Wilderness Benefits and Gifts – A Livable Earth for Our Grandchildren

by Donna Osseward

Most of us who love wilderness came by our passion by walking into an area of majestic beauty. The experience grabbed us for life. Later, sitting at home, lying in bed, walking a sidewalk, we think back to our experience in those places. They bring a smile from the joy we felt just being there, from the soreness we got walking there, or the rain soaking we received on a trip into nature.

Those of us who have walked into wilderness revel in the fresh air, sparkling water and the sounds of nature. In the Olympic Wilderness, our ears hear everything from our steps muffled in a mossy rainforest, to bubbling creeks, to the roar of a storm coming in from the Pacific. Staying quiet, we see and hear birds—some living there a lifetime, others just passing through.

In Olympic National Park, in one direction, our eyes see glaciers, forested valleys and ocean from mountain tops. In another, the Hood Canal or Straits of Juan de Fuca. From the beach, iridescent waves, lit by ocean organisms, curl into shore in the dark of night. In the day, seal heads bob on the swells. Evergreens shower in the rain. Wildflowers and spider webs glisten with fresh dew drops in the early morn. In the tidal changes we see the interaction of the sun, moon and Earth. In the seasons, we witness the wobble of the earth on its axis. We can feel nature envelop us.

But, my most passionate feelings arise when I realize that our need for wilderness comes from its gifts to us even when we are not there. Not only in the memories, but the many gifts wilderness brings to our lives. The gift of cleaner air and water; a place for animals far better than a zoo; a place where nature works mostly according to its creator's rules; and the diversity of plants, fish and animals that comes from a creation not weeded by humans. It becomes a library and laboratory for us to learn from the processes that the creator produced to provide for our survival.

Olympic Sooty Grouse

In the middle of the 1800s, Thoreau wrote, "In wildness is the preservation of the world." As we learn more, we come to understand how right he was. Daily our health depends on clean air, water and an earth capable of producing the resources we need to continue to live comfortably in this place.

Then the western United States was still being discovered and explored by Europeans. There were no national parks or forest lands protected for our future. The industrial revolution was only beginning. Forests were being cut for farmland and buildings for America's expanding population. Since then the world's human population has gone from 1 billion to 7 billion. We have cities and designated wilderness in the West. Most of our protected wilderness is in the western and far north of the United States. [See wilderness.net]

Avalanche Lilies in Olympic National Park

What Is Wilderness?

Legally, "… wilderness, in contrast with those areas where man and his own works dominate the landscape, is … where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain …

"Wilderness is … undeveloped Federal land retaining its primeval character and influence, without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions and which generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable; has outstanding opportunities for solitude or a primitive and unconfined type of recreation … and may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value." [Wilderness Act ,1964]

This act was made into law, "In order to assure that an increasing population, accompanied by expanding settlement and growing mechanization, does not occupy and modify all areas within the United States and its possessions, leaving no lands designated for preservation and protection in their natural condition, it is hereby declared to be the policy of the Congress to secure for the American people of present and future generations the benefits of an enduring resource of wilderness." [Wilderness Act, 1964]

These wild lands make our earth livable. Its native vegetation pulls pollution from the air and water; soils and plant roots filter the water. Trees and vegetation also serve to sequester carbon by using it—trading the carbon dioxide in the air with the oxygen we need.

Earth's wilderness mountains, valleys, and forests hold the winter snow to slowly release water in summer for fish, wildlife and agriculture, and to fill a summertime tall, cool glass in the city.

One person, one pine, or one panda is not enough to sustain life. In wilderness we find nature's storehouse of genes specific to that area. When a wild area is large enough, it contains the species of plants and animals that make up the natural, sustainable ecosystem of the area. Each area is special because of its mix of climate, plants and animals that collaborate in that ecosystem.

