

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.



Tribal Histories of the Willamette Valley: Reconstructing Traditional Environments

David G. Lewis, Ph.D.

Assistant Professor
Anthropology & Indigenous Studies
Oregon State University, Corvallis

Friday, 15 November 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 **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: David G. Lewis



Dr. David Lewis, a descendant of the Takelma, Chinook, Molalla, and Santiam Kalapuyan peoples of western Oregon, has devoted his career to making sure that Native histories are seen and remembered. As an assistant professor in anthropology and Indigenous studies at Oregon State University and a member of the Confederated Tribes of Grand Ronde, Lewis combines personal history, academic dedication, and a deep sense of purpose in his work. Through his teaching, writing, and public outreach, he helps expand awareness of Native cultures—especially the histories of the Kalapuyan peoples of western Oregon. “It’s going to be better in the long run,” he says, “if everybody has a little more respect for each other.”

Lewis’s recent book, *Tribal Histories of the Willamette Valley*, is a major step toward documenting Native history in Oregon. Released in 2023, it draws on years of research and personal stories to share Native experiences in the Willamette Valley, setting the record straight and addressing gaps in mainstream history. But Lewis’s impact goes far beyond books; his work spans classrooms, community projects, museum curation, and public talks, all aimed at building a more informed and inclusive society.

Lewis’s journey into cultural advocacy and education was shaped by his own life experiences. Although he was born in Heidelberg, Germany, where his father was stationed in the Army, the family eventually settled in Salem, Oregon after his father’s third tour of duty. Ironically, the house that his father purchased with the G.I. Bill and that he worked for years to secure—supplementing his income from computer and copier service repair work with extra painting jobs or by fixing trucks or vans—

was on land that had originally belonged to the Santiam Kalapuyan peoples, his own ancestors, before they were displaced. Growing up, Lewis was largely disconnected from his Native heritage, an experience he would later recognize as part of a larger pattern of cultural erasure that has affected generations of Indigenous people.

He began his college studies in California, focusing on humanities, before returning to Oregon to earn a BA degree in humanities at the University of Oregon. But “humanities” back then mostly meant European history and culture, with little acknowledgment of Indigenous contributions. This was frustrating for Lewis at first, but eventually he saw it as an opportunity to understand the mindset of the European colonizers. It gave him a unique perspective into the historical relationship between Native and settler communities.

With no Native or Indigenous studies program available at the UO, Lewis chose international studies, which he describes as “a hub of activity for Native people at the University.” His studies took him to New Zealand and Australia, where he encountered Indigenous cultures that were widely recognized in mainstream society. “There was just stuff everywhere. Artwork and street names ... things that tell you it’s a native place.” Seeing Indigenous history celebrated in these countries opened his eyes to the near invisibility of Native communities in Oregon. Reflecting on these experiences, Lewis describes a shift from a global focus to a local one. He remembers asking himself, “Why am I doing all this international studies work when there is so much work that needs to be done with people here in Oregon?” From that point on, he has dedicated himself to calling awareness to and addressing Indigenous issues in Oregon. Back at the UO, he changed his major to anthropology and received both MA and PhD degrees.

As a teacher, Lewis is determined to give his students a culturally inclusive education. At Oregon State University, he teaches introductory and advanced courses in ethnic studies and anthropology. Last year he added a course called “The Kalapuyans of Western Oregon,” and this year he is developing a course in Indigenous anthropology. These classes encourage students to reevaluate history through Native perspectives, challenging them to go beyond the standard narratives they may have encountered. Lewis sees this as vital work, noting that despite Oregon’s Senate Bill 13, which requires place-based Native American curriculum in K-12 public schools, “a lot of students come out of high school without any knowledge of Indigenous history or culture.” His teaching helps fill these gaps while engaging students with Native histories in a thoughtful, informed way.

Beyond the classroom, Lewis has served on the Oregon Heritage Commission and the Eena Haws Longhouse advisory committee, both of which focus on preserving Native culture in Oregon. One of his proudest achievements is helping to plan and design the Chachalu Museum and Cultural Center for the Confederated Tribes of Grand Ronde, which has become a community landmark. For Lewis, the museum isn't just a place to keep artifacts; it's a place to share stories, celebrate resilience, and remind visitors that "we're still here."

