Nature Trails

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Dr. Retallick and his team at an Early Triassic skeleton of the mammal-like reptile *Lystrosaurus murrayi* on Graphite Peak Antarctica.

Dr. Gregory John Retallack, Professor, Department of Geology, University of Oregon

"Past Climate Crises"

Friday, 19 February 2010, 7:30pm, Room 100, Willamette Hall, UO Campus

From the list of places that have invited Professor Gregory Retallack to speak it is clear the phrase "unaccustomed as I am to public speaking" has not passed his lips in a very long time. He has lectured at such Universities as Cal Tech, Cornell, Ohio State, Illinois, Arizona, BYU, Texas, Montana, Harvard, Yale, Sydney, New South Wales, UC Santa Barbara, UC Davis, Oregon State, Chicago... the list goes on and on. Did I mention the Eugene Kiwanis's club? The Lane County Audubon Society? So it is with no little anticipation that we await the 19th of this month, when Dr. Retallack will speak to the Eugene Natural History Society about past climate crises.

Retallack has been in the U.S. since the late seventies, but he is Australian by birth, born in Hobart. When he was an infant his family moved to the Sydney area, where he did all of his public schooling. His undergraduate degree, in geology/biology, is from Macquarie University, Sydney. For his graduate work in geology he attended the University of New England, in Armidale, NSW. When I mentioned I had noticed his PhD was awarded in 1978, in Australia, but he was lecturing at Northern Illinois University in 1977 and '78, and that also, many of those invited lectures were delivered in this country in 1977 and '78, he gave this intriguing explanation. He had submitted his thesis in 1977, but the process then in use in Australia called for it to be examined by several experts in other parts of the world. While it was under examination he needed a job, and he ended up at NIU. But he soon found he could actually make a living from the honoraria (higher then than now) given to invited speakers so he became an itinerant geology lecturer, making it around our country twice before his PhD became official. He then did a post-doc at Indiana University, working with D. L. Dilcher. He began his professorship at the University of Oregon in 1981.

Retallack found his first fossil on a Sydney beach when he was six and has been intrigued by geology ever since. He has continued collecting, and rigorously documenting his finds, to this day. His smallest fossil was a pollen grain 20 microns in diameter, his largest a tree trunk 20 meters long found in Antarctica. In 2009 he donated 9000 fossils (they occupied 26 cubic yards! You've heard the phrase "the whole nine yards"? That's how much a full-sized dump truck holds, so we're talking three dump trucks' worth of fossils) to the U of O's Museum of Natural and Cultural History. It should also be mentioned that Retallack is currently a Director of the Condon Fossil Collection of the Museum, which now is fundraising for a new collection vault. Along the back wall of his office is a jumble of boxes containing yet more fossils, awaiting cataloging.

But this is only one of many things he does or has done for fun. Surfing, sailing, skiing, caving, orienteering, mountain climbing, music making, painting – these are a few more.

Retallack's professional specialty is fossil soils: paleosols. Since 1982 his program has been funded almost continuously by the National Science Foundation, testimony to its quality. His work has appeared in several books and almost 200 refereed articles, and he has presented his findings at many professional meetings. He has held editorial positions in several of the journals in his field.

By careful study of the chemical composition of fossil soils Retallack is able to address questions

Our speaker, collecting Triassic fossil plants from shales on Fremouw peak Antarctica.

that at first blush appear totally unrelated to soil chemistry. For example, what was the impetus behind our ancestors developing our upright walking stance? Or, how did the evolution of land plants alter the earth's climate?

Or, to get to the subject of his talk to us, have there been other greenhouse crises in earth's past? How many, and how severe? From studies of fossil plants and soils he can say, for instance, that 16 million years ago the flora in Oregon resembled what is now seen in Tennessee, or that over a one-million-year period flora native to the Chico, California, area moved up to Oregon and then moved back again. He can use what he has learned about past climate changes to make

predictions about our future: by 2100 what is now the Utah desert will likely be a grassland, with temperatures 1.2° C higher and rainfall 100 mm higher than present values. He also predicts the global carbon dioxide level will be at about 950 ppm, compared to the present value of about 390 ppm.

