Nature Trails

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The Eugene Natural History Society is based out of the traditional homelands of the Kalapuya peoples, most of whom are citizens of the Confederated Tribes of Grand Ronde and the Confederated Tribes of Siletz Indians. These Indigenous people stewarded this land for millennia and continue to play an active role in local communities. We commit to supporting the many Tribes and Indigenous scholars and organizations working to shape the future of these lands and waters that we mutually cherish.



Nymph of the oak treehopper, *Platycotis vittata. Michael Palmer*

Bug Hunting at the McKenzie Valley Bug Lab

Michael Palmer

McKenzie Valley Bug Lab, Blue River, OR

Friday, 16 October 2026, 7:00 pm

This month's meeting will be a hybrid of in person and real-time Zoom. The in-person lecture will be held at **7:00** in **221 Allen Hall, University of Oregon campus.** The Zoom lecture link is https://zoom.us/j/97499095971?pwd=eE9sdG9hSHMvOHhIUEJuU21wT20rdz09 or see our website at https://eugenenaturalhistorysociety.org/

This Month's Speaker: Mike Palmer



While earning his PhD in botany at Duke University, Mike Palmer studied forest biodiversity. During that period, his advisor, Norm Christensen, became a prominent fire ecologist studying how forests respond to disturbances and changes over time. Ironic, then, that soon after Mike retired and moved with his wife, Dr. Suzanne McAlister, into her family's historic home in Blue River, OR, the Holiday Farm Fire of 2020 burned their house to the ground.

"It's kind of interesting to first appreciate, from an intellectual perspective, how fires behave and how they affect species, and then [to] become one of the people affected," Mike says. "People keep saying, 'Wouldn't it be cool to monitor what comes back?' And I think yes and no. I feel retired and I don't want to do the really hard work of careful monitoring. Now's the time to do things that match my physical abilities better."

Mike grew up in Swarthmore, PA, fascinated by fireflies. His father worked for the World Health Organization and moved the family for a year to Trinidad. "It was a place filled with flowers, flowering trees and shrubs, and the famous Caroni Swamp with the scarlet ibises," he recalls. As a teenager back in Pennsylvania, he studied backyard dandelions and chickweed through his father's old Bausch and Loam microscope. "Getting familiar with common things was really neat."

Although he discovered a passion for both insects and plants, he determined in college that for practical reasons, botany would be easier to study. "I realized that that if I focused only on insects, it would be hopeless because there were so many that were either undescribed or hard to describe for an undergrad."

He earned his undergraduate degree at Indiana's Earlham College and went to graduate school at Duke, pursuing his passion for community ecology—the interactions between different species over time within a particular forest. He completed his postdoctoral research in forest biodiversity at the North Carolina Botanical Gardens and, in 1990, became a professor in the Department of Plant Biology, Ecology, and Evolution at Oklahoma State University, where he taught until 2017. "It is there that I continued work on biodiversity patterns—both global and in tallgrass prairies—but I also did a lot of work on fire ecology, both in grasslands and woodlands."

Mike and his wife have just finished rebuilding their home and laboratory space; he's replaced his equipment, including his father's old medical microscope, which melted in the fire. "Actually, the base survived," he says, "and the microscope slides melted together in beautiful abstract forms."

For his McKenzie Valley Bug Lab, Mike raises phytophagous insects that feed on their hosts, including leafminers and stemborers, gallmakers and seedhead feeders. He's interested in the relatively unknown host and larval stages of these species known mainly from their adult forms.

"If it ends up being something common and well known, I photograph them and release them," he says. "But if it's something that's potentially new to science or a range extension or something like that, then I preserve it in ethanol and send it off to the experts." Since moving to Oregon, he's discovered six new species, including the gall midge *Leucecis eminens.*

He uses a 4- × 10-foot tentlike malaise trap to collect insects; he's hoping to get the bycatch into the hands of people interested in those particular species. "It's nice to focus on how fun all of this is, and about how the science is progressing, too," he notes. "We're racing against the clock of extinction, and to be able to get these insects in the right people's hands before things start disappearing is crucial. Even

if something is not rare … it might be a piece of the puzzle in the evolutionary tree of a certain group of organisms that can help us understand the rarer ones."