Lewis also reaches a wider audience through his blog, *The Quartux Journal*. This online platform covers the histories of Native tribes in the Willamette Valley and beyond, discussing everything from treaty history to environmental changes, topics often ignored in traditional history books. By making these narratives accessible to the public, Lewis fosters greater understanding and respect for Native communities in Oregon.

Beyond documenting history, Lewis is deeply committed to changing how people view and value Native cultures. His research often highlights how Native perspectives were overlooked by early settlers and scientists, who labeled Native knowledge as "folklore." Lewis believes that an understanding of Indigenous traditions and an appreciation of the historical context of settler culture can lead to a more balanced view of Oregon's past. He currently serves as Director of the Southwest Oregon Research Project (SWORP) Collection, part of the UO Special Collections and Archives in the Knight Library and one of the most commonly accessed collections at the UO. Lewis also serves on the UO Museum of Natural and Cultural History advisory committee.

For Lewis, education and advocacy are essential for creating lasting change. His work in Oregon—from teaching in classrooms to engaging with the community—is all about building connections across cultures. "It's not just somebody else's culture," he says. "I'm not studying somebody else. I'm studying my own culture." His career is a powerful example of the importance of reconnecting with one's roots and using that knowledge to make a difference.

Lewis's work reminds us that Oregon's history is a blend of many voices and perspectives. Through his research, teaching, and community involvement, he inspires new generations to recognize and honor the enduring presence of Native communities in the Pacific Northwest.

Join us in person on Friday, 15 November, in 221 Allen Hall on the UO campus to hear Dr. David Lewis's stories and perspectives. There will be cookies. If you can't make the trip, you won't get the cookies, but you can Zoom in at <https://zoom.us/j/97499095971?pwd=eE9sdG9hSHMvOHhIUeJuU21wT20rdz09> or find the Zoom link on the ENHS website at <https://eugenenaturalhistorysociety.org/>.

—Alicia McGraw

A note about Zoom. The ENHS presentations have been livestreamed via Zoom since the pandemic, and this approach has been mostly successful, with occasional glitches. We continue to work at improving the digital feed for our online audience.

Fish Tornadoes and the Lateral Line

by Chuck Kimmel

Many kinds of fish form schools, coherent groupings that are demonstrably adaptive. When a predator approaches to pick off a fish, it is much more likely that the fish will be eaten if it is swimming alone in the water rather than in a school, which sometimes include thousands of fishy participants. The sheer numbers make escape by any given individual more likely, but that's not all. Schools function as a sort of a quasi-magical "supra-organism" with amazing behaviors (check them out on YouTube). These behaviors of the collective are quite distinct from those of the fish that form them. The schools can rapidly twist and turn, fold in on themselves, and change shape—in addition to changing speed and direction of movement through the water. Such actions may confound and even

frighten would-be predators. Comparing a fish school to a tornado does not seem very far-fetched.

For the fish to function as a school, each fish must be able to discern and maintain its position within the rapidly moving group, neighbors behaving exquisitely in synchrony. Important for the theme I develop here, their arrangement is normally not rank-and-file, as in a marching band for example, where the fish occupy positions directly adjacent to one another (as in the set of six swimming fish on the left, below). Rather, the neighbors form a diamond shape (the set of six swimming fish on the right, below).



Close neighbors are offset from one another in the array. Why do they swim in this arrangement? Do

they use their eyes to visually discern where they are? Investigations have revealed that fish can maintain their correct diamond-shape positioning in the school even when they are blindfolded or in complete darkness; thus, vision seems unimportant for this local behavioral patterning (although vision does have a clear guidance role in schooling). Rather, a fish uses its lateral line to determine its position relative to the other fish in the school.