In the unique biology of complete ecosystems we have found the majority of our medicines. In ecosystems we have discovered plant species that help solve agricultural problems. We have learned from natural processes to synthesize new products and to understand better the importance of natural process in sustaining natural products currently valuable to us.

The burrs of burdock inspired the inventor of Velcro®. Most of our pharmaceuticals are derived from nature. The Pacific Yew tree was considered a forest weed tree until we discovered, in its bark, a cure for certain forms of cancer. Aspirin came from the willow tree. A compound found in Eastern red cedar fights MRSA, an antibiotic-resistant infection. In the Pacific Northwest, we looked to wilderness's ancient forests to discover that the Douglas-fir is mutually dependent for its strength on the fungi at its roots.

Today's wilderness may hold future cures for disease, new and healthier plants for agriculture, and inspiration, as our wisdom grows, to create new products. Different wilderness areas hold different species and genes because they exist in different places. This truth has been found by our search around the world for prospective medicines in nature. One place cannot replace another. What is destroyed is lost. Mitigation, therefore, cannot provide an excuse for destroying a wilderness area. It is truly a

question of apples and oranges. Destroying a wilderness area is like saying we don't need or want apples in our diet anymore.

As E. O. Wilson has said,"… we humans often act as if we are totally independent of our environment, as if our driving thousands of other species to extinction, and disrupting the life-giving services they provide, will have no effect on us whatsoever …

"The fundamental truth is that biodiversity matters profoundly to human health in almost every conceivable way. The roles that individual species, and the ecosystems they make up, play in providing food, fuel and unique medicinal compounds; air, water and soil purification services; and natural regulation of infectious disease, to name a few, are critical to our health and survival …" [E.O. Wilson, Professor Emeritus and Honorary Curator in Entomology, Harvard University, Harvard Medical School website, 2014]

In addition, wilderness provides wildlife habitat, which is home for the furry, feathery, and the slimy. These places, if large enough, allow wild plants and animals to maintain the interdependent web of life. One purpose for Olympic National Park was to preserve its unique animals like the Olympic Elk and more.

Salamander

All of this is done without many of us ever stepping a boot into a wilderness area. Wilderness functions best when we don't spend lots of money to "take care of it." It is unsurpassed when left alone. We only need to fend off invasive intruders—invaders our activities bring.

Even with all these benefits, wilderness can be a place where we can go and enjoy appropriate recreation. Appropriate means that our activities don't damage its ability to provide its other gifts.

As we can see, Earth's wilderness is a valuable, integrated, multiple-use resource.

"Our public lands protect and preserve our most treasured and significant places for the American people," said Sarah Creachbaum, Superintendent, Olympic National Park. "Dramatically beautiful and diverse, Olympic National Park boasts some of the greatest ecological variety in the country. Olympic National Park protects 922,651 acres encompassing three distinctly different ecosystems—rugged glacier-capped mountains, more than 70 miles of wild Pacific coast, and magnificent stands of old-growth and temperate rain forest." [2014]

Massif Travelers in Olympic National Park

Olympic National Park, which is 95% designated wilderness, had 3,085,340 visitors who spent $245,894,100 in communities near the park in 2013. That spending supported 2,993 jobs in the local area that year. [NPS report 2014]

Wilderness needs to be cherished in its untrammeled condition. That is how it provides for us best. Lacing wilderness with roads or weeding it according to our current standards of usefulness destroys we know not what. Some species may be filled with wonders and inspiration that we would never know if destroyed.

Clean Air and Livable Earth

Tree and plant photosynthesis cleans the air. Within this process, plants absorb sunlight, carbon dioxide and pollutants and then release oxygen back into the air. They hold the carbon from carbon dioxide and carbon monoxide as part of their fibrous structure. Trees and vegetation "clean our atmosphere by intercepting airborne particles, and by absorbing ground-level ozone, carbon monoxide and sulfur dioxide. A single tree can absorb up to 10 pounds of air pollutants a year, and produce nearly 260 pounds of oxygen—enough to support two people." [AmericanForests.org website, 2013]

All this reduces human asthma and other lung diseases that cause human suffering and increased health costs. These health benefits also apply to the agricultural plants and animals living near wilderness. Thus we can maintain ecosystems while increasing food production and reducing food costs.

