Nature Trails

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The Eugene Natural History Society is based out of the traditional homelands of the Kalapuya peoples who stewarded this land for millennia. Today most Kalapuya people are citizens of the Confederated Tribes of Grand Ronde and the Confederated Tribes of Siletz Indians and continue to play an active role in local communities and in the stewardship of this land.

Mt. Baldy alpine area, Kootenay Boundary, southern British Columbia, 2016. *Yoann Leforestier*

Floral Relations of Oregon's Native Bee Fauna

(cosponsored with the Emerald Chapter of the Native Plant Society of Oregon)

Lincoln Best

Department of Horticulture, Oregon State University, Corvallis

Friday, 19 April 2024, 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 our new time and room: 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: Lincoln Best

In late July 2020, Lincoln Best and I set out in his windowless van equipped with Alberta license plates, embarking on a route through the Oregon Outback that took us through rural towns amidst the paranoia of the first COVID summer. We got a few looks. The Oregon Bee Atlas (OBA) was in the midst of its 3rd field season, and we came up with a plan to explore a portion of the state that was underrepresented in historical bee collections at a time of year when floral diversity is decreasing and the bee fauna is transitioning to a smaller cohort of late summer species. We'd have to work to find the bees but figured we might find something special.

We started our first day along the Chewaucan River in the hills outside Paisley before slowly making our way south toward Lakeview, pulling off for the few flowering plants we could locate. Outside Lakeview, off Highway 395, we found the biggest floral display we would come across during our trip—on one side of the road was a ditch full of weedy sunflowers and on the other side was an effluence of gumweed pouring from a low wet spot on grazing land. Here we found a multitude of fuzzy little bees that we later identified as *Anthophorula chionura*, which specializes in the use of gumweed pollen to feed its larvae, and this siting was a new record for the state. Although much of the rest of the trip wasn't particularly fruitful and we'd later get the van stuck in the Christmas Valley sand dunes, to date *A. chionura* in Oregon is still known only from this ditch.

Lincoln wasn't always particularly interested in bees but tells me that he had a general fascination with natural history as far back as he can remember and a bit of an obsessive need to identify things—he still has the insect collection he made as a kid in the 1980s. Lincoln returned to bees while at the University of Guelph, where he became interested in evolutionary theory and biodiversity and began specializing in aculeate Hymenoptera (the bees and stinging wasps) around 2003. His passion propelled travels across Canada and around the world, eventually drawing him to Oregon.

The Oregon Bee Project was created to protect and promote wild and managed bees and is based in the Department of Horticulture at Oregon State University. This project began in 2017 as a multiagency partnership in response to a massive die-off of >50,000 bumble bees in a Wilsonville parking lot after improper application of a neonicotinoid pesticide to blooming linden trees. The OBA was designed to cover the wild bee portion of the project mission.

Lincoln began working with the OBA as a contractor in 2018. When I asked him where the idea for the OBA came from, he explained that there are a few origin stories but that he had been engaged in OBA-like initiatives for more than a decade, beginning with providing his friends with the necessary equipment and encouraging them to collect specimens when they were in the field. While doing research in Kyrgyzstan, he had collection protocols translated into Russian to encourage Kyrgyz farmers to collect bees from their orchards. The seeds were being planted for a significant community science initiative, which has grown and now serves as a framework for similar efforts in multiple states.

Lincoln is currently the full-time lead taxonomist with the OBA. Now in its 7th year, the OBA is a community science effort with the goal of documenting the bees in this state and their myriad floral interactions. The OBA is powered by volunteers trained through the Master Melittologist Program that fan out across the state, collect bees, and produce museum-quality specimens. This effort has resulted in the detection of >600 species in Oregon, including a number of new state records and some species new to science. Lincoln tells me that his favorite part of the OBA is simply seeing the data

submitted by the volunteers, not just for the scientific value but because each data point represents an adventure someone took and the amazing flora and fauna they had the opportunity to experience.

