Nature Trails

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A lichen species in the genus *Sphaerophorus*. Photo by D. Stone

Lichens: How They Tell Us About Their Environment

Daphne Stone

Faculty Research Associate, Oregon State University Herbarium

Friday, 16 April 2021, 7:30 p.m.

The Eugene Natural History Society is inviting you to their April Zoom meeting. Here is how to join the audience for this presentation. The Zoom meeting will open at 7:00 but our meeting will begin at 7:30. This allows everyone time to get connected and join in informal conversation.
Time: 16 Apr. 2021 07:00 p.m. Pacific Time (US and Canada)
Join Zoom Meeting: https://zoom.us/j/97499095971 We plan to use this Zoom link for the remainder of ENHS meetings. However, please double-check each time to make sure the link hasn't changed. Please invite interested friends and family members. From anywhere.

Lichens are complex life forms—fungi and algae living together in mutualistic relationships, each providing essential components of their shared lives. Without too much of a stretch one might consider the relationship between our April speaker and lichens to be symbiotic as well. Daphne Stone's interest in lichens began when she encountered them in New Jersey as a youngster. She imagined them as tiny forests where fairies live. Those first glimpses must have made a profound impact, because her fascination with these entities has continued and gotten stronger over the decades since that initial connection. Lichens have provided her a subject for intense study and research. They became her life work and thus gave her a profession, which continues to sustain her. She, on the other hand, through her research, exploration and teaching, benefits the lichen world.

Stone grew up in the Philadelphia area. Her family provided her ample opportunities to become interested in the natural world. Her father took her on hikes in the surrounding area. Her mother and two of her aunts, all plant persons, took her on outings to places like Longwood Gardens. Her family had sort of a lodge in rural New Jersey, and it was there, during summers between elementary school years, that her interest in lichens was born.

After high school Stone went to Benington College, shortly after it became co-ed. She was there for the art, but after one year at what was then the school with the highest tuition in the nation she had pity on her parents' finances and quit. She moved to Rhode Island and lived there for three or four years in a family cottage. One of those years she spent at the University of Rhode Island doing individual study on lichens, there being no courses that touched on lichens.

She heard about Evergreen State College, in Olympia, Washington, and its pedagogical approach appealed to her. She moved to Olympia, enrolled in ESC, and was able to continue learning about lichens thanks to the emphasis of the college on individualized curricula—which included lots of field work.

One of the formative experiences of Stone's professional life happened while she was at ESC. Driving all the way from Olympia to Minnesota, she and some classmates took a lichens class offered by Cliff Wetmore at the University of Minnesota Biological Station at Itasca State Park. At some point that summer, Wetmore told Stone she needed to go to graduate school if she really wanted to become a lichenologist. She accepted this advice and when she was done at Evergreen she became a graduate student in Stan Cook's ecology lab at the University of Oregon. She took lots of botany, did research on lichens, and finished with a Ph.D. in ecology.

In 2001 the Northwest Forest Plan, an attempt to end the impasse over management of federal forest land in the Pacific Northwest, kicked in. The U.S. Forest Service and the Bureau of Land Management needed expertise in lichenology, and the two agencies hired Stone. She worked for them for twenty years. She trained Forest Service and BLM botanists in lichenology, but the main part of her job was walking. Initially working alone, she would survey roughly fifty acres a day looking for rare lichens and bryophytes. Gradually she took on crew members, and after training them, she and her crew were covering 10,000 acres in the spring seasons and about 4,000 acres every summer. Their survey area extended from the Gifford-Pinchot National Forest in southwest Washington to the California-Oregon border.

Stone continues to work with agencies and organizations around the world to further interest, knowledge and protection of lichens. Her work with the Forest Service has helped link lichens to air quality. Lichen health and abundance diminish as air pollution increases.

Recently retired from this survey activity, Stone now works on the lichen collections at the Oregon State University Herbarium. As part of that job, she is involved in the classification of the genus *Leptogium,* the jelly lichens. This genus is a particularly difficult one to study—perhaps the reason Stone has become an expert in it. One of the outcomes of her survey work was the discovery of new lichen species. Stone has several to her credit, including one in the Siskiyou mountains in southwestern Oregon, *Leptogium siskiyouensis.* Besides fleshing out the *Leptogium* genus she is also especially interested in pin lichens and soil crusts on the east side of the Cascades. (Soil crusts are also known as cryptgamic soils. They can contain different micro-organisms, including lichens and bryophytes and, while critical to soil quality in arid zones, are delicate and easily damaged.)