Every week, he sends off two or three packages of insects to different places. "The last one was to Canada, where there's somebody studying the rove beetles of North America. Somebody else is studying the stone flies of the Pacific Northwest."

Mike documents his discoveries on iNaturalist, username Cosmopterix. "Several people like me are really impressed by iNaturalist. It's got a good enough interface to use it as a database. It's a good way for me to keep track of what I found and [an] even better [way] for me to communicate with other scientists to say, hey, I found this taxon in this location."

He also posts research on Gallformers.org. His McKenzie Valley Bug Lab has a Discord server as well, and he welcomes suggestions for taxa to research and collect for scientific purposes. "Join my Discord server if you want really nerdy interactions," he says. "It's got users from well-established scientists to high schoolers, all of us networking, sharing meetings and events and talking about bugs."

"The lines between people in the community and scientists are just so blurred nowadays," he says. "Retirees can be someone like me who's coming in from a different field. But more interesting are all the high school students and undergrads using these apps. They've chosen their niche and they're online experts in certain groups. If you're good and you know what you're talking about, then the experts will find you. So young people are communicating with established experts and swapping specimens back and forth and networking. That's one thing that I really like about the modern interconnectedness of the scientific community."

Join us on Friday, 16 October, at 7 p.m. in Allen Hall on the University of Oregon campus for "Bug Hunting at the McKenzie Valley Bug Lab," when Mike will tell us all about his work. Admission is always free! If you are unable to attend in person, join us on Zoom at https://zoom.us/j/97499095971?pwd=eE9sdG9hSHMvOHhIUEJuU21wT20rdz09 or from our website at https://eugenenaturalhistorysociety.org/

In the meantime, he welcomes followers on iNaturalist at www.inaturalist.org/people/cosmopterix and www.inaturalist.org/projects/mckenzie-valley-bug-lab.

—Melissa Hart

Small Steps by Chuck Kimmel

In his monumental 1859 book on natural selection, Charles Darwin famously wrote "*natura non facet saltum*"—nature does not make jumps. He was convinced that evolution proceeds smoothly and gradually by incremental steps over long periods of time. Although he was of course absolutely correct in his revolutionary proposal of natural selection, we now have good evidence that nature does indeed make jumps (i.e., big changes happening quickly) that play an important role in evolution.

Darwin's error persisted through most evolutionary thinking of the late 19th and 20th centuries. Richard Dawkins, in his popular book *The Blind Watchmaker* (1986, p. 244), wrote "True saltationists [i.e., folks that believe in evolutionary jumps] don't exist among modern biologists." A key argument comes from genetics. Although gradual evolution would be mediated by genes that individually have only small effects on the organism's traits (phenotypes), evolutionary jumps necessarily would involve mutations in genes that produce large phenotypic effects. The large-effect genes are often essential, and mutations in them are usually lethal. However, as we have come to realize, mutations can also affect the regulatory elements of genes, not just their protein coding sequences, with the result that the mutations change things such as when and where and by how much genes are expressed but do not kill the organism. To illustrate, imagine construction of a house with a modular design. A disruption of the dining room instruction set might turn that specific module into a mess, but the kitchen module remains unchanged and can continue to function perfectly. The house survives without its dining room, at least until repair.

Dawkins notwithstanding, Stan Sessions and I are conducting an ongoing search for evolutionary jumps involving large-effect genes (see our *Nature Trails* article "The Hopeful Monster," volume 59, number 4, April 2025; available on the ENHS website). Not only are examples of large-effect genes easy to find, but we find evidence for them seemingly wherever we look—e.g., in migrating monarch butterflies and migrating Chinook salmon. All of these cases appear to involve a mutation in a single key gene with a large effect and can be accompanied by a cloud of mutations in other genes, each of which has a smaller effect. The significance of the large-effect mutation seems clear, but what are the small-effect genes good for?

