

Nature Trails

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Morrow County meteorite, a forty-pound chondrite found in Oregon in 1999

Meteorites: Rock From the Sky

Richard Pugh
Cascadia Meteorite Laboratory,
Portland State University

Friday, 18 April 2014, 7:30pm, Room 100
Willamette Hall, UO Campus

Richard Norman Pugh, a native Oregonian, has had a life-long affinity for geology. He said he began messing with rocks in the alley by his home in the Portland area before he could walk. His interest in meteorites began when in the fifth grade somebody gave a presentation like the ones he now makes. One of his advisors at Portland State College (about which more in a moment) was also into meteorites and helped upgrade Pugh's interest into a passion.

At present Pugh describes himself as the outreach guy for the Cascadia Meteorite Laboratory. (He told me most of his work could be summed up in the single sentence "You don't have a meteorite.") The CML, the only facility of its kind in the Pacific Northwest, is affiliated with Portland State University.

Pugh's connection to PSU goes back decades. His undergraduate degree in physical science was issued in 1963 by the then Portland State College. After his military service during the Vietnam War Pugh returned to the same institution for his Master's work. His Master's degree was issued in 1970 by the now Portland State University. Pugh was a teaching assistant both at PSC and PSU, and after his graduate training he became a teacher at Cleveland High School in Portland, where he excited students in the areas of physical science, astronomy, geology, and meteorology for 31 years.

Along the way Pugh has been recognized for his teaching, outreach and leadership abilities. He received the Sigma Xi Outstanding High School Science Teacher award in 1986, and the Distinguished Citizen in Environmental Education Award in 1988. He belongs to several societies: Sigma Xi - The Scientific Research Society, for which he has served as President of the Willamette Chapter; the Meteoritical Society; the American Geophysical Union; the Oregon Academy of Science; and, my personal favorite, the Society of Miscellaneous Oregon Geoscientists (SMOG).

In 2011 Pugh got the Meteoritical Society's Service Award. Here are some comments Alex Ruzicka of the CML made when introducing Dick Pugh for this award:

In the Pacific Northwest of the USA, it is no exaggeration to say that no one has done more than Dick to increase education and public awareness of meteorites and the fireballs that produce them. Dick has inspired people of all ages, from first graders to retirees, to look for and identify meteorites. He also helped uncover the story of how the 1981 Salem meteorite was found by an off-duty policeman, and he is the main reason why the number of Oregon's known

meteorites recently jumped by 50%, from 4 to 6. ... After retirement [from Cleveland High School] Dick was free to become even more active in public outreach and education, and in 2003 he joined Melinda Hutson and myself to establish the Cascadia Meteorite Laboratory (CML) at Portland State University. Ever since, Dick has been the CML's main outreach person, traveling to schools, libraries, grange halls, science fairs, and education workshops across the state, interacting with people on a one-on-one basis, helping them to identify their 'strange rocks' that mostly weren't meteorites, letting them handle real ones, and teaching people how to find new meteorites. Although retired, Dick thinks nothing of traveling to remote regions across Oregon, Washington and (lately) Idaho on multi-day road trips with his 'teaching collection' of meteorites. No town is too small, ... Thanks largely to Dick's hard work, this program reaches about 2000 people per year. ... Dick also has made scientific contributions to meteoritics, including reports on fireballs and meteorites. One of these contributions includes the controversial – but perhaps increasingly accepted – idea first made by Dick and geologist John Allen in 1986 that the largest recovered meteorite in the U.S., the 14,107 kilogram Willamette iron [ed. note: you can see a replica of this meteorite by the front doors of the U of O's Museum of Natural and Cultural History] found in Oregon, was transplanted from Canada on an ice raft during the Bretz [also called Missoula] floods that coursed through the Pacific Northwest at the end of the last ice age. Finally, because Dick knows the educational and scientific value of meteorites, he understands the importance of maintaining and preserving meteorites for the future. In 2005, Dick started an endowment at Portland State University for the curation of meteorites in the CML collection. This endowment helps to pay for lab supplies and for the purchase of meteorites that can be used for scientific study. He has contributed personal funds to this endowment, as well as helped solicit donations for it from others. For all these reasons, Dick Pugh richly deserves the Service Award from the Meteoritical Society, and I am pleased that the Society has recognized his achievements.