Stone is a staff member of North Cascades Institute and president of Northwest Lichenologists. She will share with us some of what she has learned during her forty years of study of the lichens of the Pacific Northwest. Perusing her photographs at https://www.slideshare.net/DesLandTrust/lichensthe-extreme-fungi-by-daphne-stone should alert you that

we will be seeing some wonderful images, as well as learning more about these marvelous, mysterious organisms. Please join the Zoom audience on Friday, 16 April to hear Daphne Stone's presentation **Lichens: How They Tell Us About Their Environment**. The meeting will begin at 7:30 p.m., but the Zoom session will be open at 7:00. Here's the link again: https://zoom.us/j/97499095971 You can invite anyone, from anywhere!

Walking by a Wet Meadow, I Remembered …

By Evelyn Hess

Many years ago, I had the opportunity to assist the preparator of the University of Oregon general biology labs, Dick Darby, a doctoral candidate in aquatic biology. I was eager but hesitant. Coming from a background in landscape architecture, not biology, I doubted I had the chops.

Dick smiled. "As long as you can wash dishes and follow directions, you'll do fine," he said. Little did I know that far beyond doing dishes and following instructions, that year would introduce me to watery worlds I had never imagined.

Dick had a colony of *Obelia,* his dissertation focus, in an aquarium in the prep room. What I saw, with my distinct botany bias, was a delicate flowering plant, rooted to the gravely aquarium floor, its flowers' narrow petals moving in a languid dance to the tune of the saltwater's oxygenation. Between washing dishes, I stared, transfixed, and soon quizzed Dick about this wonderful plant.

Of course, it wasn't a plant. *Obelia* is a hydrozoan, a class of small predatory invertebrates. The "plant" that I was admiring was a branching colony of polyps (the "flowers"). The colony reproduces asexually, budding more branches, which bud more polyps. Some of the polyps pulse, contracting and expanding as they feed. Others have medusa buds, releasing the sexual generation, tiny male and female free-swimming "jellyfish," the medusae. Feeding on zooplankton, these medusae can be found in coastal and offshore plankton worldwide. The medusae release sperm and eggs that, when successfully fertilized, initially become free-swimming larvae, called planula, that later settle down to attach somewhere and develop into a single feeding polyp. This polyp asexually buds branches and more polyps to become the graceful "plant" I admired in the prep room aquarium.

Along with the feeding polyps (gastrozooids) and the medusa-budding ones (gonozooids) are other polyps specialized for defense. These, as with the feeders, have stinging tentacles to help them carry out their assigned tasks. The sting is from a cnida or nematocyst, an organelle exploded from a tentacle cell. It is the presence of such explosive cells that defines the phylum, Cnidaria, whose members include corals, sea anemones, hydrae and sea jellies.

This one complex lifeform that I saw as an attractive little plant was my introduction to the intertidal zone, to tide pools and to lying on my belly admiring the creatures under the docks at Charleston's small boat basin. But thanks to Dick and my job preparing for labs, I also discovered *freshwater* ecosystems and creatures.

Have you gazed under the microscope at critters you've dipped from the Delta Ponds? I hadn't. My only previous microscopic explorations had been in the lab of Leo Hitchcock's field botany class at the University of Washington. That was fascinating, but the parts of a flower do not *perform.* I was blown away by the diversity of size and shape of creatures, but what I remember best was some of their dances, rotifers being one of the most memorable.

Rotifers are roughly cylindrical with two ciliated floppy-dog-ear-like structures called a corona. Between those "ears" on the top of the head is the mouth, which receives food swept in by the cilia. The cilia also propel the animal through the water, making it appear to whirl like a wheel.

