

Nature Trails

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Native Salmonid Fishes of the McKenzie River

Ray Rivera, Supervisory Fisheries Biologist,

**USDA Forest Service, McKenzie River Ranger
District, McKenzie Bridge, Oregon**

Friday, 15 November 2013, 7:30pm,

**Room 302 Gerlinger Hall, UO Campus (NOTE
ROOM CHANGE)**

NOTE THAT THIS MONTH'S MEETING IS IN ROOM 302 GERLINGER HALL, UO CAMPUS.

Go in the main/front door (east side). Veer left toward the sign that says Elevator. Take the elevator to the third floor. Or go in the north side entrance and take the stairs to the third floor. A sign on a doorway at the top of the stairs says 302 is through that door. The room entrance is to the left.

Ray Rivera was born in Santa Fe, New Mexico. His ancestors were in the area long before New Mexico was part of the United States. His maternal ancestry is Pueblo Indian and his paternal ancestors, originally from Spain, were there when the region was still considered New Spain.

Rivera fell in love with wilderness as a child. His family camped a lot in the nearby mountains and he rode his horse in the Pecos Wilderness, in the Sangre de Cristo mountain range northwest of Santa Fe. He knew in kindergarten that he wanted to work for the Forest Service. His reason at that point in his life was that he loved Smokey the Bear. Some years ago he came across a report card of his from kindergarten, with a note on it from his teacher: "Ray loves to sing Smokey the Bear, though well off key." His early scientific fascinations were with geology and animal behavior.

After high school in Albuquerque Rivera went to New Mexico State University in Las Cruces, where he studied fish and wildlife science. He received the degree Bachelor of Agriculture in Science in 1990.

Rivera worked as an intern for the U. S. Forest Service in the Rogue River-Siskiyou National Forest Gold Beach Ranger District, starting there while still an undergraduate. As an intern he spent time in every department of the Ranger District: fire management, forest management, recreation, and engineering.

They must have liked his work as an intern because they offered him a permanent position in the Natural Resources Department. He spent a total of ten years with the Gold Beach Ranger District, including his 18-month internship. He said he loved that region, loved fishing for steelhead in tiny streams along the southern Oregon coast.

But in 1997 it was time to move, and Rivera took his present position, still in the USDA Forest Service, in the McKenzie River Ranger District. His title is Supervisory Fisheries Biologist. He says he does the same sort of thing now as he did while in Gold Beach, only now he's the boss. While in Gold Beach he got to spend about 60% of his time in the field. Now, because of his increased supervisory responsibilities, the field portion of his effort is down to about 40%. He doesn't want it to go any lower. He has turned down offers of other supervisory positions, with higher salaries, so he can continue doing what he loves. He is not in it for the money.

If he worked for the state, Rivera said he would work more directly on fish. But because he is in the Forest Service he is more of a habitat biologist than a

fisheries biologist. The general thrust of his position is to provide support to all the other departments. Each department has several projects, all of which focus on some aspect of the health of the forest, and Rivera's responsibility is to provide each of those projects with the fish perspective. What will their project do to the health of the fish habitat within the project's boundaries? What should the scientists and technicians do to protect the fishery? A simple example is a timber sale put on by the Forest Management Department: what will be the effect of that sale on the long-term health of the fishery within the boundaries of that sale?

One difference between his present duties and what he did in Gold Beach is the number of fish species he has to deal with. At Gold Beach he worked with five anadromous species. On the McKenzie he has only one: spring Chinook salmon. That is not to say he is only concerned with salmon. He also monitors the health of the bull trout fishery. Although in some parts of their native range bull trout are anadromous, on the McKenzie River they are a river migratory, or fluvial, species and they don't go all the way to the ocean. Because bull trout need cold water to survive, as well as stable stream channels, clean spawning and rearing gravel, and complex and diverse cover, the South Fork of the McKenzie River, with its frigid water, is a natural location for this increasingly constrained species.