In his presentation to the Eugene Natural History Society Pugh will touch on astronomy, meteorology, impact craters, types of meteors, Oregon meteors, and what to look for when trying to find a meteor. He will have on hand about a hundred pounds of meteorites, worth \$15,000, which can be handled [but not pocketed]. He said “Bring your kids, and above

all bring your meteorite early, so I can tell you it’s just a rock.” Please come, with family, to hear Richard Pugh’s talk “Meteorites: Rock from the Sky” at 7:30 pm on Friday, 18 April, in room 100 Willamette Hall on the University of Oregon campus.

John Carter

Of Guns and Wind and Sun: The Disappearing Desert by Reida Kimmel

A year ago we drove with friends from Irvine, California to Joshua Tree National Park for a weekend of walking amongst the amazing rock formations, and photographing the weird Joshua trees and various cacti, all in full bloom. When we lived in San Diego in the ‘60s we loved to pile the dogs and camping gear into the Scout and rattle up the quiet desert highway to this park, whose prickly vegetation seemed like an exotic garden set amidst sculptures that would have made Henry Moore proud. We had such fond memories of the desert. I was totally unprepared for the changes that had occurred in what had always seemed such a vast emptiness. The road we travelled was six lanes, or was it eight? And the traffic was heavy. “Why all the traffic?” I asked and was told; “Lots of military bases out here.” Lots, and big ones: Edwards Air Force Base, China Lake Naval Air Weapons Station, the adjacent Fort Irwin National Training Center, and closest to Joshua Tree NP, the Twentynine Palms Marine Corps Air Ground Combat Center. We did not go near any of these bases, but the drive to the Park was a journey through Hell, or Mordor. It was a bitterly dry spring, no snow patches on the mountains, no roadside blooms. Instead there were miles upon miles of wind towers rising from the dark maroon earth. Where the land was flatter, endless banks of solar panels caught the sun. All this renewable energy should make my environmentalist’s heart leap for joy, but somehow it seemed all wrong. We, and the occupants of the other speeding steel boxes, were the only visible living things for miles, and our beautiful planet mattered to no one at all.

Somewhere out there, still, there were creatures that had inhabited this land for nineteen million years. Once they ranged as far west as the present Orange County and Los Angeles. Today their two species live in portions of the Sonoran and Mohave Deserts in Nevada, California, Utah and Arizona. They are peaceful, even gregarious, vegetarians that expend most of their energy making multiple and deep burrows to escape from summer’s heat and winter’s fierce cold. Their burrows also provide shelter for

many other desert-dwelling species: ground squirrels, woodrats, Gila monsters, burrowing owls, Gambel’s quail, rattlesnakes, beetles, spiders, and even collared peccaries. These burrow makers are desert tortoises, *Gopherus agassizii* west of the Colorado River and *Gopherus morafkai* to the east, true keystone species for the desert ecosystem. And they are declining at a frightening rate, especially *G. agassizii*. Tortoises do not even begin to reproduce until they are in their teens and only about 2 per cent of hatchlings survive to adulthood, but the survivors live for thirty or more years, loyal to their home burrows and incredibly knowledgeable about where to find food and water. In 1984 Dr. Kristin Berry published findings that the desert tortoise, whose historic densities were as many as 150 individuals per square kilometer, had declined across the whole Mohave by 90% in the past century. In 1989 the entire Mohave population was listed as endangered. How could this happen? The list of culprits is long. Cattle ate the tender forbs and grasses, trampling burrows and vegetation. Military bases, rarely earth-friendly places, grew in size and number, and that meant lots of people moved into the desert. Las Vegas grew and grew. With people came more and bigger roads, off-road vehicles, ‘sport’ hunters, and pet collectors. Ravens and coyotes, the young tortoises’ chief predators, became more numerous. The final blow came in 1989, when an upper respiratory infection, a sort of pneumonia, began to kill thousands of tortoises. It was a novel strain of mycoplasma, and was most intense where wild tortoises were exposed to abandoned and infected pet tortoises.

After a disastrous attempt to relocate tortoises at China Lake in 1971, Dr. Berry and others had persuaded the BLM to create a forty-square-mile fenced Desert Tortoise Natural Area between Edwards Air Force Base and China Lake. For the most part, until this century, the BLM and the USFWS continued to try to reverse the decline in tortoise numbers by protecting areas of critical habitat, and in 1994 the USFWS declared 6.4 million acres as protected critical habitat. Unfortunately this was but a ‘paper’ protection that failed to prohibit most types of development. When the Federal Energy Policy Act was passed in 2005 it called for a production capacity of 10,000 megawatts of solar,

geothermal and wind energy by 2015. Much of this was to be gathered on the Mohave Desert, which most people saw as worthless empty land. The poor tortoises! The new strategy for saving tortoises was to revert to relocating them if they were in the way of progress. The translocations were designed to be ecologically correct. The tortoises are cleverly transferred with bits of their old burrow soil and scat for their new homes. They are injected with saline to mitigate the dehydration of moving stress. The new habitats are fenced and protected. But tortoises miss their old burrows and do not know the best areas to forage or the seeps where water can be found. Usually tortoises try to return home, however far. Perhaps in these dry years there are not enough resources for the newly concentrated populations of tortoises anyway. Mostly they die.