Lateral lines are rows of small organs called neuromasts that sense water movement. Single rows of neuromasts are present along both sides of the trunk and tail, and ablations reveal that these lines function in schooling. Other neuromast lines are present on the head of the fish, but these are important for other functions such as prey capture (which the fish can accomplish in complete darkness) rather than for schooling. In the absence of functional trunk and tail neuromasts, the fish can still school but do so poorly: the fish now use vision to take on a rough rank-and-file arrangement instead of the normal diamond shape. During an abrupt turn of the school, fish lacking lateral line function may lose their positions and bump into one another, sometimes with impacts hard enough to stun them. But when the lateral line is functioning (reviewed in a forthcoming publication from the laboratory of Matt McHenry, University of California Irvine), fish appear to sense the swirls of water produced by the side-to-side tail beats of their close leading neighbors and adjust their swimming to fit between these vortices.



This fitting improves swimming efficiency and hence demands less energy than would be required if the lateral lines were not functioning. The fitting explains the offset arrangement: trailing fish fitting into the set of vertices of their leading close neighbors. The behavior produces the diamond pattern of the collective.

To implement this behavior, the lines of trunk neuromasts need to send signals to the motor neurons

that elicit the muscular contractions that produce swimming. The circuitry is complex. The neuromast cells form excitatory synapses onto sensory axons of the lateral line nerves, which project to the brain near the ear. There, in the hindbrain, the sensory axons participate in circuitry involving interneurons in a region that looks much like that of the mammalian cerebellum, a massive region critical for organization and intricate coordination of activity globally in the human brain. An exciting suggestion from several researchers in the current decade is that the circuitry involving the fish lateral line is ancient and may be ancestral, a starting point for the evolution of the modern cerebellum. Be that as it may, the axons of interneurons from the hindbrain project into the spinal cord, where they synapse on the motor neurons connecting to and exciting the swimming musculature.

Any act of swimming produces water movement over the sensory neuromasts. So how does a fish “know” that the water movement detected by its lateral line is coming from its neighbors’ tails rather than its own swimming? We have the beginnings of an answer. More than 40 years ago Walt Metcalfe, then a graduate student in my University of Oregon laboratory, carried out a study recently described as “seminal” (a word choice very pleasing to me). Using young larvae of the zebrafish, a species that UO labs together have made famous, Walt discovered brain neurons with axons that leave the brain in the lateral line nerves and make synapses onto the neuromast cells. Here information is flowing out of the brain to the neuromasts, i.e., in the opposite direction of the sensory pathway from the neuromasts into the brain. Now, 40 years later, we have a basic understanding of what these so-called efferent (outgoing) neurons are doing. This understanding comes from elegant investigations—still with larval zebrafish—in Florian Engert’s laboratory at Harvard. The efferent synapses inhibit activity of the lateral line neuromast cells during locomotion, hence specifically canceling out self-generated neuromast stimulation when the fish are moving. Amazing!

Invasion: Havoc or Hope? by Reida Kimmel

For decades South Florida has suffered from droughts, and deliberate dewatering, especially of Lake Okeechobee and the Everglades, has been done to facilitate agriculture and development. This drying of the swamps resulted in a significant decline in the population of southern Florida’s apple snails (*Pomacea*). Snail kites are crow-size accipiters that feed almost exclusively on apple snails. Their range,

like that of the native snails, is limited to southern Florida’s swamps where these kites nest and feed. The increasingly dry habitat caused the kites to suffer a near catastrophic population decline in the first decade of this century, going from 3,000 individuals to only 700. This same decline was seen for limpkins.

Limpkins? What are they? If you are like me, you may never have heard of them. Although rather common in Central and South America and in the

Caribbean, these large rail-like waders are the only species in the family Aramidae and have always been restricted in the United States to the range of their preferred food, once again apple snails. Thanks to protection and habitat restoration, the small population of limpkins was stable. The unprepossessing white-spangled brown birds are infamous for their annoying, loud screeching calls made by males defending territories. Limpkins are specialized for feeding on snails; their long, curved bills have a lower mandible that is slightly decurved to the right to facilitate prying open the right-handed curve of the snail shells. The birds are said to be delicious; alligators, snakes, racoons, marsh birds, and raptors certainly think so.



