Nature Trails

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Cedar Waxwing (*Bombycilla cedrorum*) Photo credit: B. Newhouse

Pollinator Primer: Your Tiny Neighbors and the Plants They Love

Bruce Newhouse

Consulting Ecologist

Co-sponsored by the Lane County Audubon Society

Friday, 14 December 2018, 7:30 pm,
Room 100 Willamette Hall, UO Campus


Photo: Richard Brainerd

Our December speaker is a native son. Bruce Newhouse grew up in the northern Willamette Valley, and his parents got him out into our wonderful state early in his life. With his father he fished in Oregon rivers. He skied in Oregon mountains and hiked in Oregon forests. His appreciation of plants and pollinators began to be honed while he was very young. His grandfather was a farmer and sold nursery trees and his mom was a plant lover even before Newhouse was born. When the family was dealing with her home after she died in 2009 Newhouse found a few of her pressed plants. They were made over 80 years ago, when she was a young girl, and are now his. He spoke almost reverentially when he told me about this tie, both to his mother and to nature.

Newhouse attended Oregon State University, getting his degree in landscape architecture and environmental science. There was room in his curriculum to allow him to satisfy some of his other interests, such as botany, forestry and wildlife biology. His career reflects these interests.

For about ten years following his time at OSU, Newhouse's gainful employment kept him indoors, a situation that chafed at his natural inclination to spend as much of his life as possible outdoors. What brought this imprisonment to an end was a gamble. He quit his desk job with the City of Springfield Planning Department and he and a group of friends and associates took on a four-month, temporary job doing a survey of all the roadside vegetation for Lane County. Newhouse was the botanist for the group. This was the start of his career as an independent consulting biologist. He has never looked back.

A short time after taking this gamble he and two others formed Salix Associates, a consulting business that has as its main focus assessing values and threats for land in Oregon, Washington and Northern California. After a few years one of the other two members left the firm, and much later, 18 years after the partnership began, Newhouse became the sole member.

Newhouse has inventoried hundreds of sites and thousands of acres in his consulting career. An individual project is usually associated with a land sale in which the buyer is an entity such as a land trust or conservancy, a city, a county or Native American tribal groups. The first part of such a project is fieldwork, in which Newhouse does an inventory of plants, birds, other animals, and distinctive features of the site. This sort of activity has its rewards: in 2012 he found the only population of suncups (*Taraxia ovata*) known to exist in the Willamette Valley and in 2013 Oregon's only known population of many-headed sedge (*Carex sychnocephala*). He does have to spend time indoors, though, since after the initial phase he develops a written report, describing his findings and summarizing and assessing the condition of what he has found. The request for such a project can come either before a land purchase—in which case the rationale would be to determine whether the parcel is going to be worth purchasing—or after ownership has changed hands, in which case the new owners would be asking Salix Associates for a complete assessment of their new acreage.

Newhouse helped co-found the Carex Working Group and is co-author of *Field Guide to the Sedges of the Pacific Northwest.* Most of the images and some of the design work in the book are Newhouse's.

He also volunteers his time frequently. For his efforts on its behalf the Native Plant Society of Oregon honored Newhouse in 2014, inducting him as a Fellow of the organization (A brief biographical sketch, by Richard Brainerd, of Newhouse and two other persons inducted as Fellows can be found on the NPSO website: http://www.npsoregon.org/felimg/2014fellows.html. I have borrowed heavily from that bio in this introduction). Besides serving as president of the Emerald Chapter, he was also president of the statewide organization from 1999 to 2004. He has served on many committees in the Emerald Chapter and on NPSO's State Committee for developing policy on native gardening.

He has volunteered with the annual Mount Pisgah Arboretum Wildflower Show for over 25 years, identifying plants and helping arrange them. He and Peg, his wife, were two of the three co-founders of the Cascade Mycological Society in 1999. As a further example of their passion for fungi, she and he have coordinated the display in the Mount Pisgah Arboretum Mushroom Show each fall for 11 years, and Newhouse helped out on the show for another 15 years before that.

There's more. The Oregon Flora Project Gallery contains many of Newhouse's photographs, just part of the volunteer work he has done for OFP. He chaired the Stewardship Technical Advisory Committee of the Friends of Buford Park for many years, and still is on it. He is one of the original members of the Eugene-Springfield Chapter of the

North American Butterfly Association. He continues to serve as an area leader in the annual Eugene Christmas Bird Count, having done this for over 25 years. He is a certified Master Gardener specializing in native plant gardening, and the lush (native) garden surrounding his home in Eugene fully demonstrates his expertise.