What crimes we, all unknowing, commit in our search for the energy we think we need to live happy lives. Not one of us can honestly claim to disdain the benefits electricity brings. But at what cost! There are, as they say, no free rides, and when we look at the other alternatives to wind- and solar-generated

power, we see filthy polluting coal, dams that kill fish, and [un] natural gas extracted with poisons, releasing huge amounts of methane in the process. Is it hopeless? Will we scorch and poison the whole earth? Possibly not. I can think of some technological fixes. We could use the methane produced by our own sewage and garbage to produce electricity. If every house, commercial, and industrial building were solar equipped, if solar ‘farms’ were erected on brown field sites, there would be far less need to destroy our last wild spaces and their inhabitants. Force the military to mitigate the damage it does by protecting as many acres as it ruins. Oh, there are lots of feasible fixes, but first there must be the will to change, which can only be accomplished by education. Science is cool. The natural world is full of marvels and beauty. Let’s spread the word. If people learn to want to conserve, to buy less and use less, if children and adults can be persuaded really to care about a healthy planet, there will be hope.

I relied on High Country News, “Mohave Squeeze” by Emily Green, 8/5/13, for most of the facts in the history of the tortoise’s decline.

Symbiosis by Tom A. Titus

Symbiosis. To my horror I realized this morning that after decades working as a biologist I still regularly misspell the word. My poor spelling is likely inexcusable, but certainly the meaning of symbiosis has been a slippery one. Taken literally, the word simply means “living together.” Back in 1877 Albert Bernhard Frank used symbiosis to describe the mutually beneficial relationship of fungi and algae living together as lichens. But there are many ways for individuals of two species to dance, all with positive and negative outcomes on one or the other. So in 1879 mycologist Heinrich Anton de Bary loosened the strings on the definition to include any long-term interaction between species. Each of these symbiotic associations has its own catchy term. As nouns, they are mutualism, commensalism, parasitism, predation, and amensalism. Just replace the “-ism” with “-istic” when you are in need of an adjective.

My favorite type of symbiosis is mutualism, in which both interacting species benefit from the relationship. And my favorite example of mutualism hangs with me because I am a self-centered forager who always enjoys an edible outcome of evolution. In a coniferous forest, spores of the hedgehog mushroom (as well as many other fungi that aren’t nearly as cute) germinate and grow into an

underground network (the mycelium), with hairs that reach out and become intertwined with the tree roots, feeding on the gift of surplus sugars produced by photosynthesizing needles in the sunlit canopy. Hedgehog mycelia benefit their tree hosts by increasing the ability of their roots to take up water and minerals from the soil. Simple. And the mushrooms make excellent omelets.

There is something that really resonates with us about species coexisting and, over the vastness of evolutionary time, eventually cooperating in a mutualistic two-step, especially when the liaison becomes so tight that neither species can survive without the other. These interactions remind me of a good long-term marriage, and rightfully we are awed. I agree with Dr. Lynn Margulis, who discovered the ancient and now obligatory association between our own eukaryotic cells and their energy-producing mitochondria (which were once free-living single-celled organisms), when she asserted that cooperation as an evolutionary force has received short shrift compared with other win-lose interactions such as competition and predation. But I also wonder how much of our infatuation with these mutualistic relationships is borne of rectitude, our own deep-seated notion that cooperation is the “right” thing to do. We like these win-win just-so stories, even while knowing that evolution is an amoral process that cares not a whit about righteousness. Mutualism

evolves because individuals who cooperate send more of their genes into the next generation.