At our April meeting, Lincoln Best will present an illustrated program on how Master Melittologist volunteers with the OBA project have collected data on native bee interactions with >1,500 plant species. We'll learn about these incredible interactions and the ongoing efforts to understand where and how our bees live. —August Jackson

The Zoom lecture can be accessed at https://zoom.us/j/97499095971?pwd=eE9sdG9hSHMvOHhIUEJuU21wT20rdz09

Community Science Networks: Bees, Flowering Times, and Humans

by Gail A. Baker

"The success of the Oregon Bee Atlas, like Oregon Flora, rests on the shoulders of committed volunteers."
(https://extension.oregonstate.edu/bee-atlas)

Interest in and buzz about bees has exploded since environmentalists became aware of colony collapse disorder and reports of a major pollinator decline. In 2005, the slogan "Save the Bees" was introduced. Documentation of bee diversity and bee host plants and habitats became critical. This daunting task is now being tackled by community science social media networks that record the presence and timing of bees and plants and their distribution around Oregon and the world.

Three very noteworthy efforts in Oregon merit our attention because they are documenting Oregon's plant and bee diversity, geographic distribution, and interactions. These observations are made available on the internet to everyone interested. Oregon Flora has assembled a comprehensive guide to the 4,750 vascular plants of Oregon, and this information is shared through their website, publications, and a wildflower identification app. The site includes resources dedicated to flowers that provide nectar or pollen to native bees and other insect pollinators. The other two networks are the Oregon Bee Atlas (Plant Images) (OBAP) and Flora of Oregon: Vascular Plants (FOVP) projects on the community science platform iNaturalist, a social network of amateur naturalists and professional biologists built on the concept of mapping and sharing observations of biodiversity across the globe in time and space. James Mickley, creator of FOVP, noted that online observations have far outpaced collecting for herbariums and should become a reference for Oregon's biodiversity.

FOVP was fully launched January 2024 and maps the diversity of native and non-native plants and their seasonal growth. It captures vascular plant observations made by any iNaturalist account holder and does not require joining the project. Although not all participants join a project, joining allows use of a participant's observations for basic research and conservation purposes and by agencies tasked with managing our plant species; 198 of the 37,791 participants had joined by March 2024. OBAP was established in March 2018 and invites trained Oregon State University Master Melittologists to identify survey sites and document bee diversity and host plant associations. The number of bees collected for each host plant observation is also recorded. The impressive numbers of observations and participants in each project are shown in Table 1.

Table 1. Comparison of statistics for two iNaturalist projects. Values from 3/7/24.

iNaturalist project	Plant observations	Plant species	Participants
Flora of Oregon: Vascular Plants	749,819	4,772	37,791
Oregon Bee Atlas (Plant Images)	24,241*	1,552**	247†

*****Included in the FOVP total.
**Host plants associated with bee collection and also included in FOVP total.
†By invitation only.

These projects share participants and plant observations. Of the 198 individuals who have joined FOVP, 16 also are members of OBAP, and 18 also are members of the Oregon Bee Atlas (Bee Pictures) project. In an FOVP journal post, Bee Atlas folks stated that one motivation for joining FOVP is to learn more about bees' host plants. All plant observations posted in OBAP are captured in FOVP and become part of both databases. The common interest is flowering times.

Flower timing is part of a cascading sequence of environmental cues that signal bee and human activities: for bees to gather nectar and pollen and for humans to garden, hike, and observe nature. iNaturalist allows participants to annotate each observation with the plant's growth phase from vegetative growth through flower buds, flowering, and fruit set. These annotations are a basis for the seasonality and phenology graphs available for every species on iNaturalist. Annotations added to observations increase the sample size, providing a stronger baseline reference for plant flowering range and insights into year-to-year variation, potentially targeting timing of bee activity. However, most observers currently do not annotate their observations.

Would it be useful for both projects to encourage observers to annotate their plant observations? Let's consider Oregon Sunshine, *Eriophyllum lanatum*, an Oregon native plant familiar to us in the Willamette Valley and distributed across our state. In OBAP, this plant is the third most observed host plant, with 256 observations made between only mid-May and mid-August. In FOVP, this species has been observed 1,982 times during all months of the year. FOVP graphs show peak bloom in June, with a range from mid-April through August based on just 157 annotations, indicating lots of room for increasing the sample size and reliability of graphs. Could OBAP observers refer to the graphs as a recommendation for when to visit field sites and perhaps to capture early or late season bee activity?