When I asked Newhouse for a brief description of what he'll talk to us about, this is what he gave me: "Did you ever wonder about all those flying and crawling critters on your flowers? Do you know how to tell a bee from a fly? Do you know that some flies are good pollinators? Do you know how to plant a garden that will be the best possible place for pollinators? If these kinds of questions go through your mind as you stare at your garden, this presentation is for you! We will venture together, and familiarize ourselves with the most common native pollinators, and learn a few simple tricks to tell them apart. We'll also learn some of the best things you can do to invite native pollinators into your own yard, including which plants "rock the world" of the little creatures that run it**."** Please come hear Bruce Newhouse's presentation "Pollinator Primer: Your Tiny Neighbors and the Plants They Love." It's the usual venue: room 100 Willamette Hall on the UO campus. The meeting is at 7:30 pm on Friday, 14 December. Newhouse's presentation is co-sponsored by the Lane County Audubon Society and ENHS, so there are bird pollinators in the presentation, too! Save room for a cookie. John Carter

Journey Through Deep Time

By Reida Kimmel

Crouched on the damp earth beneath two of our bird feeders, planting spring bulbs, I was cheered by the soft, fluffy sounds of chickadees flying from the cedar tree to the feeders, back and forth, very busy, very fast. A much louder zooming buzzing sound broke the calm. Oh yes, Ms. Anna demanding that her feeder be washed and refilled with the sugar water she needs to get through this flowerless, almost insect-free season. Both aggressive feeders, both fast fliers, one adorably cuddly, and the other an iridescent beauty flying like no other bird—can these creatures even be related? Both fly, have warm blood and raise their young from eggs. They are obviously both birds, but where are the relationships? I turned to Google and found five recent publications concerning the evolution of hummingbirds, and the flowers with which they always have been assumed to have co-evolved.

True birds had definitely evolved before the Cretaceous's catastrophic ending, but only three orders of birds remained after the event: Paleoagnatheae, ancestors of ostriches and their kin, Gallanoseres, giving rise to ducks and waterfowl, and, hugely, Neoaves, all the other birds. The group forming ancestral hummingbirds, swifts and tree swifts split off perhaps 62 Million Years Ago. Hummingbirds thus separated very early from the ancestry of perching birds like our garden friends, which began to differentiate 'only' 60 or so MYA. Then, however, hummingbirds were not hummingbirds and they lived in Eurasia. Genetically they separated from the swifts and tree swifts 42 MYA. They never evolved into hummingbirds in Eurasia. Evidence of hummingbirds as we know them has not been found earlier than 22 MYA, and they were all in South America!

Before we look into the amazing recent and diverse evolution of hummingbirds, let's examine what it takes to be so small, a nectivore and carnivore, a pollinator, and for some, a long-distance intercontinental migrator. What did it take to evolve a bird-shaped bird into something that flies like a fly? Hummingbirds hover, and that is energetically very

Photo credit: B. Newhouse

expensive. They had to become small because nectar is produced in tiny quantities per flower. It may look like those wings are twirling in a figure-eight pattern, but the wings are really shearing the air as they move. The muscles that move an avian wing are the pectoralis for the down stroke and the supracoracoideus for the upstroke. In most birds the supracoracoideus is 1/5 the size of the pectoralis. In hummingbirds it is much larger, half the size of the pectoralis, and thus stronger, allowing hummingbirds to hover. Special adaptations in wing structure allow the wings to be very forceful. The forearm can invert the bones and feathers of the handwing, to provide weight support and unprecedented maneuvering abilities. The primary flight feathers are exceptionally long, forming 75% or more of the wing area. As for

metabolism, their high energy requirements are met by the birds' ability to switch quickly between sugar and fatty acid metabolism, using mostly glucose when feeding, but oxidizing fatty acids when migrating.

Hummingbirds' common ancestor was present in South America by the middle Miocene. There is no fossil proof, but progenitors probably travelled via Berengia to reach the Americas. Why hummingbirds evolved in South, not North, America is unknown. Seven clades of hummingbirds diversified rapidly and remained in South America, where today there are about 338 species. Traditionally the rapid speciation has been linked to the uplift of the Andes, creating many ecological niches. Most of the South American species, however, inhabit the lowlands.