In his talk, Retallack will place our present climate crisis into a broader context by relating it to previous events revealed by the geologic record contained in fossil soils. Please join us as we listen to "Past Climate Crises", a lecture by Professor Gregory Retallack, at 7:30 pm on 19 February 2010, in Room 100 Willamette Hall, on the University of Oregon Campus. John Carter

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Dinosaur Trees by Reida Kimmel

Chuck and I spent the holiday season in Valparaiso, Chile, and in the little fishing village of Quintay nearby. Nothing, except our inability to communicate in Spanish, was as we had expected it to be. The city is on a huge bay facing north, intensely sunny, yet cool. Colorful, densely packed houses rise from the sea, ascending layer after layer of exhaustingly steep hills to the surrounding forests. Ah the forests, that's what we were looking for, the weird and wonderful *Araucaria* forests of the southern hemisphere. Well, wrong. We were hundreds of miles north of the surviving woodlands dominated by monkey puzzle trees (*A. araucana*).

We learned that the region around Valparaiso and Santiago was once a sclerophyllous scrub forest. Unlike the chaparral country of southern California, which it superficially resembles, this area was dominated by many species of woody shrubs and trees, all with leathery, drought-resistant evergreen leaves. Now the land is agricultural, planted in vineyards, flowers, fruits and vegetables. Wherever the land is too steep to farm there are dense plantations of invasive eucalyptus and pine. We feasted on avocados, tomatoes, and delicious seafood, but our senses were assaulted by smoke from the many forest fires, a daily occurrence in summertime Chile. The eucalyptus and their under story of acacias thrive on this fire regime. Eradication is probably hopeless given the extent of the eucalyptus invasion. Nonetheless there are still many places to see the native vegetation. We particularly loved the grove of bolda trees (*Peumus bolda*) in the Emiliana Vineyard's garden. The leaves smelled strongly lemony and the branches were hung with blue berries. Both the leaves and berries of this tree have medicinal properties. We avoided the 'even-worse-than-poison–oak' leaves of another tree, which seemed not unlike bolda, but when we were riding horses up and down the dry overgrazed hillsides, we were less lucky in escaping the spiny branches of a shrub that our friend called 'spinosa'.

But where were the *Araucaria* trees we longed to see? Well, where else but the botanical garden! There are actually only two species of *Araucaria* in South America, out of nineteen species worldwide, but they are fascinating and beautiful. One, the familiar monkey puzzle tree, was the dominant lumber species in Chile, and hence is much depleted by centuries of logging. The other, pino parana (*A. angustifolia*) from Southern Brazil, is another magnificently tall though somewhat less prickly looking species. If you have ever seen either of these two species growing in parks in this country, you would be amazed to see how much taller they grow in Chile, and how far from the ground their lowest branches are.

The living *Araucarias* of the world are all southern hemisphere trees, survivors of the Mesozoic Gondwanaland. There are Jurassic age fossil logs in Patagonia, Argentina, that are ten feet in diameter. The trees must have been two hundred feet tall when they were alive. A successful tree then must have had to grow very tall indeed to escape the teeth of those huge herbivorous dinosaurs. There were *Araucariaceae* species in the Northern Hemisphere in the Mesozoic too, but they all went extinct with the dinosaurs at the end of the Cretaceous. There is a lot of interest in learning more about the extinct Northern Hemisphere *Araucarias.* For many years paleobotanists believed that the Triassic-era Petrified Forest in Arizona contained specimens that were distant *Araucaria* relatives. Very thin sections of samples of the fossilized wood show, however, that though there was a diversity of species in the forest, there is no real fossil evidence of *Araucaria* ancestors, as neither the branching pattern nor the bark of the species examined resembled any living species (Ash, S.R. and Creber, G.T., 2003). Paleobotanists need to

find seed cones to identify members of the *Araucariaceae*. The seed cones are very distinctive, one seed per scale, fused to the scale or winged depending on the genus. Langenheim (2003), another paleobotanical researcher, says the chemical composition of wood inclusions in Baltic amber closely resembles *Araucarias*, not pines, as previously believed.