Recently the study of mycorrhizal mutualism has revealed a level of complexity previously unimagined. Enter Dr. Susan Shimard of the Department of Forest Sciences at the University of British Columbia. She and others have discovered that the mycorrhizal relationships between trees and fungi are actually a community-wide phenomenon. Although individual trees and their fungal symbionts do exchange carbon and nutrients, Shimard and others have demonstrated an extensive set of mycorrhizal networks in which carbon and water can be transferred from tree to fungus and then to other trees in the forest. This nutrient and water exchange can even depend on the needs of individual trees and fungi in the network, with a disproportionate quantity being shared with those individuals that are stressed. Young seedlings grow faster when they are able to tap into a mycorrhizal network established by older trees, and the exchange of water and nutrients can occur among multiple species of both fungi and trees. Thus, individuals that are connected to mycorrhizal networks not only help themselves through cross-species reciprocal relationships, they also help other individuals of the same and different species. Suddenly, my limited vision of symbiotic mutualism has expanded from a simple case of two individuals in a “you help me, I help you” relationship to one in which the ebb and flow of life-giving materials in a community occurs among many individuals of a variety of species and age groups.

The metaphorical consequences of this network of species linked through subterranean relationships fascinate me. I thought that symbiosis was a term first used in biology that was then co-opted to describe any situation in which there is an association between two things, including people, interacting for mutual benefit. But the reverse is actually true. The

first use of the word dates back to the 1620's and was meant to depict different people living together for mutual benefit within a human community. So symbiosis began as a sociological concept for describing a community of cooperating individuals. Apparently Albert Bernhard Frank was the borrower of the term when he applied it to mutually beneficial interactions between two different biological species. The recent work on mycorrhizal networks by Dr. Shimard and her colleagues, in which many individuals of several species interact beneficially, seems to return the concept of symbiosis, or at least symbiotic mutualism, back to the original intent of the word.

On April Fool's day I bolted from work under a stalwart overcast. As I forked leaf compost into a wheelbarrow for a new potato bed in my front yard, darkness closed around the front of the house, hastened along by a gray brick and mortar sky. My next-door neighbor passed by on the sidewalk, flushed and sweaty from his run and wondering why it had become so hard in the last month. “Tree pollen” I replied. Down the street Doris rolled in from work and from her front yard began talking to her basset hound that was baying in anticipation from inside the house. Later she came by with the dog to see what I was planting. Directly across the street the squeals of the small, still wordless voice of our new nine-month-old neighbor reached me through an open kitchen window while her parents engaged her in “conversation” and worked on dinner. I smiled to myself and forked more leaves into the wheelbarrow. We really are a community, like trees and fungi, fungi and algae, algae and salamanders, all exchanging energy in the form of sounds and materials and goodwill from one person to another. We grow best in this mutualistic network of relationships. We are symbiotic. We are mutual.

We need booth sitters during the Wildflower and Music Festival at Mt. Pisgah Arboretum on Sunday, 18 May. No experience necessary. Please let a board member know if you are willing to help out. Sign up at the April meeting.

ENHS Field Trip to Malheur National Wildlife Refuge, Thursday–Sunday, 29 May – 1 June

The Spring 2014 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. Side trips also are possible. Carpools will be arranged.

Accommodations at the Field Station: We will stay in recently renovated spaces, some of which have separate bedrooms with two beds. The Field Station will provide three meals per day on Friday and Saturday and two meals on Sunday, with pack-your-own brown bag lunches.

Costs: Lodging is \$30 per person per night, the eight meals add to \$79 per person, and there will be a small cleaning fee (approximately \$3), for a total of \$172 per person.

Details: This is not a guided trip. However, people who have been to the area have various favorite places. We will leave Eugene Thursday afternoon. Pack your own dinner or stop for it along the way (a deli in Bend is a popular spot). Friday and Saturday can include the Refuge headquarters, the central patrol road in the Refuge, and a loop around Steens Mountain with

stops at Mann Lake, Mickey Hot Springs, Pike Creek, Fields, and other places in the Alvord Desert and Catlow Valley. Sunday will be a shorter day, with a possible stop at Fort Rock.

To participate: Make a check out to the Eugene Natural History Society and give it to Judi Horstmann or Kim Wollter at the monthly meeting or mail it to the Eugene Natural History Society, P.O. Box 5494, Eugene, OR 97405. Be sure to provide participant name(s), phone numbers, snail mail addresses, and e-mail addresses. **All payments must be made by 1 May.** Refunds may be made in the case of emergencies. For more information, contact Kim Wollter at 541-484-4477, kwollter@comcast.net.

Out and About

"Out & about" is a periodical encouragement to Eugene Natural History Society members to get out and experience our magnificent Oregon. Photos and descriptions provided by David Stone.