Rotifers range in size from about 200 to 500 microns. A micron is one-thousandth of a millimeter. Our eyes are capable of seeing unaided to about 0.1 mm, making rotifers barely visible. But small as they are, they are complex true animals, having around a thousand cells. Below the stomach and reproductive organs is the foot, ending in a "toe" that contains a cement gland allowing the rotifer to attach itself to debris in the water, where it casually hangs out, sifting dead or decomposing organic matter and assorted phytoplankton for dinner. Rotifers in turn become dinner for other creatures including small fish, shrimp and crabs. Their several reproduction methods include parthenogenesis producing only females from unfertilized eggs and parthenogenesis forming two types of eggs: females and degenerate males that survive only long enough to copulate. The resulting fertilized eggs form resistant zygotes that can survive if the water supply dries up.

But I didn't know any of that. What I was drawn to was the movement of the "wheel animalcules." Whirling dervishes! Why give a child a kitten if you could give her a rotifer and a microscope?

Besides discovering creatures in the Delta Ponds ecosystem, I was introduced to the life in vernal pools—those roadside puddles and wet prairies so

typical of our Willamette Valley Mediterranean climate. Here, pools appear for much of the winter and spring but dry up in summer and fall. The seasonal aspect gives obvious advantages to seasonal life cycles, such as being a nursery for chorus frogs or other amphibian or insect species, safe from becoming breakfast for fish or bullfrogs. Still, how could *any* life persist year around in a vernal pool? I pondered this question, even while knowing that the life cycles of endemic plants let them survive very well as seeds or tubers in such places. I didn't know about seed-like adaptations in the animal world. But it was in vernal pools that I discovered fairy shrimp.

Fairy shrimp (order Anostraca, class Branchiopoda) are crustaceans. They look very like a tiny upside-down-swimming shrimp, with an especially long tail, weaving a sinuous course through the water, propelled by eleven pairs of legs. At 6 to 25 mm, fairy shrimp are definitely visible to the naked eye, but I've seen them only after they've been caught in a dip net. It was their graceful way of moving that attracted me to them, but it was their life cycle that taught me about their resilience. Fairy shrimp enter diapause—biological dormancy, when they neither grow nor metabolize—as an egg-like cyst. In this state, they can endure most any condition they might confront: desiccation, extreme heat or cold, radiation and hypersalinity. Besides such resilience, the cyst state can also aid dispersal by wind, flood or predators. And once attaining such dormancy, they can remain viable for centuries. Each year as the puddles in fields or at roadsides begin to grow, I want to don my boots, grab a dip net, and search for fairy shrimp.

In retrospect, I find it rather shocking that someone professing to love the natural world could have ignored the wet three-quarters of it for the first thirty years of her life. I consider that a personal loss, or at least a delayed joy, as I think of the wonder of the lives and dances of our fellow organisms. But to the extent such ignorance is shared by others, it is a loss for humanity and ultimately for the planet. How can we live well if we understand nothing of creatures and systems with whom we share our earth home? Children are taught *human* history (albeit a rather conquest-centered version) from early in school. If beginning in the youngest grades we spent at least as much time learning about *natural* history and our connection to a biome, about other biomes and their jobs, about their relation to each other and to us, mightn't we make healthier decisions about how to live?

Evelyn Hess is the author of *To the Woods*, 2010, and *Building a Better Nest*, 2015. Her new book, *Shoulder to Shoulder: Working Together for a Sustainable Future*, will be available this summer.

Virtual Meetings in the Post-Pandemic Era

The Board of the Eugene Natural History Society seeks feedback regarding the potential use of Zoom once COVID-19 restrictions are lifted and we are safely able to meet again on the University of Oregon campus.

