turtles in the United States. According to fossil records, these turtles lived 15 million years ago. The western painted turtle that lives in the Pacific Northwest grows up to ten inches long and has webbed feet to help it swim well. Like humans at the beach, these turtles love to

bask in the sun – but turtles do it to keep warm since they are cold-blooded reptiles – or ectotherms. That means their own bodies do not generate enough heat or cooling so they must regulate their body temperature using the outside environment – for example sun to get warm or shade to cool off.



Calypso or **Fairy Slipper Orchids** (*Calypso bulbosa*) are rare beauties and the Pippins like to eat their corms (a bulb under the ground) as a delicious, buttery treat. Many other orchids are epiphytes (growing on a host) but these calypso orchids are terrestrial orchids which means they grow in the ground.



Chanterelle Mushrooms (*Cantharellus formosus*) grow brightly in mossy coniferous forests around trees such as fir, spruce and hemlock. This delicacy usually sprouts a little later but it's been particularly rainy on the Olympic Peninsula, so they are out early for the Pippins. Of course, there are many poisonous mushrooms so it is important to know them very, very well. Fungi help preserve the well-being of forests by helping trees increase their water and nutrient uptake, and they decompose organic matter for healthier soil.



Mud comes with the rain, too! Occasionally there are huge mudslides in Olympic National Park because of heavy rain and sometimes wind, but also because of steep slopes, vegetation or lack of it, and the underlying soil and rocks. Most likely the Pippins have fallen into wet, rich, fertile, alluvial soil (deposited by water such as a river) along the trail!



Waterfalls are prevalent throughout the Olympic National Park. One of the most popular falls that I visited is near Lake Crescent, called Marymere Falls. Of course, the Pippins would be pummeled by such a large waterfall; they would find something smaller to wash away the mud. Waterfalls typically form when a watercourse - such as a stream or river - flows across hard and soft rock, eroding the soft rock and creating a steeper watercourse.



Alder Forests (*Alnus rubra*) in Olympic National Park look similar to birch trees and they are indeed in the birch family. Red alders on the Olympic Peninsula prefer to live near streams, wetlands and rivers. In fact, they tend to grow en masse in waterlogged terrain called a carr. Because of the alder trees' water-resistance, they were used almost exclusively as underwater pilings to build Venice, Italy.



Rocks of the Olympic National Park generally fall into three types: basalt, shale and sandstone, mostly originating underwater in the Pacific Ocean. The basalts and sedimentary rocks that form the peaks we see today were laid down 18 to 57 million years ago in the sea, then uplifted, bent, folded and eroded. The rocks of the Olympic Mountains are considered “young” rocks. The oldest rocks in the United States are believed to be in Minnesota and Wyoming and they are more than 3 BILLION years old.

THE SEA



Pacific Ocean is the deepest and largest ocean on Earth. From the West Coast of Washington State to the East Coast of Japan is about 5,500 miles. In 2018 a Frenchman attempted to swim the distance, but after swimming about 1,700 miles at a pace of 40 miles per day, he stopped. The Never-Ending Sea is a reality because all of Earth’s oceans are connected. Like an infinity symbol, they do go on forever – covering more than 70 percent of our planet’s surface.



Seastacks are large rock formations along the seashore that punctuate the West Coast of Washington State. Seastacks are formed as waves crash against the shore, eroding the rock. They begin as caves, then arches, and finally the arch collapses leaving a seastack. The picturesque seastacks, along with reefs and shoals, provide treacherous obstacles to seagoing vessels. The area that the Pippins visit is known as the Graveyard of the Pacific because of all the shipwrecks that have occurred there.



Giant Green Sea Anemones (*Anthopleura xanthogrammica*) are not flowers but they resemble flowers when they open their tentacles like petals in the tidal waters. The anemones have a symbiosis with algae. Symbiosis is the interaction between the algae and the anemones whereby they are both benefited by the relationship with each other: the algae is protected from animals that would eat it, and the anemone benefits from nutrients provided directly from the algae.



Western Gulls (*Larus occidentalis*) live up to 25 years. They are opportunistic scavengers, eating fish and jellyfish, carcasses and roadkill, and will even steal food from the mouth of a larger bird such as a pelican. In Alfred Hitchcock’s movie *The Birds*, many of the live birds were western gulls caught in a San Francisco garbage dump.



Orcas (*Orcinus orca*) are known as killer whales based on their hunting habits and their ability to take down large marine animals such as sea lions. These toothed whales are almost as big as a city bus with distinctive black and white markings. Orcas hunt in pods of family groups with up to 40 whales. They use echolocation to

communicate with each other and to hunt. Echolocation is a technique for determining the location of objects using reflected sound. It allows the animals to move around in muddy or dark waters. It is also used by bats and dolphins.