In search of Flying Jewels

Time to look for odonates (dragonflies and damselflies). Where? Anywhere there is standing or moving water. Sandpiper Pond, just west of Stewart Pond in West Eugene, is reputed to have one of the most diverse collections of odonates in the Willamette Valley. They are most active during the warmer hours of the day when the adults patrol for prey (such as mosquitoes) and the males seek mates or challenge other males entering the area.

What is the difference between dragonflies and damselflies? There are several, but the most obvious involves wing position at rest - dragonflies hold their wings horizontal to the body, most damselflies hold their wings folded and above the body. Learn more about these beautiful and fascinating insects from guides written by our own Steve Gordon and Cary Kerst - *Dragonflies and Damselflies of the Willamette*, and *Dragonflies and Damselflies of Oregon*.

ENHS bike path work party. Saturday, 12 April. Meet at 10 am on the North Bank Bike Path under the north end of Ferry Street Bridge, or in the parking lot in front of McMenamin's North Bank restaurant off Centennial Loop. Families welcome; nature study entertainment provided. Bring gloves and be clothed for the weather. Work usually lasts until about noon, after which many of us stay for lunch and conversation at McMenamin's. Contact for info: David Wagner 541-344-3327.

Events of Interest in the Community

Lane County Audubon Society

You can access the current issue of *The Quail*, LCAS's excellent newsletter, from their website: <http://www.laneaudubon.org/>. A summary of their upcoming monthly meeting can be found there, as well as many other interesting avian tidbits.

Saturday, 19 April, 8 am-noon. Third Saturday Bird Walk. Skinner Butte, led by John Sullivan. Meet at 8 am at the South Eugene High School parking lot (corner of 19th and Patterson), rain or shine, for car-pooling. Plan to return by noon. All levels of birders are welcome. A \$3 donation is appreciated to help support LCAS activities.

Tuesday, 22 April, 7:30 pm. Bird World: Insights for Humans from the Amazing Lives of Birds. Noah Strycker explores the astonishing homing abilities of pigeons, the extraordinary memories of nutcrackers, self-image in magpies, the life-long

loves of albatrosses, particle physics of starling flocks, and other mysteries. Strycker's latest project, *Bird World*, a book about the fascinating behaviors of birds, was released in March 2014 (Riverhead Books). 1645 High St., Eugene.

Fridays, 25 April and 2 May, 7:30 pm. Welcome back Vaux's Swifts. Agate Hall on the U of O campus

Mt. Pisgah Arboretum

Sunday, 20 April, 8:30-11 am. Spring Bird Walk. Led by Julia Siporin and Chris Roth. Come discover or rediscover the Arboretum's avian diversity—and be prepared for potentially inclement weather. Bring binoculars. Option to continue the walk until noon for those who are interested. Meet at the Arboretum Visitor Center. \$5, Members free.

Friends of Buford Park and Mt. Pisgah

Thursday, 17 April, 7-8pm. Revitalizing the Confluence. Learn how the Friends are partnering with Oregon State Parks and The Nature Conservancy to restore floodplain habitat across three ownerships at the confluence of the Coast and Middle Forks of the Willamette River. At REI, 306 Lawrence Street, Eugene.

Saturday, 19 April, 9 am-noon. Wildflowers of Meadowlark Prairie. John Koenig will lead a tour of the prairie and point out the showy, hidden, and endangered plants of this fragile habitat.

Saturday, 26 April 10 am-1 pm. Work up a Thirst at Turtle Flats! Get your hands dirty pulling teasel at a Turtle Flats restoration party and join us afterwards for a free beer at the Bier Stein! Carpool from the Bier Stein at 10 am at 1591 Willamette St, Eugene, OR 97401. Email volunteer@bufordpark.org to RSVP or with questions.

Nearby Nature Go to <http://www.nearbynature.org/events> for information on these activities, or call 541-687-9699.

Saturday, 26 April, 10 am-2 pm. Adventure Fest. Sponsored by Youth in Nature Partnership. Activities: *River Rafting, *Bike Touring, Longboarding, Skinner Butte Hike, Survival Shelter Building, Earth Art, Scavenger Hunt, Jarana Workshop. Most activities designed for ages 12-18. * Pre-registration required for biking and rafting: 541-682-5329

Saturday, 26 April, 1-4 pm. Earth Day Park Cleanup. Help spruce up Alton Baker Park. Meet at the WaterWise Garden patio outside the Park Host House. Wear work clothes and bring a water bottle. Please sign up with SOLVE at <http://solv.org/get-involved/events/nearby-nature-alton-baker-park-clean>.