We have learned that increased carbon dioxide levels in the atmosphere cause the earth to hold more of the sun's heat resulting in global warming, sea level rise and ocean acidification. Undisturbed wild earth protects carbon reserves lying below the surface. Carbon sequestration reduces Earth's probability of becoming like Venus, a planet so warm with its heavy carbon dioxide-filled air that lead melts at Venus's normal daytime temperature.

Carbon liberation, if it continues, will drastically change the way our children and grandchildren live. It will alter coastlines by raising the sea level, change the weather, increase the acid in the oceans, and cause extinctions of wild plants, fish and animals. In a domino effect, life forms that are dependent on other life forms that disappear, will also disappear. Water is acidified by a simple chemical reaction—its absorption of carbon dioxide from the air.

All this has already started to happen. Warmer oceans increase hurricane intensity, while other parts of the world experience unusual drought. Today, in American and Australian forests, trees that are stressed by drought are more vulnerable to insects and disease, which makes them more at risk to fire. Alaskan forests and forest fires are advancing into the arctic regions. Forest fires are increasing in the western United States.

Islands in the South Pacific are slowly being covered by the Pacific Ocean. Arctic coastal buildings are washing into the sea. Polar bears are drowning because they are unable to swim the widening gaps between arctic ice where the seal live and the land. Lately, there has been greater coastal flooding on the Olympic Peninsula during storms.

"Partial deglaciation of the Greenland ice sheet, and possibly the West Antarctic ice sheet, could contribute 4 to 6 m (13 to 20 ft) or more to sea level rise." [Wikipedia: IPCC, Summary for Policymakers, Section C. Current knowledge about future impacts – Magnitudes of impact in IPCC AR4 WG2 2007.] This would create huge changes to the Peninsula's, United States', and world's coastlines.

Many coastal cities would have to change their operations and lifestyle to be like Venice, Italy. While Venice is beautiful, in this scenario, it would likely disappear and people living in coastal cities around the world would have basements and first floors permanently flooded.

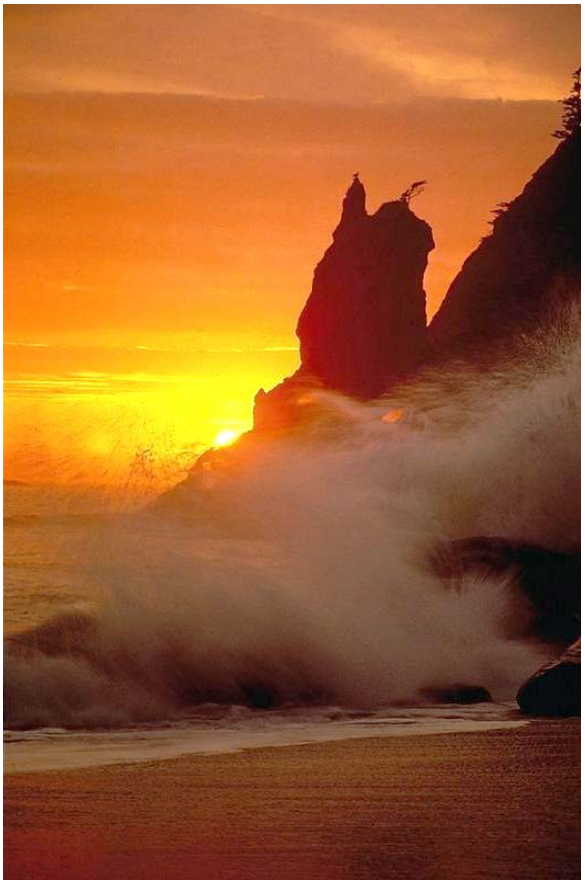
Other problems are starting. Alaskan crab is being hurt because ocean acidification reduces its ability to form shell. According to the National Ocean and Atmospheric Administration (NOAA), "Ocean acidification is occurring because the world's oceans are absorbing increasing amounts of atmospheric carbon dioxide, leading to lower pH and greater acidity. This is literally causing a sea change and threatening the fundamental chemical balance of ocean and coastal waters from pole to pole …" [NOAA website, 2013]