The limpkins, native apple snails, and snail kites were listed as species of concern but were holding their own. Then late in the 20th century everything changed for apple snails and therefore for limpkins and snail kites. Four species of South American apple snails became established in Florida's swamps and outcompeted the troubled population of native apple snails. These exotic snails spread swiftly through Florida and the Gulf states because they are more drought tolerant and fecund than Florida's native apple snails. They can survive out of the water, and their egg masses, deposited on land, are huge bubble-gum-pink clusters frequently containing 2,000 eggs (below, right), compared with 30 eggs laid by our native apple snails (below, left).



At first these invaders were regarded as a possible solution to problem swamp vegetation such as hydrilla and water hyacinth, but the exotic apple snails graze too efficiently and will decimate a feeding area, including the sensitive native plants, leaving behind a murky swamp covered with algae.

With the demise of the native apple snails, their dependent predator species also faced extinction. The introduced snails can be so large that they are difficult for kites, especially young ones, to carry, open, and consume. However, snail kites proved remarkably resilient. Reminiscent of Darwin's Galapagos finches, genes generally hidden (recessive) in snail kites contained instructions to modify their bodies somewhat. When these genes were selected for, body type modifications permitted the kites to cope with the huge change in their habitat. Within a decade, snail kites had stronger bills, longer legs, and heavier bodies. The kites gobbled the invasive snails and flourished; Florida's snail kite population increased from 700 back to 3,000, approximately the historical average.

Limpkins have responded differently and, in their own humble way, even more astonishingly to the exotic apple snails. Possibly because of their long evolution south of the United States, these birds were biologically prepared to prey on the introduced snails. Long-legged swamp hunters, limpkins already have bills fit for the job of opening big hard shells. Most important, they are not fussy eaters like snail kites. Although apple snails may be their preferred prey, limpkins also will devour snakes, freshwater clams and mussels, lizards, frogs, and crayfish. As the exotic apple snails flourished, they moved north where the habitat, although drier, was marshy enough to support this invasive species. But the limpkins followed, not ones to miss out on a good thing! In 2017, individual limpkins were reported in Louisiana, where they had never been seen before, followed immediately by sightings of nesting pairs. Very soon there were limpkin populations along major river systems in Texas. Now, limpkins are not at all rare anywhere along the Gulf Coast. But what is really weird is what has been happening in the last 2 years. Limpkins are being spotted in almost every state east of the Mississippi. Although there had been rare sightings of the birds in the Southeast and even in Nova Scotia since 2020, including this year, limpkins appear to be exploring many new habitats. Illinois, Ohio, and Oklahoma seem reasonable possibilities, but why Minnesota, Wisconsin, Ontario, and Colorado? Population pressure may be one reason. With limpkin numbers increasing by 50% between 2012 and 2022, crowding could have caused exploring limpkins to test the swamps of alien climes. The numerous sightings of the birds have all been in the summer. There are as yet no records of

overwintering populations further north. Although the exotic apple snails will not be able to establish north of the Carolinas, there is other limpkin food available, such as the invasive Chinese mystery snail in New England and the Midwest. Do the pioneer limpkins migrate back to the South for winter? Their breeding range seems to be limited to the Gulf States. However, the possibility of migratory behavior remains; unverified reports have come in of female limpkins moving south to southern Florida and even to Cuba.

Imagine the excitement of photographing a rare new visitor! Perhaps in 2024 limpkins will be seen in New Mexico, South Dakota, or Quebec. But there are problems. While scarfing down invasive snails or

other mollusks, these migrant birds may also be eating our very imperiled native mussels and who knows what other precious species. The old story again. There are no new lessons to learn from this history of yet another invasive species causing trouble. But the limpkin story is not just another sorry example of the globalization of life on our planet. The saga of the limpkins and the snail kites gives me joy and glimmers of hope. This old fool bets that birds are much tougher and more resilient than we think.

I thank Scott Weidensaul, "It's a Limpkin World," *Audubon Magazine*, fall 2024, for introducing me to the amazing limpkin!