Here we come to the point of this essay. An answer to the question posed above comes from, of all things, pine trees. The trees, specifically the commercially important western white pines, cover great expanses of the landscapes in Oregon and neighboring regions. However, in the early part of the 20th century a fungus causing white pine blister rust began to destroy huge tracts of trees, as many as 95% of the trees in an infected stand. The rust was inadvertently introduced into North America on infected seedlings imported from Europe. The blisters are full of infectious spores that become airborne.



White pine blister rust. *Richard Sniezko*

By the 1990s, partial resistance to the rust was apparent. This resistance was mediated by small-effect genes, each one contributing typically less than 10% of the total resistance. In contrast, in a seminal 1999 publication the authors described a major-effect dominant allele, Cr2. This mutation confers complete immunity to the rust. It may be of interest to Eugene folks that large-scale studies are being done in our vicinity at the U.S. Forest Service's Dorena Genetic Resource Center, immediately below Dorena Lake near Cottage Grove (visitors are welcome).

It seems clear that a major-effect Cr2 genetic locus would be advantageous with respect to initial establishment and propagation of rust resistance, relative to the requirement of a large number of small-effect resistance genes. The Cr2 locus is a genetic dominant, meaning that only a single allele needs to be involved, further increasing its advantage. However, this advantage is only one side of the coin. The other side, as considered by Richard Sniezko and Jun-jun Liu in a 2023 article, is the durability of the resistance. Pine genes can mutate to increase resistance, and rust genes can mutate to increase virulence; the conflict creates a kind of arms race between the two species.

You would think that the rust's short generation time, small size, and production of huge numbers of spores would give it the upper hand genetically. However, as Sniezko and Liu proposed, target size matters. Virulence directed toward a single major effect resistance gene, Cr2, may well work to overcome effects of this gene, and the result will be the plant becoming susceptible to infection. But neutralizing a single small-effect resistance gene will have little effect. All or most of the pine's small-effect resistance loci would need to be essentially simultaneous targets for the rust to be able to escape resistance. Although mutation in a single key gene of large effect can give the trees instant initial protection from the rust, the resistance of the tree protected by genes of small effect will be more durable over time. This hypothesis is reasonable in principle and has been supported by observation. The dead pines in an experimental planted plot were all descended from Cr2 seed and inoculated with a virulent strain of rust. Surviving trees surrounding the dead ones were protected by small-effect resistance genes.

Returning to the question posed above, it is straightforward to extrapolate these findings to other organisms and their pathogens, and because resistance to pathogens is certainly adaptive, durability gives a "reason for being" for critical genes of small effect in examples more general than pine trees and their



Dead pines in an experimental plot. *Richard Sniezko*

infectious fungi. Extending this line of thinking still further, consider host–microbiome interactions. An individual multicellular host (e.g., a human) may have more than 1,000 kinds of commensal microbes in its biome, and interactions may well be durably stabilized by clouds of host genes of small effect. An answer to "what are small-effect genes good for?" is that the collective of small-effect genes mediates durability of the phenotype.

ENHS Field Trip to Green Island



Monica Farris

On 19 September, our September speaker Brooke Penaluna led a trip to the McKenzie River Trust property of Green Island to look for native and nonnative fishes in a side channel of the Willamette River. Twenty water lovers (including two middle school students) gathered to meet the challenge of identifying the contents of the nets and seines being dipped and dragged through the quiet water. Although the sky was overcast, we got wet only from our feet up; the rain held off.



Monica Farris

We had set out minnow traps in a quiet eddy the day before, and these yielded various fishes and other river dwellers, such as our native signal crayfish and several snails.