Two other clades account for the eighteen hummingbirds species in North America. The Mellisugini, the Bee Hummingbirds and the Mountain Gems, originated in the mid- to late-Miocene, well over five MYA. Mellisugini is the only hummingbird group that practices long-distance seasonal migration. Six to seven MYA, ancestral Mellisugini species moved north into Central and North America. Some species became migratory, some did not, while others remained in South America. This range extension occurred well before the rise of the Panamanian land bridge about 3 MYA. Why migrate? And keep migrating even when the Ice Ages occur? Migrating hummingbirds return south to winter in their ancestral place of origin, but move north in spring to breed where there is a plethora of nectar-bearing flowers and tiny insects during the warm season. Climate change could explain the relatively rapid range extensions, but at the core, seasonality is the cause. Seasonality induces migratory behaviors, and that encourages species diversification.

The group Mellisugini saw four independent gains in migratory behavior during its evolution. Of the species distributed throughout North and Central America and the Caribbean, Cuba's Bee Hummingbird is the world's smallest living bird. (It beats its wings 80 times per second, roughly a third of the rate for a honeybee and half the rate for a bumblebee.) There were Mellisugini species in Western North America by the end of the Miocene, 5 MYA. Birds of two modern genera are very familiar. Calyptus has two species, Anna's and Costa Hummingbirds. The highly vocal Anna's Hummingbird has been expanding its range enormously since the 1950s and now breeds north to British Columbia and east to Arizona, often wintering west of the Cascades. Genus Selaphorus contains the Rufous Hummingbird, which flies 6000 kilometers to breed as far north as Alaska, and also Calliope, Allen's, and Broadtail Hummingbirds. Mellisugini has a rapid rate of diversification, evolving one new species roughly every two million years. Its species have an unusual feature, dimorphic tail morphology. The males' tail rectrices have an unusual shape that enables sounds to be produced during acrobatic swoops in courtship displays. Nestlings need a rich diet, a mush of nectar and insects that their parents mouth feed them, so they will grow rapidly, feed independently and be strong for migration at summer's end.

The roughly 361 hummingbird species from Patagonia to Alaska pollinate about 7000 plant species with flowers adapted to them. Traditionally it was said that flowering plants and hummingbirds co-evolved tightly, but the new perspective says that habitat specialization is more important in the evolution of nectar-bearing flowers. Flowering plant groups preadapted for insect pollination did, however, contain enough genetic diversity to evolve the bird pollination strategy. Thus Ruellia, "Mexican petunia", with about 50% of its 350 species hummingbird-pollinated, is far more species-rich than its Old World sister group, which has only 75 species. It is easy to believe that even if there were no tight co-evolution, species diversification has been influenced by hummingbirds utilizing flowers.

Hummingbirds may be the most fascinating birds of all. We are learning so much about them now, using modern molecular analysis, and evidence from observation and skeletal studies. What might we learn about hummingbirds and climate change? Positive news, perhaps. These tough, lovely survivors have thrived over millions of years of climatic turbulence.

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Finding Home Again
By August Jackson

It was raining in the way it doesn't rain in August anymore—at least hasn't in some time, and the Douglas-firs, though I hadn't named them yet, were clothed in fog, holding fast to the basalt cliff faces like kelp in a tide pool, the air in the Gorge thick as water and all of it as alien as the deep sea. It was raining when we left, too, three days before, after a breakfast of oversized double chocolate muffins from Sam's Club, a half-dozen saran-wrapped, shared cross-legged with my neighbor friend in our furniture-less living room. My parents didn't believe in breakfasts like these and the muffins were an indulgence and maybe an apology. As I took shotgun in the U-Haul, the skies opened in the last monsoon I would see for 21 years and counting.

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Later even than as late as they've been lately, the soaking fall rains have finally arrived and on this first weekend in November I return to where I last was two weeks under a year ago, to the place I'm drawn to in this season, but a little farther up the road this time, passing out of private timberlands and crossing into federal ones. I step out of my car underneath the drooping, droplet-laden fans of a western red cedar younger than me, a totem of O&C Lands where the extravagance of late-successional species may be tolerated for a time. I inhale and almost convince myself I can feel the forest doing the same.

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We continued further west, past Portland and into the Coast Range where even the golden light of a late summer evening, leaking through a break in storms, failed to reach the ground through forest understories tangled in vine maple and choked with ferns as black as they were green. It seemed that we had rounded a corner and everything manmade was imbued with an ephemeral quality. The sunken, weather-worn homes and rusting vehicles looked as if they had taken a wrong turn some years ago and been lost ever since, subsumed under the weight of unrelenting primary productivity. Nothing so not alive could last for long in these forests that reclaimed by means of moss and bramble. Even the road wasn't more than a hastily constructed tunnel through reaching maple boughs, themselves just a conduit for more life. I was accustomed to—had fallen in love with—the openness of pine savannas and prickly pear gardens. Just a month past my eighth birthday, it all filled me with a growing sense of unease and claustrophobia, accentuated by a burgeoning anxiety disorder and a car beginning to struggle with mechanical problems. We might disappear in this forest, Toyota Tercel lifted on cinder blocks, birthing moss and slime mold from its seams.