Citizen science projects have inspired a new genre of data gathering and analysis. The Oregon Bee Atlas is the topic of the ENHS/NPSO April program, and presenter Lincoln Best will provide information on how observational data increases our knowledge of Oregon's biodiversity.

National Pollinator Week is an annual event celebrated all over the world at the end of June, this year from 17 to 23 June. It was first observed in 2017 in the United States after the Senate's unanimous approval, acknowledging the week as a necessary step in recognizing the urgent issue of declining pollinator populations. For a global perspective, check out the Global Pollinator Watch through iNaturalist: https://www.inaturalist.org/projects/global-pollinator-watch?tab=about

To find out more about the basics of iNaturalist, I recommend this article: "Using iNaturalist to Contribute Your Nature Observations to Science." https://www.researchgate.net/publication/343196074_Using_iNaturalist_to_Contribute_Your_Nature_Observations_to_Science

Other useful links

Oregon Flora, Gardening with Natives, Grow Natives, Complete Collection. Flowers that provide nectar or pollen to native bees and other insect pollinators https://oregonflora.org/garden/index.php

United Nations World Bee Day: resolution on 20 December 2017 designated 20 May annually https://www.un.org/en/observances/bee-day

Wild Bee Conservation, Xerces Society https://www.xerces.org/endangered-species/wild-bees

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The Wonders of Autecology

by Stanley K. Sessions

I think most readers of *Nature Trails* will agree that few things in life are as thrilling as an encounter with an animal in its natural "wild" habitat. This is especially true, at least for me, when the animal is a mammal, especially a large mammal. One memory that I often think about was an encounter I had while hiking along a forest trail at the field station owned by the college where I worked in Oneonta, NY. I was walking along, looking down at my feet, lost in thought, when suddenly for some reason I looked up and saw a large porcupine sauntering toward me and doing very much the same thing. In fact, the porcupine looked up at exactly the same time I did. We both stopped and looked at each other, each assessing the potential danger. The look on the porcupine's dark face was one that I had seen before, mostly on the faces of animals such as deer and peccaries that are potential prey for carnivores. It's not exactly a stare but more of a cautious, regarding gaze, as if to ask, "Am I in danger here?" My gaze was more straightforward, literally, and as I watched, the porcupine finished its assessment, pooped, and

headed off into the forest. Being a predatory biologist, but seeking information rather than tonight's meal, I walked over to examine the poop. Of course I did! Not only that, I stirred it with a stick, discovering that it was a thick liquid, almost jet black, and full of squiggly worms. Now the questions come: Is this normal? Are the worms parasitic or mutualistic? Why is its poop so dark colored? etc., etc. This kind of observation is often referred to as "autecology," a term originating with the old German zoologists of the 19th century: learning about the biology of a species by simply watching an individual and its interactions with its environment. Of course, in this case my observation was completely unplanned, as such encounters usually are.

The memory of that outing reminds me of an autecology story told by one of my favorite Berkeley professors, Harry Greene, who I got to know at the Museum of Vertebrate Zoology where I did my PhD work. Harry's specialty is snakes, especially large venomous ones. He tells of a time when he was walking the trails at the La Selva Field Station in Costa Rica and came across a large female fer-de-lance (basically a giant copperhead) coiled in a small clearing formed from a tree fall. These snakes are very common at this field station but seldom seen because of their camouflage. They are locally known as *terciopelo* ("velvet") because they are covered with finely ridged scales that give their skin a velvety look and texture. These sit-and-wait predators prefer large rodents, and Harry decided to watch this snake daily for several weeks. He noticed that there was no water nearby, so how was the snake able to stay in that one place for so long? One morning it rained, and he noticed that large water droplets had formed on the snake's scales, allowing the snake to bend its head back and drink from its own skin. The velvety texture was useful! The payoff for Harry was learning something important about the role of skin texture in the biology of these snakes. Harry has long promoted autecology as an essential part of the scientific method, generating questions that can be used to pose testable hypotheses.