Signal crayfish, *Pacifastacus leniusculus. Rachel Glaeser*



Acute bladder snail, *Physella acuta. Dat Doris (CC BY-SA 4.0)*

Brooke let us puzzle over whether the fishes we were looking at in the viewing tank were northern pikeminnows (usually have a dark spot on the tail) or peamouths (usually with bright red lips). The largescale sucker was easier to spot, with its mouth directed downward … for sucking! Sculpins and three-spine stickleback were more common. Catfish and baby salmonids also showed up.



Monica Farris



Northern pikeminnow, peamouth, sculpin. *Rachel Glaeser*

All that fishing and puzzling helped us work up an appetite, so a subset of us made the short drive to Coburg to the Coburg Pizza Company. The hot cocoa, cold beer, and unique pizza possibilties were most welcome.

You are welcome, too, to join us on our next outing. Stay tuned to *Nature Trails* and our website for more information!

Volunteers needed for ENHS booth at the Mt. Pisgah Arboretum Mushroom Festival
Sunday, 25 October, 10am–5pm

See announcement in the calendar below. No experience necessary; you will be paired with a trained volunteer. Booth sitting is a great way to learn interesting things and meet interesting people! We usually work in 3-hour shifts, but other time slots are possible. Contact Judi Horstmann (horstmann529@comcast.net).

Upcoming Events

(for complete listings and details, see individual websites)

- **McKenzie River Trust** https://mckenzieriver.org/events/#event-listings or 541-345-2799
  Wednesdays, 9–11:30am. Watershed Wednesdays at Green Island. Beginning 30 Sept. Volunteer projects include invasive species removal, habitat care, planting, and tree establishment. Sign up
  First Fridays at the Willamette Confluence. Beginning 2 Oct. Work may include bending, clipping, digging, lifting, and walking on uneven ground. Tools provided.
  Second Saturdays, 8am–4pm. Living River Exploration Day at Green Island. We open the gates to this conservation area and welcome our community to explore this special place. Free, no preregistration.
  Saturday, 24 Oct., 9–11am. hatch ikt'at'uu Neighbor Tour, Florence, Oregon. A chance to see the site, hear from the people who helped implement the project, and talk together about what comes next.
  Saturday, 26 Oct., 9am–1pm. Painting and Photography Open House. Calling all artists and photographers! Grab your paints, pencils, or cameras and head to the breathtaking Willamette Confluence for a day of creativity in the heart of nature. 34000 Seavey Loop Rd., Eugene. Preregister.
  Saturday, 7 Nov., 9:30am. Willow Harvest at Green Island. Sign up online.
- **Native Plant Society of Oregon, Emerald Chapter** https://emerald.npsoregon.org/
  Monday, 19 Oct., 7–9pm. Ethical Foraging of Native Plants. Presenter: Steve Yeager. Amazon Community Center, 2700 Hilyard St., Eugene.

Monday, 16 Nov., 7–9pm. Wetland Restoration. Presenter: Laurie Holts, City of Eugene. Amazon Community Center, 2700 Hilyard St., Eugene.