Rivera's program involves monitoring fish populations and habitat. Their motto is 'protect, restore, enhance.' Another example of what they do stems from the requirement by both salmon and bull trout of unblocked migratory corridors. Rivera and colleagues locate side channels that either through natural or human-caused disturbance are no longer connected with flowing streams. His group then works to reconnect the side channel with the main channel.

So we can think of Rivera as a fish protector, which means he is living up to his name. His full first name, Ramon, means protector. His last name, Rivera, comes from the Greek *ripa*, from which comes *riparian*. So from birth Rivera has been destined to be a riparian protector. As we know, the riparian zone along a river is the interface between the river and the surrounding land. If it is healthy, the river is healthy, and fish have a fighting chance. By being a riparian protector, Rivera therefore is a protector of fish.

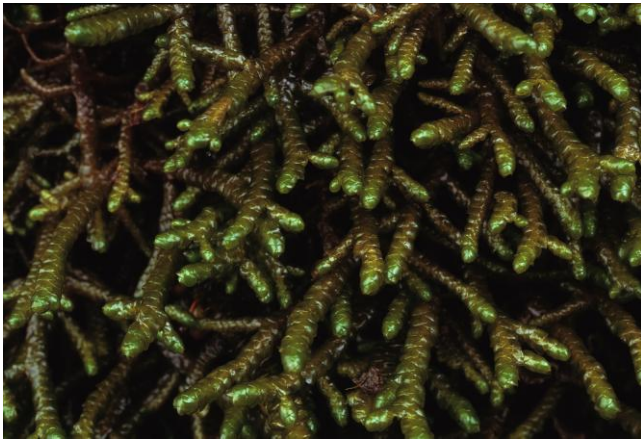
In his talk to the Eugene Natural History Society, "Native Salmonid Fishes of the McKenzie River,"

Rivera will tell us about the fish that are naturally found in this storied river and the habitat that favors their presence. Essentially his talk will be about what fish are here and why they are here. All who love this wonderful, famous Oregon stream (can you think of another river with a boat design named for it?) will

want to be present to hear him speak and to see some wonderful still photos and video coverage of the work he is doing. Join us in room 302 Gerlinger Hall (NOT 100 Willamette Hall!) at 7:30 pm on Friday, 15 November 2013. John Carter

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.



Porella – Western scalemoss

Although its common name suggests that this plant is a moss, and it looks like moss, it is, in fact, a liverwort. The difference is technical and includes more complex chemistry and the nature of sporophyte development. The *porella* pictured is one of the few common liverworts found in our area. Look for it on tree trunks in our local forests. It is especially prominent during winter when moisture is abundant.

Life in Decay by Tom A. Titus

Eighteen of us file along a trail threading a cathedral of green needles, yellow vine maple leaves, quiet shadows, and the furrowed dinosaurian bark of 500-year-old Douglas fir trees. Our destination is the Log Decomposition Site at the H.J. Andrews Experimental Forest, a 200-year study of decomposing wood instituted by Dr. Mark Harmon in 1985. Mark dryly refers to this intergenerational ambition as “morticulture.” The Log Decomposition Site is a mandatory stop for writers who participate in the Long-Term Ecological Reflections (LTER) program (also a 200-year endeavor), which is sponsored in part by the Oregon State University Spring Creek Project and was designed to inspire and disseminate literary contemplations of the forest (two past LTER writers, Robert Michael Pyle and Robin Wall Kimmerer, have graced the podium at Eugene Natural History Society lectures). My compatriots and I are here to celebrate the 10th anniversary of the LTER program, and we have been asked to imagine what LTER might look like over the next 10 years.

For me, thoughts on decomposing wood automatically lead to a meditation on salamanders. Downed wood is great salamander habitat, partly because it holds a tremendous amount of moisture that can shepherd a thin-skinned creature safely through our annual summer drought. All salamanders are predators, and their prey also like the moist haven of rotten wood. So for salamanders, decaying logs are both safe refuges and smorgasbords of mites, termites, centipedes, and other delectables.