I thought of autecology when, many years later, in my own course on the natural history of Costa Rica I was guiding some undergraduates through the same forest at La Selva, and we encountered a bright yellow eyelash viper coiled in the crotch of a small tree. The snake was about at eye level and was so brightly colored it could be seen from yards away. I asked for volunteers. One student, Peter (a geology major), agreed to do the research project: just watch the snake for a couple of days and record its behavior. Peter actually decided to stay in the forest overnight, where other students brought him food and water. Peter found that the snake stayed motionless during the day, but soon after dark it lifted its head and slowly made its way into the higher branches where it presumably hunted among the leaves for lizards, frogs, or other small animals, perhaps even resting birds. Just as the sun came up and the light began to infiltrate the depths of the forest, down the snake came to take up its position in the tree crotch. Later we learned from someone else's observations that the rare yellow morph of the eyelash viper (most individuals of that species are camouflaged and difficult to see) is a hummingbird specialist. The birds are attracted to their doom by the bright yellow color, apparently a case where curiosity kills the bird! Only a small fraction of eyelash vipers are born with the bright yellow coloration. If they were more common, the hummingbirds would soon learn to avoid them, which is a great example of frequency-dependent natural selection.

Whenever I think back on these kinds of encounters, I think about how autecology can help humans relate to our environment and especially to the other organisms that share it with us. If humans are going to survive over the long term, we need to develop a better understanding of our inextricable connection to the natural world around us. Learning about biology by observing individual organisms in their natural environments, autecology, is a great way to do that.

Golden morph eyelash viper (*Bothriechis shlegelii*) as we first found it, coiled in the crotch of a small tree at the La Selva Field Station, Costa Rica. *Peter LaFemina*

Later in the night, the viper was observed moving into the upper branches of the tree, presumably to hunt for small prey among the leaves. You can just make out the pointed scales above the snake's eyes, giving rise to the name "eyelash" viper. *Peter LaFemina*

ONLY 2 SLOTS LEFT FOR THE ENHS FIELD TRIP TO MALHEUR NATIONAL WILDLIFE REFUGE
Thursday–Sunday, 30 May–2 June, 2024

The Spring 2024 ENHS field trip will be to the Malheur Field Station, where we will enjoy world-class bird watching on the Refuge, at the field station, and at the Refuge headquarters. **Cost**: Lodging (3 nights) plus meals (Friday breakfast–Sunday lunch) is $200 per person. **To participate:** Make a check out to the Eugene Natural History Society and mail it to John Carter, 2080 Shields Ave, Eugene, OR 97405. Provide participant name(s), cell phone numbers, snail mail addresses, and e-mail addresses. Space limited to 20 participants. **Payment must be received before the name(s) can be added to the participant list. All payments must be received by 30 April.** For more information, see the ENHS website or contact John Carter at 541-221-6237, jvernoncarter@comcast.net

Volunteers needed for ENHS booth at the Mt. Pisgah Arboretum Wildflower Festival
Sunday, 19 May, 10am–5pm.

See announcement 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 Kim Wollter to sign up: kwollter@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. Projects include invasive species removal, habitat care, planting, and tree establishment. Sign up
  Saturday, 13 Apr., 8am–4pm. Living River Exploration Day at Green Island. Free. Preregistration not required.
  Wednesday, 17 Apr., 7:30–9pm. Upstream: An Evening with David James Duncan. Join author and river advocate Duncan and MRT. Jaqua Concert Hall, The Shedd Institute, Eugene. $15. Purchase tickets online or at the Shedd.
  Saturday, 20 Apr., 8am–1pm. Siuslaw Estuary Earth Day Volunteer Cleanup. Dress for the weather and bring sturdy footwear that can handle muddy conditions. **Sign up**
  Saturday, 20 Apr., 10am–noon. Earth Day Tree Care at Finn Rock Reach. Help mulch hundreds of trees planted as part of ongoing reforestation work in the area. **Sign Up**
  Monday, 22 Apr., 8–10am. Earth Day Birding at Green Island. Guided bird walk. **Register**
  Wednesday, 24 Apr., 5–8pm. Oakshire Inspires: Percentage of Sales to MRT. Beer, wine, and food trucks, with live Cajun music 6–8pm. Oakshire Brewing, Eugene. **Learn More**
  Saturday, 27 Apr., 6:30pm. Writers on the Fly West Coast Tour. Readings, art sales, and raffle to benefit MRT. Caddis Fly Shop, Eugene. $20. **Buy Tickets**
- **Native Plant Society of Oregon, Emerald Chapter** https://emerald.npsoregon.org/
  Friday–Monday, 26–29 Apr. 2024 City Nature Challenge. The City Nature Challenge is a community science bioblitz with the goal of observing and identifying as many species as possible in urban communities and surrounding areas. Upload the iNaturalist project here and make observations of plants, animals, or fungi when you are outside during this weekend. More info on the City Nature Challenge Facebook page.