Fossil plant species are often mystifying. As Greg Retallack told us in his course years ago, the various parts of a tree often may be given three or more different species and even genus names. How can one tell that those roots found at site A are really part of that trunk found at site B and belong to the flowers or fruits found at sites C and D? Only finding a complete specimen can solve the mystery, though new techniques of tissue analysis and examination of very thin sections can help. There is still so much to learn about the ancient forests of eons ago but I am very happy that the descendants of these dinosaur trees still live on earth, and that I was able to stand under and look up into these strange huge beings.

President's Corner

Last Dance By Tom Titus

The back way to Smith River is now burned into my synapses, etched into my being, as though I could close my eyes and will the pickup along the entire route. Above 1,000 feet the temperature in the hills hasn't risen above freezing for three days. Nighttime fog has accreted into a crystalline hoar frost, covering the evergreens in druidic white cloaks that blur the margin between forested hillsides and the sun-broken vapors of late morning.

Midday approaches as I pull into the Gatchell place, a landmark on Smith River Road. Jerry is on the front porch splitting kindling. He's been out and about already today; the front of his canvas chaps are wet. We exchange the usual "hi-how-ya-doin?"

"Do you have time to show me those fish?" I inquire.

Now is generally a good time for Jerry. After the short trip to Bear Creek we hike leisurely up a gravel road following the small stream. The lower reaches of the creek wind through old Douglas fir, western red cedar, gray-green trunks of vine maple, brown salmonberry canes, and stiff evergreen leaves of salal. Jerry knows what he is about here. His path is a wandering but efficient means of moving along the brushy canyon bottom, skirting the densest salmonberry thickets and largest downed logs. He recites the history of each fallen tree as though he were recounting the funerals of dead relatives--this one 20 years ago, that one 3 years ago, another a convenient bridge across the creek before being covered by relentlessly growing underbrush. We use the recent casualties as causeways above the impenetrable salmonberries. As we draw closer the small creek murmurs insistently: always polite, never overbearing.

Arriving at the creek, the flotsam indicates that last week's rains had driven the placid brook into a mild snit. But today the water is calm, retaining a milky hue reminiscent of sun-baked glass. Inside each bend is a miniature beach of fresh, untracked sand, its pristine nakedness nearly begging for the new footprints of raccoon, mink, and otter. Sandbars are the bones of the mountains, relentlessly ground and reduced by water, beginning their long path to the Pacific where they will join the restless dunes surrounding the mouth of the Umpqua River.

Coho salmon begin their return to Bear Creek when autumn rainstorms break the summer drought and send drifts of yellow alder leaves into coastal rivers. Using their sense of smell, the fish winnow this stream from seemingly limitless other possibilities, detecting subtle differences in water chemistry, sniffing for that unique signature, that perfect match to the template that was somehow stamped into their brains in the weeks after hatching.

Violent splashing overpowers the gentle burble of the creek. Jerry and I wait for the arrival of the fish, but the splashing continues from the same spot, out of sight around a downstream bend. We pick our way through a grove of old conifers that grow so closely that their shoulders nearly touch, then we carefully slip through twisted vine maple, approaching the creek like latecomers slipping unobtrusively into a service already in progress.

The Coho is a female, a hen, her 30-inch body incongruously large in the tiny creek. She fans the water with her tattered white tail, expending just enough energy to remain stationary in the softly flowing water. Her dorsal fin is white and shredded, bony fin rays protruding like skeletal

fingers from a darkly speckled back. The hen is three years old, ripe with eggs, beat up by the 60-mile river trip from Umpqua Bay. She tips on her side, thrashing violently against golden sandstone pebbles, churning up a silty froth, probing the gravel for that sweet spot in which she will dig a redd and deposit her eggs. In the shallow water her upturned flank flashes like a dying sunset.

From our vantage point behind the damp sword ferns above the creek we see the buck swim into view just downstream. His nuptial physique is outrageous; elephantine nose hooking grotesquely downward, humped back culminating in a ragged white ridge, sides a gaudy holly berry red. He is reminiscent of a Travolta-like dandy in a 1970's discotheque.