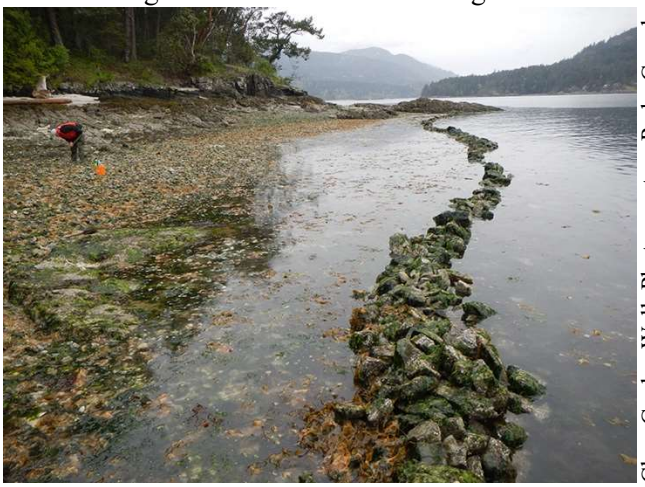
1. Would you support the occasional use of Zoom for meetings?
2. Would you attend an in-person meeting in our usual meeting place on campus that featured a speaker broadcasted over Zoom?

A Zoom meeting would potentially allow us to bring in speakers whom we might not be able to book otherwise (e.g., from the east coast or even farther away). Please email your support or opposition to each question (a simple yes or no will suffice) to August Jackson at augustjackson@ecolingual.com.

Clam Gardens, Ancient and Future

by Reida Kimmel

Perhaps you have seen the remnants of stone weirs at the mouths of rivers and streams. These weirs were built by Native Americans to guide incoming salmon to shallow pools where they could be caught. Probably you have seen the iconic photographs of indigenous people standing on rickety platforms daringly fishing the surging waters of the Columbia River before the dams that destroyed their fisheries were built. Today there are sturdier platforms along the banks of the Columbia from which tribal people fish. When nets are used, fish that are legal are kept, while other fish, such as wild salmon, can be released with less harm than is incurred by any other method of fishing. The original inhabitants of our Pacific Northwest have always had ingenious and low-tech solutions for harvesting the seafood that sustains life, physical and spiritual. But clams? We know they were important to some groups. The Lummi were famous for preserving and trading their clams all over the Washington coast until the damming of the Elwah



Clam Garden Wall. Photo courtesy Parks Canada

River destroyed the beaches that were Lummi clamming grounds.

In 1995, John Harper, conducting aerial surveillance for the British Columbia government, noticed hundreds of stone walls along the Kwakwaka'wakw First Nation's beaches. These walls, and many more discovered in the area known to us as the Salish Sea, remained a mystery. What were they? Finally, someone had the brilliant idea to ask the elders. Traditional knowledge said the walls were built over a thousand years ago, others said since the beginning of time. They were built to expand habitat for diverse species of clams, to provide a life-sustaining food source that was always reliable and easy to obtain. As for their actual age, Dana Lepofsky and Nicole Smith dated them to 3500 years old. Their radiocarbon analysis of shell fragments from deep in the walls of some clam gardens appeared in a *PLoS One* article. If the practice of building clam gardens is that ancient, then many truly ancient constructions are hidden, buried underwater by rising sea levels.

The walls are the remains of thousands of clam gardens, some as small as ninety square feet. Lepofsky et al., in *Ecosystems* vol. 24, reported that Indigenous Peoples built clam garden walls on 35% of the Pacific Northwest shoreline, creating almost 113,000 square meters of flat beach terrace. Clam gardens were even built on bedrock where no clam habitat had previously existed. All represented the labor of families, groups or tribes over many years or generations, because once constructed, the gardens must be maintained. European settlement, coupling the loss of traditional territories with diseases that devastated native populations, spelled the end of clam gardening. Few were left to tend the gardens. Social structure, culture and knowledge were lost.

What a wonderful thing was lost! The structure is simple yet sophisticated. The results of building create mindboggling diversity as well as food. To build a clam garden you need plenty of rocks. There will be a terrace the length of the garden on the landward side at the top of the optimal reach of the future clam garden. Traditional knowledge informs wall builders as to the intertidal height at which clams grow best. The goal in building is to modify the slope of the beach from the top to the all-important wall at the seaward bottom of the future clam beach. The family or tribe that owns the beach, old and young, and these days scientists and students as well, gather rocks to build the walls. To build the seaward wall people roll big rocks down to the lowest tideline on the beach. Incoming tides will flow over the wall and bring in shelly debris, small gravels and other sediment. This will result in a flatter beach. The waters will also bring important nutrients and many species that thrive in the intertidal zone. The gently sloping beach created by the walls will increase water retention which in turn will mitigate temperatures, keeping warmer in winter, cooler in summer, encouraging greater plankton productivity. Outgoing tides will wash out silt and fine sediment that would harm clam habitat by reducing aeration. The clam garden takes time to mature, to arrive at the whole walled area being converted to a gently sloping beach just right for a number of clam species. Storms happen. It is important that the wall be actively maintained to grow and preserve the beach. The gardens themselves have to be cleared of large cobble to keep the clams' water oxygenated.