Saturday & Sunday, 27 & 28 Apr., 9am–5pm each day. Glide Wildflower Show. Glide Community Center, Glide, OR. $5 entrance fee.

Anytime. Self-guided Tour of Laurelwood Bog. Go south on Agate St in Eugene to the dead end at 29th. The entrance to the Bog is clearly signed, and the trails are covered with bark.

- **Mt. Pisgah Arboretum** https://mountpisgaharboretum.com or 541-747-3817.
  Sunday, 21 Apr., 9am–1pm. Earth Day Celebration. Wildflower walks, tree climbing, picnic lunch, and more. For more information and registration, see the website.
  Sunday, 28 Apr., 10am–1pm. Birds, Bees, Butterflies, and Blooms Tour. Led by ecologists Peg Boulay and Bruce Newhouse. This event corresponds with the City Nature Challenge, so iNaturalist observations are encouraged! Rain or shine. $5; FREE for Arboretum members. Limited to 18 attendees. Preregistration required. Click here
  Sunday, 19 May, 10am–5pm. 2024 Wildflower Festival. Attendance is limited. Tickets are required and will go on sale in early April. FREE for Arboretum members.
- **Lane County Audubon Society** www.laneaudubon.org or 541-485-BIRD; maeveanddick@q.com or 541-343-8664
  Tuesday, 23 Apr., 7–8:30pm. Bird Friendly Pollination Garden. Presenters: Margi and Tim Griffith. How to landscape for wildlife in an urban environment. Campbell Community Center, 155 High St., Eugene.
  Friday, 26 Apr., dusk. Vaux's Swift Watch. Vaux's Swifts use the Agate Hall Chimney on the UO campus at 17th Ave. and Agate Street to roost for the night during their stopover in the Willamette Valley. Check them out any time in April. LCAS staff will be on hand in the parking lot on this Friday with information about these amazing birds.
- **Museum of Natural and Cultural History, University of Oregon** https://mnch.uoregon.edu/museum-home
  Ongoing exhibits: Oregon—Where Past Is Present; Explore Oregon; Underwater Forests—Oregon's Kelp Ecosystems.
  Sunday, 21 Apr., 10am–5pm. Ocean Adventures for the Whole Family. Hands-on activities and snacks provided. Bilingual.
  Monday, 22 Apr., 10am–5pm. Earth Day Celebration. Walks and talks after noon. Cupcakes provided!
  Thursday, 9 May, 5:30–7:30pm. Meet an Archeologist. Three staff archeologists will be discussing what they do.
  Thursday, 16 May, 2–4pm. Paleontology at the MNCH. Meet students doing research projects in the lab and see the fossils they work with.
- **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.
  Tuesdays and/or Fridays afternoons. Natural Neighbors. After-school program outdoors in our Learnscape.

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http://eugenenaturalhistorysociety.org/
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https://www.youtube.com/channel/UCEryzVh9lw9y-nLS_t94BVw

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/

ONLY 2 SLOTS LEFT FOR THE ENHS FIELD TRIP TO MALHEUR!!
See info box inside (p. 6)

ENHS Officers and Board Members 2023–2024

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2024 Speakers and Topics

19 Jan.	**John Postlethwait**	**An Icefish Is a Nice Fish**
16 Feb.	**Ryan Tucker-Jones**	**How Soviet Cetologists Confronted the World's Greatest Whale Slaughter**
15 Mar.	**Ron Larson**	**Natural History of Lake Abert**
19 Apr.	**Lincoln Best**	**Floral Relations of Oregon's Native Bee Fauna** (cosponsored with the Emerald Chapter of the Native Plant Society of Oregon)
17 May	**Marli Miller**	**Amazing Geologic Sites in Oregon**