Steller Sea Lion (*Eumetopias jubatus*) males can weigh up to one ton – that's 2,000 pounds. Steller sea lions are fin-footed semiaquatic marine animals in the pinniped family with walruses, leopard and harbor seals, elephant seals. Steller sea lions communicate on land with a series of grunts, snorts, hisses, growls and belches. Underwater their noises includes clicks, belches and barks. Mothers and their pups use distinctive bleat (think sheep) calls, similar to names, to find each other in a crowd of sea lions.



Humpback Whales (*Megaptera novaeangliae*) frequent the northern Olympic Peninsula and can often be seen breaching offshore. At 60,000 pounds and 50 feet long it is about half the size of a blue whale that averages about 100 feet long and 400,000 pounds! Black on top with a white belly, humpbacks have large, long, narrow flippers. Some humpback whale pods use intelligence and cooperation to catch their prey with bubbles. Known as bubble netting, one whale will dive down deeper and, swimming in a spiral, will release many bubbles from its blowhole to encircle and trap a school of herring that are driven upwards – into the giant mouths of the other humpback whales waiting near the surface. The whales use distinctive calls to synchronize their movements and confuse the fish. Brilliant!



Driftwood and **Drift Logs** are scattered all along the beaches of the Olympic Peninsula and some are huge – up to ten feet in diameter and one hundred feet long. How do they get there? It starts with a huge storm that can cause the rivers in the forest to flood. Trees on the edge of the river can topple into the fast-moving flood waters and wash to the sea. Strong winds and high tides bring the trees ashore.

FESTIVAL



Saskatoon Berries (*Amelanchier alnifolia*) are the Pippins' purpleberries, also known as Western Serviceberry. Native Americans called them Sweet-berries and used them in pemmican, a high energy concentrated food comprising dried fruit, meat and fat.



Boats of the Pippins are modeled after the canoes made by coastal Northwest Native American tribes that were carved from one giant log, usually of red cedar. Red cedars can grow up to 300 feet long and eight to ten feet wide. The carving of one canoe could take two years.



Black Bears (*Ursus americanus*) are common on the Olympic Peninsula and all over North America, in many different environments. They love to eat berries! Baby bears, or cubs, are born inside the bear den while the mother is hibernating over the winter. During the six-month hibernation, bears do not drink, eat, poop, or urinate. That means that to survive hibernation, bears must eat a year's worth of food in six months or less.



Sasquatch, aka **Big Foot**, is rarely (if ever) seen, like the Pippins. Even so, in a 2017 poll, voters chose Olympic National Park as the "Best Place to Find Bigfoot." In 2009, a Sasquatch study was begun by The Olympic Project, which is an association of researchers, investigators, biologists and trackers committed to documenting the existence of Sasquatch through science and education. So far? Well, they are still working on it. Have you seen a Sasquatch? Do you think the Pippins looked up to see Sasquatch at the beach?



Basket Hats were woven by Native Americans using split spruce tree roots or cedar bark. There were many shapes and styles and decorations. These hats protected the indigenous people from the relentless rain of the Pacific Northwest.



Tree Root Cave is known as The Tree of Life on Kalaloch Beach near Forks, Washington. It is a Sitka spruce. A stream flows into the cave and out to the ocean, washing soil away from the tree roots every year. No one really knows when it might collapse!



Forks, Washington, became well known as the location of the Twilight series of books about vampires. The author said she chose Forks as the setting for her stories because she looked for the place in the United States with highest rainfall.



Kickball was played in Ancient Greece as long ago as 2,700 years and in Ancient China almost two thousand years ago. The Sea Pippins don't know how they learned the game or how long it has been played, but they enjoy it anyway.

SHORE



Roosevelt Elk (*Cervus canadensis roosevelti*) graze along highways in Washington and when I first moved to that state, I had never seen elk. I remember saying, "Look at those huge deer!" Olympic National Park has the largest population of Roosevelt elk in the world.



Western Grebes' (*Aechmophorus occidentalis*) courtship dances look like a ballet with the water as the stage. It would be unusual to see a western grebe and a baby chick at the sea because grebes typically nest on lakes and other freshwater bodies. They lose their wing feathers and become flightless while nesting, and then migrate to saltwater once new flight feathers have grown in. Western grebes migrate at night and are rarely seen flying. Babies have a spot on their heads that turns brighter red as they beg for food. Once fed, the spot fades.



Pacific Harbor Seals (*Phoca vitulina*) are year-round residents of the coastal Olympic Peninsula. Their thick layer of blubber (fat) insulates them from the icy cold of the Pacific Ocean. Seal pups can swim as soon as they are born but sometimes ride on their mother's back with whom they have a strong bond.