A majority of the salamander species inhabiting down wood are in the family Plethodontidae. The members of this most speciose of salamander families share the peculiar characteristic of being lungless; they are the product of an evolutionary loss of lungs. Lungless salamanders will never be taught diaphragmatic breathing meditations nor will they waddle into the kitchen before Thanksgiving dinner and inhale the smell of cooking turkey and dressing. Because they do not breathe as we understand it, the majority of gas exchange happens through their very porous skin. Salamander skin is unlike that of humans and birds and snakes in having only a very thin layer of dead, keratinized cells on the surface. A

network of capillaries permeates the outermost layer of living cells, transporting red blood cells that expire carbon dioxide and absorb oxygen. Thus, their skin is an excellent organ for gas exchange, provided that it remains moist. Salamander skin also has a marvelous variety of cells that make things such as mucus for lubrication (this would be *slime* in non-herpetological circles), poisons that repel predators, and chemicals that attract mates. In contrast, our skin is as boring as brown paper on a holiday package.

The complex workings of salamander skin come with a cost. These animals must constantly deal with the reality of dehydration, so we can look to water to begin to understand the importance of decayed wood to forest salamander communities. Pound for pound, decayed wood will store more water and provide a wetter microhabitat than will intact wood. As a log decays and disintegrates, pathways appear that allow invasion by animals into its interior. During the Pacific Northwest summer drought, the entire forest floor community of salamanders will retreat to the very center of large decayed logs or will head further underground where moisture levels remain high enough to prevent dehydration. Probably not coincidentally, this is also the time of year when lungless salamander females brood a grape-like cluster of eggs, usually attached to the wood by a stalk.

Because salamander species differ tremendously in their tolerance to dehydration, we find different species associated with various microhabitats within decayed wood. Dunn's salamander (*Plethodon dunnii*), for example, is particularly sensitive to water loss and is found in only the very wettest dead wood during wet times of the year. At other times, they are found primarily in the nearly saturated areas near seeps and springs. The Oregon ensatina (*Ensatina eschscholtzii*) is more tolerant of desiccation and has more eclectic tastes when it comes to moisture levels in rotting wood. In one study done in the Oregon Coast Range, clouded salamanders (*Aneides ferreus*) occupied less decayed wood, whereas Oregon ensatinas preferred very decayed wood. The western

redback salamander (*Plethodon vehiculum*) seemed to go for intermediate levels of decay. We can only speculate as to the reasons for this pattern. Perhaps invertebrates found in wood at different stages of decomposition were meeting the peculiar dining preferences of each salamander species. Or maybe moisture levels in these various types of wood suit one species over another. Could it be that these species just don't like each other, and the ensatina, being the biggest baddest animal on the block, was excluding the others from the choicest habitats? We really don't know, which really turns my crank. This means that salamander biologists have not run out things to do. More importantly, I am at liberty to speculate wildly about the underlying drivers of this spatial pattern. Regardless, this habitat partitioning probably breaks down in summer when the forest floor becomes as dry as an over-baked brownie and every individual of every species retreats to the wettest spaces still available.

We could continue to study salamanders until those proverbial cows come home. We could probe more deeply into the causes underlying the patterns they exhibit by doing all manner of ecological and behavioral experimentation or working out the molecular biology of the chemicals secreted by their skin. I understand this curiosity, this need to know. But we could also take the deep breath that lungless salamanders will never breathe and ask this question: if we were to sit at the four-toed feet of salamanders and really listen, what would they teach us about the forest, right now? They might teach us that dead wood is squirming with life and that a down log is like a bus with passengers that get on or off as it travels through time. They could teach us the difference between *timber*, a human construct measured primarily in board feet, and *forest*, a community whose complexity defies metrics applied by an egocentric bipedal vertebrate. Salamanders might teach us that knowledge can knock quietly at doors we did not previously recognize. Perhaps we could begin to understand silence. We might even consider opening our skin to the world.