A study by Groesbeck et al. published in *PLoS One*, 3/11/14, comparing clams at an unwalled beach and at a replicate clam garden found that the ancient aquaculture practice of altering the slope of a beach improved growing conditions for the two clam species studied. Littleneck clams were found at twice the density and butter clams at a four-fold increased density in the clam gardens. Littlenecks grew 1.7 times faster and had a higher survival rate. Cockles and horse clams are also attracted to the gardens, as are barnacles, snails, crabs, eels, mussels and sea cucumbers. The algae-rich clam gardens are wonderfully nutritious. Many vertebrates are attracted to the beaches. Racoons, mink, river otters, bears, sea ducks and geese feed on the riches.

Warming waters, rising seas, fiercer storm surges, and ocean acidification are all huge threats. Clam gardens could do much to mitigate life-threatening disasters. Beaches with altered gentler slopes lessen wave energy and reduce erosion as sea levels rise. Acidic water is a distinct survival threat to young shellfish. The tides bring particles of shell into the walled beaches. Their calcium can reduce the acidity of the sub-surface water in the clam gardens. Bivalves are marvelous water purifiers. Some clam beaches in Washington state are closed due to pollution from manure and other sources. Even if the flourishing clam populations cannot be harvested for food, they can provide a hugely important environmental service.

Today, many untended clam gardens are unproductive, the beaches compacted, choked with sea lettuce and covered with driftwood. The Clam Garden Network is a group of First Nations, their researchers and resource managers and others from Canadian universities, striving to learn from traditional knowledge and research science to restore and revive clam gardens. Ten First Nations Communities and Parks Canada are restoring gardens on two Canadian Islands. One is on Russell Island in

the Gulf Islands National Parks Preserve, and the other is on Salt Spring Island. Members of the native communities are restoring the thousand-year-old rock walls. Young and old, bursting with energy, learning and giving so much. As one elder said, "When the tide's low, make that our classroom." Visit this wonderful short video. https://youtu.be/22Nytmxw2Z8

ENHS welcomes new members! Membership payments allow us to give modest honoraria to our speakers and pay for the publication and mailing of *Nature Trails.* To become a member, go to our website, click on *join* and follow the instructions. Our web address: http://eugenenaturalhistorysociety.org/

Events of Interest in the Community

McKenzie River Trust https://mckenzieriver.org/events/#event-listings
Wednesday, 21 April, 7 p.m. A Benefit for MRT. Writer Rebecca Solnit will lead the third annual "Upstream: Conversations Between People and Rivers." Solnit's wide-ranging reflections and clear-eyed insights offer the space and the language for considering how people shape and are shaped by land, how they support each other and recover from times of trauma, and why compassion for each other in this work is fundamental. For information about Rebecca Solnit, how to get a ticket, cost, and how to join the Zoom meeting, go to https://give.mckenzieriver.org/event/upstream-an-evening-with-rebecca-solnit/e330834

Lane County Audubon Society lanecountyaudubon.org
Saturday, 17 April, 8 a.m. Third Saturday Bird Walk. This month's bird walk is a celebration of the recently adopted Lane Audubon Inclusivity and Diversity Statement. We are reaching out to women, BIPOC, and queer birders and their allies. In May, we will have our traditional Third Saturday Bird Walk. With both walks, participants will need to stay masked and distanced, and the walks will be limited in size. If Bex is free, she enjoys leading walks at other times. New birders always welcome. For more information or to sign up for a walk, please email Bex at fieldtrips@laneaudubon.org
Tuesday, 27 April, 7 p.m. Zoom Program Meeting: Saline Lakes, Flamingos, and Life in Extreme Environments. Nate Senner, faculty member at University of South Carolina, will explore how water availability and lithium mining influence the three species of flamingos that breed in the Lithium Triangle: the Andean (*Phoenicoparrus andinus*), James' (*P. jamesi*), and Chilean (*Phoenicopterus chilensis*) Flamingos. For access details, check laneaudubon.org