In addition to crab, oysters in Oregon, along with Washington and Alaskan scallops, are currently suffering from ocean acidification. Studies are underway to determine if other damage is being done to other sea life.

"Over the last 250 years, the atmospheric concentration of carbon dioxide has increased from 280 parts per million to over 394 parts per million due to the burning of fossil fuels (e.g., coal, gas, oil) and land use change (such as conversion of natural forest into crop production). Ocean acidification has potentially devastating ramifications for all ocean life; from the smallest, single celled algae to the largest whales." (Office of Oceanic and Atmospheric Research, NOAA website, 2013]

Coral reefs are dying because of acid increase. "Healthy coral reefs are among the most biologically diverse and economically valuable ecosystems on Earth, providing valuable and vital ecosystem services.

Sunset at Rialto Beach



"Coral ecosystems are a source of food for millions; protect coastlines from storms and erosion; provide habitat, spawning and nursery grounds for economically important fish species; provide jobs and income to local economies from fishing, recreation, and tourism; are a source of new medicines, and are hotspots of marine biodiversity.

"Unlike shallow coral species, which are restricted to the tropics … deep-sea corals are found in all the world's ocean basins, from coastal Antarctica to the Arctic Circle …

"Within U.S. waters, deep-sea coral communities have been identified in every region of the U.S. EEZ (Economic Exclusive Zone), an area extending 200 nautical miles … offshore and covering 11.7 million square kilometers in the Pacific, Atlantic, and Arctic Oceans. Most deep-sea coral groups, with the exception of sea pens, occur on the scarce and scattered hard surfaces of the ocean floor, especially near the continental shelf break, along the continental slope, and on oceanic islands slopes and seamounts." [NOAA website, 2013]

Areas kept in wilderness will naturally reduce the carbon in the atmosphere which will result in less intense storms, unlike 2012's storm Sandy. They will provide a more stable water supply for agriculture and cities and reduce forest fires.

This balance is under our control. Maintaining wild land is an inexpensive and beautiful way to help. We only need to be aware of the problems and make our individual efforts to reduce liberating carbon into the air.

We can make a difference by:

- voting to preserve wilderness and keep its gifts;
- changing our most-used light bulbs to use new less-wattage bulbs to save electricity, reducing the need for more power plants, and helping our personal budgets;
- keeping our tires at proper pressure thereby reducing gas use and helping our personal budgets;
- consolidating our car trips to reduce car mileage and save money;
- walk or use a bicycle for short trips and small items needed, reducing gas use and increasing our good health;
- caulking our house to prevent heat leakage in winter and keep our houses cooler in summer, again reducing energy needs and saving our money; and
- push our lawnmower, reducing power use and our waistline OR
- reduce our grass area with ornamental plants that don't need weekly cutting.

By doing the little things, if many do it, we can make a big difference in our world.

If we have the financial ability, we can add to the list by:

- buying more fuel efficient cars or alternatively powered cars;
- insulating our house to reduce energy loss and save our money; or
- adding solar panels to energize our homes and cars and save money over the longer run.

We've caused it, we can fix it. Will we start fixing it or will we lay the burden on our children and grandchildren?

Clean Water

Clean water is becoming an increasingly scarce and valuable resource in many areas of Washington state and around the world. Earth's wilderness mountains, valleys and forests hold winter snow to slowly release water in summer for fish, wildlife, agriculture, and to fill a tall glass of clear, cool water in the city.