Mother Nature does Scratchboard

By John Carter

Kris Kirkeby is an artist. She is also my wife. Before we became an item my conception of what an artist does was so utterly lame that it would have been laughable if it had been allowed to see the light of day. Give me some credit for having the sense to keep my ignorance to myself. My education in the

doing of art has continued. I now know that not all art is made with paint and brush. Artists work in many mediums. The editor in me, never far from the surface, has tried more than once to substitute 'media' for 'mediums' in her writing. After being chastised more than once I am now acutely aware that in the art world it is 'mediums'. Artists are what you might call a group of sooth-sayers, after all, so

the usage is not without precedent. And if they all had smiley faces they would be happy mediums.

This is leading up to the subject, I promise. I want to tell you about one of Kris's mediums: scratchboard. She is really good at it. She made a holiday card of a black bear head using this medium and if there ever was a better bear head made I have not seen it. It has a remorseless, fearless quality that I cannot imagine being captured in a photograph. Not angry, but contemplative. Looking at that bear looking at me, I can imagine it thinking "I could eat you if I wanted to."



So what on earth can this have to do with fall color? Trust me, there is a link. First, scratchboard. How Kris created that bear is just the opposite of how I used to imagine art being done. On a special board she put a layer of black India ink where the head was going to be. The board was coated so the ink didn't soak into it. After the ink was dry she picked up an exacto knife and proceeded to scrape away everything that wasn't the bear. When she was done I could see individual hairs on the bear's head. It was almost eerie, as if the bear was already there, just waiting to be freed. If I had not seen her do this I would have sworn it could not be done. It's like putting your brain in reverse.

And this gets me to fall color. Kris's scratchboard technique and the way Mother Nature generates those magnificent oranges, golds and reds have something in common. Those colors are already there in the leaves. As other elements begin to degrade they are gradually exposed. Instead of black, nature's Artist lays down in the leaves that will provide our fall art show a mass of green. Chlorophyll, that magical molecule that makes it possible for plants to eat out of the air, absorbs blue and red light, so it looks bright green. In the fall, when the plant is done being active and begins to go dormant for the winter, that

Artist takes out her proteinaceous equivalent of the exacto blade and begins scraping away the green.

The analogy does get a little stretched, I admit, but bear with me (ahem) and I think you'll agree that Jack Frost doesn't use a paintbrush.

Chlorophyll's starring role in the plant leaf's ability to capture energy from sunlight is critical to life on earth, as we all learned in Biology class. So it may come as a surprise to learn that this huge molecule, packed tightly in the thylakoid membrane of the chloroplasts in the cells of those leaves we're oohing and aahing at, is fairly rapidly degraded by sunlight. Leaves handle this by shuttling away some of the breakdown products and making more chlorophyll. There is some recycling, but to make the new chlorophyll molecules the leaves have to get many of the building blocks from somewhere else in the plant. Think of a scratchboard artist having what she scrapes away replaced when she's not looking.

Another thing that begins to happen in the leaves in late summer and early fall as the growing season draws to a close is the slow buildup of a corky layer at the point where each leaf's petiole joins the branch that holds it. As this abscission layer develops, the raw materials the chloroplasts need for making more chlorophyll have a harder time getting into the leaf. The scratchboard Artist begins to get the upper hand; she scrapes away her green pigment faster than the leaf can make more.

Now, imagine what Kris's final scratchboard would look like if instead of a uniform white background she had put the India ink on a board that had several different colors on it. This is similar to what happens in leaves. Carotene, which is yellow, is made in the leaf and is pretty stable, so as the chlorophyll goes away carotene gradually comes into view. Anthocyanins likewise. They are red and purple, but because their synthesis requires exposure to sunlight anthocyanins aren't in every leaf in equal amounts. The more sun a leaf gets, the more anthocyanins it builds up.