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Looking for the easiest route through a mature forest has its limits, and after a short time a stubbornness takes hold and propels me simply forward. I pass a rough-skinned newt, similarly navigating with little tact as he moves uphill from a creek running somewhere out of earshot below. Rain brings us both out today. I hoist myself atop a fallen hemlock, wedged between and held aloft at waist height by two others, apologizing loudly to unknown organisms and more time-honored natural processes as I break through a soft spot in the log while slipping over the other end, scattering a carpet of rust-red cellulose beneath me. If only for a couple hours, I'm trying to disappear in this forest.

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It had begun raining again and we arrived after dark, barely besting a steep, muddy road that delivered us to a cabin somewhere in the mountains outside of Tillamook—the home of a friend and former glam-band-mate of my dad's. We'd spent our first night in Oregon at a Best Western in Baker City, and we'd soon spend several more in a Motel 6 in Troutdale before a job and a more permanent residence were found. But this was our first night in *Oregon.* I awoke to find I had traded scorpions for centipedes, horned toads for tree frogs, and rattlesnakes for banana slugs. It was a raw, damp, and sticky deal.

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Huckleberry pancakes were palliative. I was sent out in the morning with the other kids, the tart red berries reflecting off the surface of the metal mixing bowl and made more exciting by being the exception to the red-berry-rule. My life-list was growing too, with more new birds than I could aim a disposable camera at. Still I couldn't make it feel like home, and it was a feeling that would stay with me in some form for a decade.

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The red huckleberries have long since found bellies, and they don't fit well into my seasonal schedule,

regardless. I'm here for mushrooms, mushrooms that are a love letter to everything about these forests I found untenable not long ago. As I brush the duff from the ruffled false-gills of a golden chanterelle, a Pacific wren alights on twisted vine maple feet from me with a single, curious cheep—a half-alarm that speaks of not often encountering humans, and draws in another. We watch each other for a moment, considering our shared experience before they make some agreeable determination about my intentions and melt back into the ferns. This is home now, though not mine in the strictest sense. My veins run with the red earth of a desert I no longer know, but I let these drops that curl around and down Sitka spruce needles seep into my consciousness as I look up at a canopy obscured by fog and smile.

Events of Interest in the Community

McKenzie River Trust
Go to http://www.mckenzieriver.org/events/list/ for information on MRT's upcoming events.

Lane County Audubon Society
Friday 14 December, 7:30 pm. Pollinator Primer: Your Tiny Neighbors and the Plants They Love. Bruce Newhouse, presenter. LCAS and ENHS co-sponsor this event. See pp 2–3 for details.
Saturday, 15 December. Third Saturday Bird Walk. Go to http://www.laneaudubon.org/ for location and times.
Sunday, 30 December. Christmas Bird Count. Go to the December issue of The Quail, http://www.laneaudubon.org/, for information on how to participate.

Mt. Pisgah Arboretum
Sunday, 11 December, 8–11:30 am. Bird Walk. Join Julia Siporin and Joni Dawning for another monthly bird walk intended for people with all levels of birding experience. We'll use vocalizations, habitat, and behavior clues for identification of our fall migrants and year-round residents. Come discover the Arboretum's avian diversity. Please bring binoculars. Option to continue the walk until noon for those who are interested. Rain or shine. Meet at the Arboretum Visitor Center. $5, members FREE.
Saturday 15 December, 10 am–1 pm. REI Stewardship Session: Trail Work Party. Join us for this trail resurfacing work party co-sponsored by REI and Mount Pisgah Arboretum. Attend three trail work parties and receive a free t-shirt! Tools, gloves, and a parking pass will be provided to volunteers (we suggest you bring along a water bottle). Please RSVP to mailto:site@mountpisgaharboretum.org if you plan to attend.

Friends of Buford Park and Mt. Pisgah
Monday Morning Regulars. 9 am-12 pm. Contact volunteer@bufordpark.org for more information.
Tuesdays and Thursdays, 9 am-12 pm. Nursery Work. Meet and work at the Native Plant Nursery at Buford Park. Enter Buford Park from Seavey Loop Road. Turn LEFT after crossing the bridge and drive 1/4 mile to the nursery.