But the hen seems appreciative of his ridiculous attire. She splashes upstream through a gravelly chute into the next pool, again tipping onto her side to thrash the gravel. After a brief rest she turns downstream, returning to the buck. They lie quietly, side by side. Tipping slightly, the buck applies a shuddering stroke to her left flank. She remains for a time, then flops over for another churning trip into the upstream pool. This time the buck swims gracefully upstream to join her, nudging against her rose-colored flank, apparently realizing somewhere in the depths of his piscine brain that subtle persistence is the only way. Humans should be so lucky.

Jerry and I are quiet observers here. But river otter tracks in the fresh sand attest to the danger in these final days of the Coho's journey; not everyone in the forest shares our detachment. I hope the otter will wait until the fish have finished their final task, when the redd is covered and the fertile eggs are nestled in sandstone pebbles awaiting their chance at life while their parents quietly wait for death.

The circling dance of the Coho continues, moving toward that nuptial consummation that is integral to the lifeblood of this place. Although I would very much love to see them through to the end of this ritual, it could go on for days and I simply don't share their endurance. For now I am happy that they have fed my sun-deprived spirit, that we were part of their Great Circle, the one with big fish dancing and dying in small streams, feeding ancient trees becoming rotting logs that become more trees, sandstone mountains turning to nesting gravel that becomes sandbars that wash out to sea and are pressed into new rocks that make new mountains—a world where time is defined by ceaselessly interconnected circles.

Out and About

(A new feature, with photographs and words by David Stone)

Cannery Dune

Located on BLM property right behind the Fred Meyer Store in Florence, this easily overlooked dune is one of few remaining on the Oregon coast not taken over by European beach grass. Visit in January or February, when winter storms regularly sculpt and re-sculpt the sand. For more grass-free dunes, head 15 miles south to the Tahkenitch Dunes Trail.

Want more information about this location? Contact Dave Stone at 541-683-6127

Opal Creek Ancient Forest Field Trip. Our count now stands at 19, with several more having made a verbal commitment. We reserved another cabin, so the maximum is now 32. Costs remain as outlined last month: $70/person for lodging, and if you want them to feed you, $80/person for meals. Deadline for registration and deposit is now 16 April. To register, make your check (nonrefundable) for $70 per person payable to the Eugene Natural History Society and send to: **Judi Horstmann, Treasurer, Eugene Natural History Society, PO Box 3082, Eugene OR 97403 (or give it to her at the 16 April meeting). Questions? Email Tom at titus@uoregon.edu.**

Events of Interest in the Community

Lane County Audubon Society

Tuesday, 23 February, 7:30pm. A Season With Penguins In Antarctica. Eugene Garden Club, 1645 High St. Noah Strycker, a Creswell native and OSU graduate and associate editor of "Birding" magazine, will recount adventures of living and working in an Adelie Penguin "city".

Mount Pisgah Arboretum

34901 Frank Parrish Rd., Eugene, 97405. Located off I-5 Exit 189, 15 minutes southeast of Eugene. Call Peg Douthit-Jackson at 541-747-1504 or email mtpisgjp@efn.org for more information or to sign up for any of the following Arboretum activities.

Sunday, 14 February, 1-3pm. Life Among the Mosses Walk. Led by David Wagner. This walk will help you appreciate the elfin world of mosses, liverworts, and lichens. Rain or shine. Meet at the Arboretum Visitors Center. Fee: $5.

Sunday, 21 February, 1-4pm and Sunday February 28, 1-3pm. Nature Photography in a Digital World. Professional photographer David Stone will take the mystery out of the digital camera you got at the end of December or help you pick the right one if you're going to buy. Rain or shine. Meet at the Arboretum Visitors Center. Fee: $25/$20 members.

Saturday, 6 March, 10am-noon. Singles Hike. Come explore Mount Pisgah and the Arboretum's less traveled areas with Tom LoCascio, Arboretum Site Manager. Singles of all ages are welcome to join us for this vigorous hike. Wear sturdy shoes and bring water and snacks. Rain or Shine. Meet at the Arboretum Visitors Center. Fee: $5.

Saturday, 13 March, 10am-noon. Signs of Spring Walk. Join Rhoda Love on an easy Winter Arboretum Walk to search for the signs of spring. Rain or Shine. Meet at the Arboretum Visitors Center. Fee: $5.