Native Plant Society of Oregon, Emerald Chapter

Thursday, 17 April, 7:30 pm. Growing More than Plants at the Friends of Buford Park Nursery. Jason Blazar, stewardship coordinator of FBP, will discuss the purpose, scope, and scale of native plant material production in the Mt. Pisgah area. His talk includes context within the FBP stewardship program, purpose, scale, production, marketing, ethno-botanical projects, educational opportunities, and an opportunity for the NPSO Emerald Chapter to consider partnering to develop a pollinator demonstration garden at the nursery. Location: Conference Room at Lane County Mental Health. For more information call 541-344-8377.

North American Butterfly Association, Eugene–Springfield Chapter

Monday, 14 April, 7 pm - refreshments; 7:30 pm – presentation. Flying Circus: The How and Why of Butterfly Wing Patterns. Dr. Kathleen Prudic, a research scientist at OSU, will discuss how climate influences the development of butterfly behavior and coloration. Eugene Garden Club, 1645 High St. (note new location for NABA-Eugene).

The University of Oregon's Museum of Natural and Cultural History

Exhibit Hours: Tuesday through Sunday, 11:00 am - 5:00 pm

Wednesday, 16 April, 8:30 am -7:30pm. Climate Change Research Symposium. The UO Climate Change Research Group and the Museum of Natural and Cultural History invite you to the Third Annual Climate Change Research Symposium – an interdisciplinary conversation about a multifaceted crisis. Join professors and students in the arts, humanities, and natural and social sciences for a daylong exploration of recent research and works of art related to global climate change. Keynote speaker: Kate Larsen, Director for Climate Change at the New York-based Rhodium Group. Fir Room, Erb Memorial Union, U of O. Roundtable discussion (4:30 pm) and reception (6:00 pm) at the Museum of Natural and Cultural History, 1680 E. 15th Ave.

Current Exhibits

- Cruisin' the fossil freeway with artist Ray Troll and paleontologist Kirk Johnson.
- Site Seeing: Snapshots of Historical Archaeology in Oregon.
- Oregon - Where Past is Present. 15,000 years of Northwest cultural history and 200 million years of geology.
- Tradition Keepers: Cornhusk Weavings by Kelly Palmer and Joy Ramirez.

WREN

Saturday, 12 April, 10 am-2 pm. Family Exploration Day at Danebo Wetland Site Tsanchiifin Trail. The Tsanchiifin trail offers a rich diversity of plants and wildlife for families to enjoy. This free program provides unstructured observation, education and inspiration in our surrounding natural spaces. WREN staff and volunteers will be on hand to check out nature exploration equipment and provide guidance for independent exploration of the wonders in the wetlands.

We welcome new members! To join ENHS, 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

Name _____
Address _____
City _____ State & Zip _____ Phone _____
E-mail (if you want to receive announcements) _____
I (we) prefer electronic copies of NT rather than paper copies. ___ Yes ___ No
If yes, email address (if different from the one above): _____

ANNUAL DUES: Contributing 20.00
Family 15.00
Individual 10.00
Life Membership 300.00
Contribution _____

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

Make checks payable to: The Eugene Natural History Society
P.O. Box 5494, Eugene OR 97405

The following information is voluntary, but appreciated:

Would you like to: ___ lead field trips ___ teach informal classes ___ work on committees ___

What would you like to hear a talk on? _____

Do you have special experience in natural history: _____

ENHS OFFICERS AND BOARD MEMBERS 2011-2012

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ENHS Schedule of Speakers and Topics for 2013-2014 and for 2014-2015

18 Apr. 2014	– Richard Pugh	– Meteorites: Rock From The Sky
16 May 2014	– Robin Hartman	– Energy from Waves: A Consideration of the Issues
19 Sept. 2014	– Rich Lampugh	Yellowstone Wolves
17 Oct. 2014	– R. M. Pyle	– Butterflies (joint with NABA Eugene-Springfield Chapter)
21 Nov. 2014	– George Wuerthner	– Praise the Dead: the Ecological Role of Dead Trees
12 Dec. 2014	– John Marzluff	– Crows, Ravens, and Us
16 Jan. 2015	– James Cassidy	– Soil: What it is and How it Works!
17 Feb. 2015	– Shelly Miller	– Native Freshwater Mussels in the Pacific Northwest
17 Mar. 2015	– Paul Engelmeyer	– Conservation strategies: seabirds and forage fish
18 April 2015	– Marli Miller	– Geology of Oregon
19 May 2015	– Pat Orm	– Bats