So the background in each leaf has a unique blend of pigments. They differ in kind, in amount, and in location. As the Artist slowly scratches away the green, each leaf becomes a piece of art in itself. Jack Frost doesn't wield a paintbrush, he uses an exacto knife.

The Eugene Natural History Society thanks the Oregon Humanities Center's Endowment for Public Outreach in the Arts, Sciences, and Humanities, as well as the U of O's Environmental Studies Program, for their support of the October program, which featured Robin Wall Kimmerer.

Events of Interest in the Community

Lane County Audubon Society

You can access the current issue of *The Quail*, LCAS's excellent monthly 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, 16 November. Jim and Charlotte Maloney will lead November's **Third Saturday Bird Walk**. Meet at 8:00 am at the South Eugene High School parking lot (corner of 19th and Patterson) for greetings and carpooling, and plan to return by noon. Don't leave valuables in your vehicle if it's parked at the high school. All levels of birders are welcome. A \$3 donation is appreciated to help support LCAS's activities. Contact Jim Maloney at 541-968-9249 or jimgmal (at) comcast.net.

Tuesday, 26 November, 7:30 pm. California Dreaming: Birding The Golden State. Last spring, bird photographer and LCAS member Dave Stone traveled to California and visited the coast, the Central Valley, and the Klamath Basin in search of the best birds in that birdy state. Working on what he calls the "photogenic scale," Dave brought back photos of the biggest, brightest, most approachable birds he could find. For this program Dave produced a tapestry of bird images backed by an evocative sound track that moves the viewer through the state. Come and enjoy amazing images of waterfowl, shorebirds, and a few surprises. Eugene Garden Club, 1655 High Street, Eugene.

THE ENHS booth at the **Mushroom Festival** got lots of attention, and the hardy, waterproof volunteers who put the booth up, took it down, and provided the welcoming atmosphere deserve our sincerest thank-you, so here it is:

THANKS BOOTH SITTERS!

Mount Pisgah Arboretum 34901 Frank Parrish Rd., Eugene, 97405.

Saturday, 9 November, 10 am-3 pm. Play in the Rain Day. Play in the Rain Day will happen rain or shine, so dress for the weather. The event includes tree climbing, hayrides, nature crafts, hot dog roasting, and much more. Sponsored by the Youth in Nature Partnership, a collaboration of non-profit and governmental organizations committed to increasing opportunities for youth to spend time in nature. Its members include the Bureau of Land Management, the City of Eugene, Friends of Buford Park & Mt. Pisgah, Nearby Nature, Northwest Youth Corps, Mount Pisgah Arboretum, Willamalane Park and Recreation District, the United States Forest Service, and Willamette Resources & Educational Network (WREN).

Sunday, 10 November, 8 -10:30 am. Late Fall Birds of Mount Pisgah Arboretum. Join Marly Johnson and Chris Roth for a walk intended for people with all levels of birding experience. We'll observe the effects of migration on bird populations as fall sets in, and use vocalizations, habitat, and behavior clues to track down and identify our feathered friends. Come discover or rediscover the Arboretum's avian diversity—and be prepared for potentially inclement weather as we enter this slower birding season. Please bring binoculars! \$5, members free. 541-747-1504.

Saturday, 16 November, 10 am-noon. Water Garden Ecology Walk. Join Mt. Pisgah Arboretum Assistant Site Manager, August Jackson, for the first in a seasonal exploration of the dynamic ecology of the Arboretum's Water Garden. Learn about the hydrology of this unique area and the lasting impact that powerful fall storms have on the local ecology. Discover the birds, insects, fungi, and flora that make the Water Garden their home during the short and wet days of mid-Autumn. Rain or shine. Meet at the Arboretum Visitor Center. \$5, members free. 541-747-1504

Thursday, 12 December, noon-1 pm. Park Watch Training.