- **Mt. Pisgah Arboretum** https://mountpisgaharboretum.com or 541-747-3817.
  Sunday, 18 Oct., 10am–noon. Native Plants and Home Landscapes Tour. With Nick Sky. Learn about native plants and find inspiration for creating native habitats at your home. Preregister. Limited to 18 people.
  Sunday, 25 Oct., 10am–5pm. 2026 Mushroom Festival. Attendance is limited; tickets go on sale 25 Sept.
  Saturday, 7 Nov., 10am–noon. The Art of Decay: Grief, Transformation, and Native Plants Workshop. Explore how local ecosystems embrace shedding, dormancy, and decay to nourish future growth. White Oak Pavillion. Preregister. Limited to 23 people.
- **Coast to Cascades Bird Alliance** www.laneaudubon.org or 541-485-BIRD;
  Saturday, 17 Oct., 8–11am. Third Saturday Bird Walk. Everyone welcome. For meeting info, contact tolalla@gmail.com
  Tuesday, 27 Oct., 7–8:30pm. Thailand Is for the Birds. Presenter: Forest Tomlinson. Zoom and in person, Campbell Community Center, 155 High St., Eugene.
- **Museum of Natural and Cultural History, University of Oregon** https://mnch.uoregon.edu/museum-home
  Ongoing exhibits: Oregon—Where Past Is Present; Explore Oregon; America at 250: Before, Between, and Beyond (through Mar. 2027); The Buzz About Bees (through Jan. 2027)
  Thursday, 29 Oct., 6pm. Centering Indigenous Knowledge Keepers in Museum Collections. Panelists will discuss how meaningful collaboration and data sharing can strengthen scholarship and collections care and can support Indigenous resilience and connection. MNCH Galleria.
  Thursday, 12 Nov., 6pm. Restoring Cultural Arts: Artist Talk with Shirod Younker. Join Shirod for stories of his path and inspiration as an artist and how he works to perpetuate the artwork of his people and support others to do the same. MNCH Galleria.
- **Nearby Nature** https://www.nearbynature.org/ or 541-687-9699, 622 Day Island Rd., Eugene (Alton Baker Park)
  Monday, Wednesday, Friday mornings. Wonder Keepers. Preschool program outdoors in our Learnscape.
  Tuesday and/or Friday afternoons. Natural Neighbors. After-school program outdoors in our Learnscape.
  Friday, 16 Oct., 5:30–9pm. Haunted Hike. Celebrate night creatures in Alton Baker Park. Register online.
  Tuesday, 10 Nov., 10–11:30am. Green Start Play Day: Fun with Fungi. In our Learnscape. Register online.
- **Lane Country Butterfly Club** https://www.lanebutterflies.org (new website)
  Wednesday, 14 Oct., 7:15–9pm. Moths: They're More Interesting Than You Think. Presenter: Rick Ahrens. Main Hall, Hilyard Community Center, 2580 Hilyard St., Eugene.
  Wednesday, 11 Nov., 7:15–9pm. The Oregon Butterfly Atlas 2026: Dot Maps, Patterns, and Other Insights. Presenter: Jeff Miller. Main Hall, Hilyard Community Center, 2580 Hilyard St., Eugene.

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Eugene Natural History Society
P.O. Box 5494
Eugene, OR 97405

Monthly meetings:
When: September–May: third Friday; December: second Friday
Where: 221 Allen Hall (UO campus) and/or on Zoom at https://zoom.us/j/97499095971?pwd=eE9sdG9hSHMvOHhIUEJuU21wT20rdz09
Time: 7:00 pm
Parking for UO events is available at the UO Physical Plant lot: From Franklin, turn north onto Onyx, go 1 block to the lot. After 6pm, it's open to the public.
See our website for more details.
http://eugenenaturalhistorysociety.org/

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2026–2027 Speakers and Topics

18 Sept.	**Brooke Penaluna**	**Willamette River Fishes: Thriving, Striving, or Nose-diving?**
16 Oct.	**Michael Palmer**	**Bug Hunting at the McKenzie Valley Bug Lab**
20 Nov.	**Kayla Fratt**	**Remote Scentsing: Using Detection Dogs and Satellite Imagery to Understand Alaska's Island Wolves**
11 Dec.	**Nolan Clements**	**A 50-Year Snapshot of Change in Oregon Coast Range Bird Communities** (cosponsored with the Coast to Cascades Bird Alliance)
15 Jan.	**Alex Nyers**	**What Obsidian Can Tell Us**
19 Feb.	**Leif Karlstrom**	**Giant Aquifer of the Cascades**
19 Mar.	**Desirée Tullos**	**Klamath River Dam Removal: What's Next**
16 Apr.	**Stephanie Hazen**	**Backyard Butterflies and Conservation** (cosponsored with the Emerald Chapter of the Native Plant Society of Oregon)
21 May	**Erin Pettit**	**Thwaites Glacier, Antarctica**