Mt. Pisgah Arboretum
For MPA activities go to https://mountpisgaharboretum.com/festivals-events/
Tuesday through Saturday, 11 to 15 May. iNaturalist Wildflower Bioblitz. Upload your photo observations of plants in Lane County. Your photos will be identified by experts, and these observations will serve as the display at this year's Wildflower Festival. The dates for this event simulate the plant collections time for the 2021 Festival, which would occur on Sunday, 16 May. For more information, visit the project here. The Bioblitz is supported by the Emerald Chapter of NPSO.
Friday through Sunday, 14 to 16 May, 5 to 7 p.m. Restoration, Recovery, Resilience. The poster plant for the 2021 Wildflower Festival is fireweed (*Chamaenerion angustifolium*), representing this year's theme of restoration, recovery, and resilience as our human and natural communities emerge from the Labor Day wildfires and the COVID-19 pandemic. We'll be presenting three nights of programming, featuring a variety of virtual field trips and presentations on topics such as fire ecology, native plant gardening, plant-pollinator interactions, and botanical illustration. See here for presenter bios and talk descriptions. Full schedule available soon. Tickets go on sale in the first week of April!

University of Oregon's Museum of Natural and Cultural History https://mnch.uoregon.edu/museum-home
Thursday through Sunday, 8 to 11 April, 11 a.m. to 4 p.m. MEMBERS-ONLY REOPENING Starting this week! We're thrilled to announce that we're reopening our onsite exhibits to members beginning this week, and with our new timed ticketing system you can be assured of a safe, relaxed, and enjoyable visit—without the crowds! Advance reservations are required. Reserve your timed ticket using our online form, or contact us at mnchticketing@uoregon.edu or 541-346-3024. As always, members are admitted free. Another excellent form of outreach from MNCH is FIELDNOTES. Go to https://mnchfieldnotes.uoregon.edu/directions-2/museum-spotlight/

Native Plant Society of Oregon, Emerald Chapter https://emerald.npsoregon.org/
Sunday, 11 April, 1 to 3 p.m. Hendricks Park Wildflower Walk. Field Botanist Steven Yeager leads the Friends of Hendricks Park inaugural spring tour. Learn to identify and use edible and medicinal plants with one of the preeminent herbal educators in the Northwest. Trip will proceed rain or shine. Bring enthusiasm and a loupe (hand lens). Meet at Wilkins Shelter. Sign up here.
Wednesday, 14 April, 5:30 to 7 p.m. Armitage Park Evening Wildflower Walk. Ed Alverson will lead an evening wildflower walk along the Crilly Trail in Armitage Park. We'll also see a large population of Henderson's shooting star in full bloom. Sign up here.
Wednesday, 14 April, 7 to 8:30 p.m. Program: iNaturalist Is Way More than an APP. Bruce Newhouse will list all the things you can do with iNaturalist and discuss how to make better observations and use projects. Gail Baker will demonstrate how to use it for trip planning and to follow the blooms. Bitty Roy will show how your posted observations contribute to species discovery, range extensions and conservation. Dean Walton will facilitate the question-and-answer session. If you are

not familiar with iNaturalist and want to get the most out of this presentation, please visit the iNaturalist web site, read the Community Guidelines (linked at the bottom of every web page) and watch the iNaturalist videos prior to the event.
Join this Zoom meetingat https://uoregon.zoom.us/j/99033926840?pwd=Wmlzb0xHL0JJWnZwMkJOTUY4ZnFUdz09
Monday, 19 April, 7 to 9 p.m. Online Program: Plant Succession 40 Years after the Mt. St. Helens Eruption. The Weevil Empire: How Insects Rule and Other Stories from the Pumice Plain. Speaker **John Bishop** is Co-Director and Associate Dean at the College of Arts and Sciences and professor of biological sciences at Washington State University. His ecological research at Mt. St. Helens is focused on the effects of herbivores on keystone plant colonists and the resulting cascading impacts on community and ecosystem development. The link for the presentation will be emailed to Emerald Chapter members in advance and will be posted at https://emerald.npsoregon.org/ closer to the date.
Saturday, 1 May, 1 to 3 p.m. Gail Baker and Steven Yeager will lead a wildflower walk. Register here (location and handouts available with registration).