In wilderness landscapes, rain soaks into the ground gradually. The absorption process allows surface water to filter into underground aquifers. Plant roots both hold soil in place and filter out contaminants.

New York City found it could save $6 to $8 billion not by constructing new water treatment plants but by protecting the upstate watershed that provides these purification services for free. The city invested $1.5 billion in buying land to keep it "forever wild" around its reservoirs and putting other protective measures in place.

The process of removing coal seams from the earth often results in disruption to water moving into streams and underground aquifers. Rain on exposed soils and minerals in an open pit mine results in

toxic acidification of surrounding rivers and ground water. While holes can be filled and soil can be replanted, the ground structure has been disrupted and ground water is re-channeled. That is why farmers in Montana and Wyoming are protesting large coal extractions so that the coal could be sent to Asia. Burning that coal only intensifies the carbon in the air.

Global warming will replace snowfall with rain across large regions, causing more winter and spring flooding and less water to fill summer rivers and underground aquifers—thereby making agriculture more risky and difficult.

The snow is gone from Kilimanjaro. Glacier National Park is losing its glaciers. The same is happening in the Olympic and Cascade Mountains.

Healthy air and water produce healthier agricultural products and better profits for farmers. They also provide a healthier environment for farm families and workers.

Purple Crab

On the Olympic Peninsula, where rivers run to the sea from wild mountains and forests, the water is clean and healthy. This provides a rich environment for animals, fish, shellfish, and us.

Constructed reservoirs are barriers to fish migration and all navigation. They reduce multiple land uses, increase evaporation, and heat surface waters and downstream rivers. Warmed water adversely affects the native species that depend on the watershed. Reduced water flow causes sand, gravel and nutrient particulates to fall to the reservoir bottom, which reduces reservoir capacity and reduces river nutrients that would feed estuaries and replenish downstream river bars and beaches.

Wild salmon is considered by nutritionists to be better food than farm-raised. Wild salmon need healthy streams to spawn, incubate, grow and migrate back to the ocean to mature. Loss of healthy salmon habitat is the major reason for depletion of wild salmon and steelhead. These fish require cool, clean water, and sufficient water depth and flow to swim upstream to spawn. They require streambank vegetation to stabilize soil and to keep the water cool. They need clean gravel for spawning and rearing.

Otter eating salmon

Large woody debris is necessary to provide pools for resting and places to hide from predators. Juvenile salmon eat one-celled animals, bug larva, insects and worms produced in the forest near the stream. Before salmon fry migrate to the ocean, they need estuary pools at the sea's edge to adapt to saltwater.

Fertile estuaries fed by the forest are also needed by clams, oysters, crab and mussels. The wilderness environment provides these needs far better and cheaper than rivers and streams carrying pollutants that must be extracted to keep life safe.

If salmon were the only reason for maintaining upper watersheds as wilderness, they would be very expensive fish. However, they are not. Salmon is an important component of an ecosystem that ties land and sea together, and we need the same clean water and air that wildlife needs.

Eagles, clams, otters and oysters all need a clean, healthy environment and the food provided by the interlocking web of spawning salmon and their terrestrial watersheds. Native plants need the nutrients provided by spawned salmon and those that feed on salmon. The food that bear and eagle need, we need. It is all an-important part of our economy, culture, and future.

Wilderness, with all its gifts, is an efficient and inexpensive way to provide the clean air, water, salmon and healthy marine environments necessary to all life.

Biodiversity

Doctors Chivian and Bernstein, two doctors from Harvard Medical School, have written,

- "Wild species, like scientific laboratory organisms, may possess attributes that make them uniquely well suited for the study and treatment of human diseases. If these species are lost, they will take these secrets with them."

- "Changes to the environment—be they from pollution, deforestation, greenhouse gas emissions, or other causes—ultimately affect the living world. Once we lose a gene, species, or an ecosystem, it is gone forever."