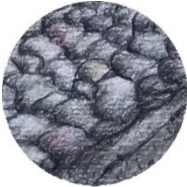
Agates are semi-precious stones that are different colors, shapes and opacity. They are often found on the gray basalt beaches on the Olympic Peninsula. These rocks develop naturally when an empty pocket inside a host rock fills in molecule-by-molecule, layer-by-layer to form concentric bands or other patterns. Most agates have developed in ancient molten lava – hello, basalt!



Seaweed is an edible plant that lives in.... the sea. There are several varieties in the Pacific Northwest, including bull kelp that is the fastest growing plant in the world at seven inches per day.



Starfish (*Pisaster ochraceus*) live in tidepools of the Pacific Ocean in Olympic National Park that protects 65 miles of wilderness coast. Purple, red, yellow, these are colorful additions to the marine environment here. The reason these starfish can live in Puget Sound and the Pacific Ocean is that *both* are saltwater.



Basalt Rocks are featured on many Pacific Coast beaches. On the Olympic Peninsula the many smooth dark gray stones on beaches are usually basalt, a fine-grained volcanic – or igneous - rock. Basalt is the Earth's (and the Moon's) most abundant bedrock. The basalt here is from undersea volcanoes, brought to the surface by plate tectonics.



Drift Logs arrive on the beaches of the Olympic Peninsula by way of the forest – duh! The abundant trees stand patiently until a storm comes along causing the trees to fall into the numerous rivers. They float downstream to the ocean. Usually during huge winter storms, powerful waves toss the logs up onto the beaches. The sea and the sun transform the color and texture of the trees, smooth away rough bark, and weather the trunks and branches to silvery white with distinctive lines of wood grain.



Cliffs and eroded hills along the shorelines of the Olympic Peninsula vary. Some are bedrock that was solidified volcanic material from the sea floor about 45 million years ago. Some cliffs comprise sandstone and siltstone beds that were originally sediments deposited in the sea about 5 million years ago. Overlying the bedrock along the coast are “young” deposits of sand and gravel that were laid down by streams from glaciers a mere 17 to 70 thousand years ago.

CELEBRATION



Hollow Trees are the perfect gathering spots for tiny Pippins. Whether in snow or rain, they are sheltered from the elements and can feast, talk and visit as they please.



Saint Edward State Park was at the end of the road where I lived on Holmes Point in Kirkland, Washington. I used to walk the miles of trails through the forested slopes and down to the water's edge. Along the 3,000 feet of shoreline, there was a large hollow tree that I always imagined as a meeting place for tiny creatures – like the Pippins!



Turkey Tail Bracket Mushroom (*Trametes versicolor*) is a polypore fungus that grows on dead wood or living conifers. It forms shelves or brackets that are very hard – like rocks. Just like the rings inside a tree, the rings on a bracket fungus gives clues to its age. Unfortunately, the attractive bracket fungus is a sign of disease in the tree it infects, which are usually old or already weakened trees.



Giant Puffball Mushrooms (*Calvatia gigantea*) were considered a delicacy in my home. My father used to take me and my brother on mushroom hunts (in the city where I lived), especially looking for giant puffballs. The edible ones have no stem or stalk and grow right on the ground. When we returned home with our treasures, my father would slice them and cook them in butter and garlic.



Rose Quartz is found all over the world. The pink color of rose quartz is attributed to microscopic inclusions of another mineral. In 2013 a specimen of rose quartz called La Madona Rosa was sold for more than a half-million dollars.



Grove Snail (*Cepaea nemoralis*) is an immigrant from Europe. It is believed that the many color and banding variations of this snail could be an anti-predator adaptation. This means that these snails could avoid detection by their predators by changing their own color and banding because predators become familiar with their prey's appearance – if it changes, the prey might not “see” the snail.



White Breasted Nuthatches (*Sitta carolinensis tenuissima*) often perch upside down on tree trunks – a perfect position to take advantage of Pippin offerings! They will wedge a large seed into a crack in a tree and then hammer the hard shell with their strong beak – hence the name sitta or nuthatch. Nuthatches do not notch out their own holes for nesting but rather will find a hole in a tree and line it with fur, shredded bark and fine grasses.



Deer Mouse (*Peromyscus*) is a rodent, meaning it has front incisors (teeth) that continuously grow causing them to gnaw on things such as wood and to dig burrows. About 40 percent of all mammals in the world are rodents and this little mouse is the most populous mammal of all! Friendly to the Pippin world, they are annoying to humans.

NOTE: Every area of the world provides a rich environment. Wherever you are, you can find so much nature to explore, whether you are in a city, the suburbs, the tundra or desert, forest or prairie. I have loved exploring wherever I've been. I am especially fond of visiting national parks that we all steward.