Nearby Nature https://www.nearbynature.org/
Tuesday, 13 April, 10 a.m. to 12:30 p.m. Green Start Play Day: Talons and Tweets. This month discover the world of birds—feathers, beaks, eggs and nests! Check in with Miss Grace at the start of your family's 45-minute reserved time slot to receive instructions, and then set off in our safe and exciting outdoor classroom to discover toddler and pre-school activities, stories, and games. Rain or shine! Kids 5 and under only, with an adult. You will need to pre-register to reserve your time slot, as there will be only three families max in the Learnscape at the same time (with social distancing guidelines in place). Members free, non-members $7/family. Nearby Nature, 622 Day Island Rd.
Saturday, 17 April, 9 a.m. to noon. Alton Baker Park Earth Day Clean Up.
Saturday, 1 May, 1 to 4 p.m. Bioblitz 2021.
Tuesday, 11 May, 10 a.m. to 12:30 p.m. Green Start Play Day: Spring Sprouts.
Go to NN's website (above) for complete details on these events.

Friends of Buford Park and Mt. Pisgah https://www.bufordpark.org/
Because people and nature need each other, the Park is OPEN during the Coronavirus/COVID-19 pandemic. Please refer to Lane County for instructions about the park and updates.

WREN (Willamette Resources and Educational Network)
This April and May, we will be offering after-school programs in the West Eugene Wetlands for early elementary school children (1st–3rd grade). For more details and to register, Contact Laura Maloney, WREN's Education Director.
Tuesday, 13 May, 9 to 11 a.m. Wetland Wander. Location: Whilamut Natural Area; Meet at the north end of the Dave and Lynn Frohnmayer (Autzen) Bridge over the Willamette from the UO campus to the park. **Walk Leaders:** Bitty Roy, UO Professor and Volunteer at Cascade Mycological Society; and Brett Parsons, Natural Resources Specialist with Willamalane Parks and Recreation District. This walk will encompass a variety of ecosystems including the riparian areas along the Willamette River, pond bank and swales, and river bottom forests. Bitty will lead us in an exploration of birds, insects, fungi, and plants using the iNaturalist tool to help identify species and record findings. Have the iNaturalist APP downloaded on your phone.

Lichens on trees in Fort Clatsop State Park. Photo by D. Stone

Last year we postponed our annual business meeting from May to September due to the pandemic. This year we will go back to our normal schedule. The annual business meeting will occur at the beginning of the May 2021 Zoom meeting.

ENHS Officers and Board Members 2020–2021

President: August Jackson augustjackson@ecolingual.com
Vice President: Rebecca Hazen rebeccahazen2011@comcast.net
Immediate Past President: Dean Walton
Secretary: Monica Farris
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Website Webmaster: Tim Godsil tgodsil@uoregon.edu
Nature Trails: Editor: John Carter jvernoncarter@comcast.net; Support Staff: Ruth BreMiller, Reida Kimmel, Tom Titus, and Kim Wollter

2020–2021 Speakers and Topics

16 Apr.	**Daphne Stone**	**Lichens: How They Tell Us About Their Environment**
21 May	**Lauren Ponisio**	**Bees and Wildfire**

2021-2022 Speakers and Topics

17 Sept.	**Julia Clark**	**Dinosaur Colors and Vocalizations**
15 Oct.	**Laura Prugh**	**Wildlife Ecology**
19 Nov.	**TBA**	
10 Dec.	**Paul Bannick**	**Snowy Owls (cosponsored with Lane County Audubon Society)**
21 Jan.	**TBA**	
18 Feb.	**Michael Nelson**	**Fire Ecology and Report Following 2020 Fires**
18 Mar.	**Pat O'Grady**	**Archaeology**
15 Apr.	**TBA**	
20 May	**Lauren Hallett**	**Siskiyou Plant Communities**