- "Ecosystems provide goods and services that sustain all life on this planet, including human life. If damaged, we cannot fully restore them, no matter how much money we spend."

[How Our Health Depends on Biodiversity; Eric Chivian M.D. and Aaron Bernstein, M.D., M.P.H; Harvard Medical School and the Center for Health and the Global Environment M.D., M.P.H., Harvard Medical School website, 2014]

"The loss of species as a result of human activity and the degradation of ecosystems ongoing around the world lowers the quality of the planet's natural resources and destabilizes the physical environment. " [E. O. Wilson, Harvard Medical School website, 2014]

The natural complexity of plant, animal and fungi molecules has been generated over millions of years and provides compounds that would be found only by chance in the laboratory. The unique forces of nature in a place have generated infinite complexity. Native people in an area have learned over the centuries that plants provide medicinal cures for many conditions. Their knowledge and faith in natural medicines have been exploited by pharmaceutical companies to develop medicines to diminish pain, fight cancer, reduce mental illness, and help organ transplants succeed. Over half of our medicines have as their source plants, animals or fish found in the natural world.

Unique symbiotic relationships have developed and we are still learning about them. The Douglas-fir that we use for building our houses depends on fungus in the soil to contribute nutrients necessary for the quality of its timber. This process is known as mycorrhiza. We have discovered that the current clear-cut method of taking trees harms the fungi by drying out the soil, killing the fungi, and thereby reducing the quality of the next generation of trees and the quality of its timber. We are learning that our monoculture method of planting trees and many agricultural crops increases the opportunity for disease.

Biodiversity slows insect movement and allows symbiotic relationships to develop for healthier living. Wilderness is naturally biodiverse.

Wilderness preserves gene pools, which gives us a chance to find genes useful in preserving our crops and forests. Monoculture in agriculture reduces variety and increases the chances for disease infections in these crops. We must save plants and animals that will provide genes for agricultural use to reduce disease, provide better fruit or seed, or to confer on a species the ability to grow in different conditions.

"Because other organisms also need to protect themselves against infections and cancers and other diseases people get; because Nature has been making biologically active compounds for close to 4 billion years (and conducting its own "clinical trials" on these compounds, which, if they didn't work, are no longer around); and because of the remarkable uniformity of all living things, particularly at the genetic and molecular level, plants, animals, and microbes contain virtually an endless supply of potential medicines for human diseases." [©2012 Presidents and Fellows of Harvard College. Published by the Center for Health and the Global Environment.]

In our egotism too often we have acted as though we have no connection to our environment. In our history, each generation too often has assumed that we now know all that can be known. Yet, each generation learns more. As transportation methods become faster and more available, we spread disease more easily and quickly. Witness AIDS and Ebola. We must keep species to provide the opportunity for finding future cures in their genes.

Fiddlehead Fern

One of the best insurances for saving the earth's gene pool is in wilderness. We do not know what will be needed or when it will be needed to solve current or future problems. We must preserve the diversity of remaining genes so they are there when we need them. Wilderness can do this.

We have passed laws for this protection of species and genes. " … to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved, to provide a program for the conservation of such endangered species and threatened species …" [Endangered Species Act, 1973]. It is imperative that we respect the spirit and the letter of this law to provide for our grandchildren's future.

The patenting of species, as is now allowed, can result in the loss of gene species because of market controls. Patent holders try to reduce competition by using lawsuits to restrict the planting of non-patented seeds.

We have more to learn that will be beneficial to our continued ability to live comfortably on this earth for many generations.

However because we are now such a dominating force of what happens on the earth, we must be aware of our potential to destroy this valuable interspecies complexity. With power must come responsibility. We must reduce our carbon footprint and preserve remaining wilderness to maintain diversity of life on Earth. Global warming and other adversities we generate to disturb our life on Earth will require our learning, effort and cooperation to maintain a comfortable life for us and future generations.

Pictures from Olympic National Park's picture gallery