WREN (Willamette Resources and Educational Network)
Go to **http://wewwild.blogspot.com/ f**or information on WREN upcoming events.

The University of Oregon's Museum of Natural and Cultural History
New Exhibit: NAVIGATING KNOWLEDGE. From monkeys and maps to fossils and folklore, MNCH collections help University of Oregon scholars solve mysteries about our planet and our collective human experience. Glimpse into the vaults with UO faculty and student researchers and join their ongoing investigations: you'll traverse land and sea to uncover life's origins, voyage across the Pacific in search of the First Americans, discover how fossils can predict earthquakes, explore arts in Africa and the Americas, and more. Other exhibits: OREGON – WHERE PAST IS PRESENT; EXPLORE OREGON; and H2O TODAY. Exhibit hours: Tuesdays – Sundays 11 am-5 pm.

Native Plant Society of Oregon, Emerald Chapter
See http://emerald.npsoregon.org/ for information on future events.

Nearby Nature
Tuesday, 18 December, 10 am–12 pm. Super Senses Green Start Play Day. Enjoy outside nature play in our Learnscape plus pre-school crafts and stories. Shelters are available for wet weather. Kids 5 and under only, with an adult. Members free, non-members $5 per family. Pre-register by calling 541-687-9699, ext. 2

North American Butterfly Association, Oregon (Eugene/Springfield) Chapter
Monday, 10 December, 7 pm Friends and Food, 7:30 pm Presentation: Butterflies of Oregon Project: Stories from the Field. Amateur lepidopterist and butterfly photographer **Neil Björklund,** cofounder and former President of the Eugene-Springfield chapter of NABA, will share stories from his 18 years of chasing and photographing Oregon's butterflies. From the impossible-to-find species, to the near misses, to the most unique and scarce species, to the big surprises, Bjorklund will guide you on a journey across the wilds of Oregon, introducing you to the beautiful butterflies and their vital habitats. We will meet at the Eugene Garden Club, 1645 High St. Refreshments will be available. Free and open to all.

ENHS welcomes new members! To join, fill out the form below. Membership payments allow us to give modest honoraria to our speakers, as well as to pay for the publication and mailing of *Nature Trails*. Our web address: http://biology.uoregon.edu/enhs

MEMBERSHIP FORM

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Annual dues for renewing members are payable in September. Memberships run from September to September. Generosity is encouraged and appreciated.

Black-headed Grosbeak nest. Photo credit: B. Newhouse

The Eugene Natural History Society meets on the third Friday of the month September through May except in December when the meeting is on the second Friday. Meeting time is 7:30 pm and our standard meeting location is room 100 Willamette Hall on the University of Oregon Campus. Any temporary changes will be noted in the newsletter for the current meeting and on our website: https://pages.uoregon.edu/enhs/

A BIG THANK YOU TO THOSE WHO FILLED OUT THE SURVEY

✓Looking at attendee topic 'favorites',
we find we're pretty much aligned in our current programming
✓We got great speaker suggestions. Thank you!
✓We're exploring ways to help more people go on our field trips
✓50% became members within the last 5 years
✓ 'Friends' are still an important way for people to hear about us and ...
✓50% of the members surveyed are over 61 years of age. So ...
✓YOU CAN HELP US! Invite a young person to attend!

Male Calliope Hummingbird. Photo credit: Marya Moosman

A good place to park for our meetings is the Physical Plant lot: turn north from Franklin onto Onyx, go about a block and you will be in the lot. After 6pm it's open to the public.

ENHS. Officers and Board Members 2017-2018

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2018-2019 Speakers and Titles

14 Dec.	**Bruce Newhouse**	**Pollinator Primer: Your Tiny Neighbors and the Plants They Love**
18 Jan.	**Laura Tesler**	**Payment to Provide: A Fresh Approach To Traditional Mitigation Programs**
15 Feb.	**Samantha Hopkins**	**Evolving Mammals on an Active Landscape: Biogeographic History of Oregon's Mammals Over Deep Time**
15 Mar.	**Amanda Stamper**	**Burning for Butterflies, Birds, and Blooms: Prescribed Fire in the Willamette Valley**
19 Apr.	**Scott Burns**	**Cataclysms on the Columbia: The Great Missoula Floods**
17 May	**Vanessa Petro**	**How Busy are Beavers in Oregon?**