Friends of Buford Park and Mt. Pisgah

Saturday, 16 November, 9 am-noon. Native Plant Nursery Autumn Work Party. Where: Howard Buford County Recreation Area / Friends of Buford Park Native Plant Nursery.

Sunday, 8 December, 1-4 pm. Tour the Nature Conservancy's Willamette Confluence Project with Chaz Dutoit.

Nearby Nature

Go to <http://www.nearbynature.org/events> to view NN's calendar, or call 541-687-9699.

Saturday, 7 December, 1-3 pm: Nearby Nature Quest -- Tall Tree Trails and Tales.

Saturday, 14 December, 1-4 pm: Nearby Nature Lessons in the Learnscape Workshop.

Volunteer Opportunities: For more information about any of these opportunities, call 541-687-9699 or email info@nearbynature.org.

- **Play in the Rain Day:** Help with activities at Play in the Rain Day on **9 November, 10 am-3 pm**, at Mount Pisgah Arboretum. Shifts available.
- **Nature Quest Assistants:** Help with activities and games at our Quest in Hendricks Park on **7 December, 1-3 pm**.

Native Plant Society of Oregon, Emerald Chapter

Thursday, 21 November, 7:30 pm, Post-fire Vegetation Dynamics in the Northern Sierras. David E. Hibbs, Associate Department Head, Professor Emeritus of Ecology and Silviculture, Department of Forest Ecosystems, Oregon State University, will summarize nearly 20 years of studies of post-fire vegetation change in the northern California Sierras. Conference Room at Lane County Mental Health, 2411 MLK Blvd. (Turn off MLK Blvd. onto Scout Access Rd. across from Autzen and take the first left into the parking lot. The meeting room is on the right side as you face the building). More information: 541-349-9999.

North American Butterfly Association, Eugene-Springfield Chapter

Monday, 9 December, 7 pm – refreshments; 7:30 pm – presentation. From Ancient Capital to South of the Clouds: Butterflies and Others in Wild China. Robert Michael Pyle, internationally recognized butterfly expert, author, and naturalist, will explore the remarkable habitats he visited during his 2011 trip to China. We will see an array of nearly 100 species of butterflies, many moths, and other wildlife including wild panda, the giant red-and-white flying squirrel, leeches, and an eye-popping trillium named *Paris polyphylla*. Pyle is an entertaining and informative speaker, so this is a program you will not want to miss. Co-Sponsored by NABA Eugene-Springfield and the Eugene Natural History Society. Eugene Garden Club at 1645 High Street (Note: NEW LOCATION this year for NABA-E-S). FREE, all are welcome.

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

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

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

WREN

Go to <http://www.wewetlands.org/> for news of upcoming events, or call 541 338 7047.

Tuesday, 12 November, 9-10:30 am. Wetland Wander at Wild Iris Ridge. Park on Bailey View Drive in Eugene, walk to the end of the street and meet our group at the entrance. Participants should bring a picnic lunch, bring water and wear sturdy shoes. WREN will provide binoculars.

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 _____

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: _____

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



ENHS Schedule of Speakers and Topics for 2013

- | | |
|--|--|
| 115 Nov. 2013 – Ray Rivera | – Native Salmonid Fishes of the McKenzie River. |
| 13 Dec. 2013 – Daniel Robey | – Caspian Tern Predation in the lower Columbia River Basin |
| 17 Jan. 2014 – Kristine Kirkeby | – Conveying Nature in Personal Sketchbooks |
| 21 Feb. 2014 – Bob Doppelt | – The Social Costs of Climate Disruption |
| 21 Mar. 2014 – Robert Fleming | – From the Impenetrable Forest to the Namib Desert: Biodiversity in sub-Saharan Africa |
| 18 Apr. 2014 – Richard Pugh | – Meteorites Rock From The Sky |
| 16 May 2014 – Robin Hartman | – Energy from Waves: A Consideration of the Issues |

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