Native Plant Society of Oregon, Emerald Chapter

Saturday, 27 February, 9am. Field Trip: Mt. Pisgah. View early wildflowers and see habitat restoration work on the floodplain of the Coast Fork of the Willamette River. The walk is 3 miles. Bring snacks and water. Meet at the Mt. Pisgah Arboretum. More info at 541-345-5531.

Monday, 15 March, 7:30 pm. "Wildflowers of the Marys Peak Meadows." Steve Carpenter speaks on plant ecology, botanic history, geology, and weather of Marys Peak, the highest promontory of the Coast Range. EWEB Training Room at 500 E. 4th Ave. Call 541-746-9478.

WREN For more information on these activities call 683-6494 or email info@wewetlands.org.

Saturday, 27 February, 9:30am-12:30pm, Stream Team tree planting project along Amazon Creek. Join in the biggest Stream Team planting event of the winter. Volunteers will be planting and mulching 270 new native trees along the bank of Amazon Creek. No experience is necessary. Gloves, tools, plants, a restroom, and refreshments will be provided. Families are welcome.

Tuesday, 9 March. 9-10am. Wetland Wander at Willow Creek Preserve Wetland. Parking turnouts along West 18th are available for this wander through The Nature Conservancy preserve near the corner of 18th and Bertelson Rd. WREN will provide binoculars.

Nearby Nature
Pre-registration required and space is limited for these programs. Call 541-687-9699 or email info@nearbynature.org. (Online? Click here for registration forms.)
Monday, 15 February, 8:30am-3pm. No School Day Program: Green Machines. Learn about earth-friendly power. Create model wind turbines and mini cars that run off batteries. Build boats to race and discover how to cook with sunlight. Ages 6-9. Maximum 12 kids. Meets at the Nearby Nature Yurt in Alton Baker Park. Cost: $30 members/$35 non-members.
Wednesday, 10 March, 6:30-8pm. Nearby Nature Spring New Volunteer Orientation. Love nature? Enjoy kids? Learn all about leading school nature walks in Alton Baker Park this spring as well as other Nearby Nature volunteer opportunities. No experience needed--free training provided in April. Meet in the Tykeson Room at the Eugene Public Library.

2009 Eugene Christmas Bird Count. On 3 January 2010, a clear, relatively warm day, 144 birdwatchers took part in the 68th Eugene Christmas Bird Count and 110th National Audubon Society Christmas Bird Count. Twenty-six teams combed our fifteen-mile-diameter circle; they, together with 91 home counters (another record high), found 135 species. For a full account and the tabular results go to our site [http://biology.uoregon.edu/enhs/] or http://www.laneaudubon.org/thequail.htm.

ENHS bike path work party. Sunday, 21 March. Meet at 10 am on North Bank Bike Path under the north end of Ferry Street Bridge, or in the parking lot in front of McMenamins 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 McMenamins. Contact for info: David Wagner 541-344-3327.

We welcome new members! To join ENHS, fill out the form below. You will receive *Nature Trails* through December of next year. Membership payments allow us to give modest honoraria to our speakers, as well as to pay for the publication and mailing of *Nature Trails*.

MEMBERSHIP FORM Mail checks to **Eugene Natural History Society**
P.O. Box 3082, Eugene OR 97403

Name_____
Phone_____
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E-mail (optional)_____
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ANNUAL DUES:	Contributing	20.00
	Family	15.00
	Individual	10.00
	Life Membership	300.00

Generosity is Appreciated

Do you have any special experience in natural history?_____
Would you like to organize/lead field trips?_____
Teach informal classes?_____
Work on committees?_____
What natural history topics interest you for future talks?_____

ENHS Schedule of Speakers and Topics 2009-2010

19 February - Greg Retallack – Geologist: "Past Climate Crises"
19 March - Sue Beilke – Herpetologist: "Native Turtles of Oregon; How these Ancient Species Are Faring in Modern Times"
16 April - Dean Walton -- Ecologist, Science Librarian: "Freshwater Tidal Swamps of the Atlantic Coast"
21 May - Pat Kennedy – Ecologist: "Can Cows and Birds Coexist in NE Oregon?"

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