Keep your copies of *Nature Trails* coming and support our efforts to provide fascinating natural history presentations every month and occasional field trips!

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ENHS TRUFFLE FIELD TRIP

Saturday, November 16, 10 am

Join Charles LeFevre, our upcoming January speaker, for an easy to moderate hike near Hardesty Mountain to look for various species of truffles. Rain or shine, no signup needed.

Meet at 10am at the northeast corner of the South Eugene High School parking lot.

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. Every Wednesday through 18 Dec. Projects include invasive species removal, habitat care, planting, and tree establishment. [Sign up](#)
Saturday, 14 Dec., 8am–4pm. Living River Exploration Day at Green Island. Free, no preregistration.
- **Native Plant Society of Oregon, Emerald Chapter** <https://emerald.npsoregon.org/>
Saturday, 16 Nov., 10am–noon. Volunteer at Fern Ridge Library. Help with native plantings. 88026 Territorial Rd., Veneta.
Monday, 18 Nov., 7–9pm. What Does It Mean to Be a Species in the Paintbrushes? Dr. Sarah Jacobs, a specialist in western flora and assistant curator of botany at the California Academy of Sciences, will present via Zoom. <https://us06web.zoom.us/j/81509150792?pwd=oqhBehLzfzPaM5mPtzbiHy9nX2seew.1>
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.
Saturday, 16 Nov., 10am–noon. Lichens and Fungi Tour. All ages; preregistration required.
Saturday, 23 Nov., 9am–noon. Trail Work Party. Volunteers help us keep our trails, facilities, and park clean, accessible, and beautiful! We provide tools, gloves, and a parking pass. Bring your own water. Sign up by emailing habitat@mountpisgaharboretum.org.
- **Lane County Audubon Society** www.laneaudubon.org or 541-485-BIRD; maeveanddick@q.com or 541-343-8664
Saturday, 16 Nov., 8–11am. Bird Walk. For all participants. For more info, contact tolalla@gmail.com.
Tuesday, 26 Nov., 7–8:30pm. Bolivia, Birds, Bugs, and Boas. John Sullivan and Laura Johnson will talk about diverse ecosystems, from the semiarid tropical lowlands to the Amazon rainforest and Lake Titicaca. Zoom and in person, Campbell Community Center, 155 High St., Eugene.
Sunday, 29 Dec., all day. Christmas Bird Count. Save the date!
- **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; Capturing the Cosmos: Images from the James Webb Telescope.
Thursday, 14 Nov., 6pm. Ascent to Europa: NASA’s Mission to Jupiter’s Ocean Moon. UO space physicist Carol Paty discusses the Clipper spacecraft and its mission to Europa.
- **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 Learnscope.
Tuesdays and/or Fridays afternoons. Natural Neighbors. After-school program outdoors in our Learnscope.

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Eugene Natural History Society
P.O. Box 5494
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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=eE9sdG9hSHMvOHhIUeJuU2lwT20rdz09>

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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2024–2025 Speakers and Topics

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|----------|--------------------|---|
| 20 Sept. | Patty Garvey-Darda | Why Did the Ecosystem Cross the Road? |
| 18 Oct. | David Mildrexler | An Enduring Conservation Vision for the Blue Mountains Ecoregion |
| 15 Nov. | David G. Lewis | Tribal Histories of the Willamette Valley: Reconstructing Traditional Environments |
| 13 Dec. | Michael Murphy | The Modern Bird World ... Living for the City (cosponsored with the Lane County Audubon Society) |
| 17 Jan. | Charles Lefevre | Northwest Truffle Diversity |
| 21 Feb. | David Paul Bayles | In Trees I Trust |
| 21 Mar. | Nina Ferrari | Into the Third Dimension: Understanding Vertical Distributions of Birds in Old-Growth Forests |
| 18 Apr. | Sara Hamilton | Taking Care of Oregon's Kelp Forests (cosponsored with the Emerald Chapter of the Native Plant Society of Oregon) |
| 16 May | Clara Bird | Gray Whale Foraging Behavior |