

Nature Trails

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The plains pocket gopher (*Geomys bursarius*)

Pocket Gophers as Ecosystem Engineers

Dr. James Reichman

Professor Emeritus, University of
California,

Santa Barbara

**Friday, 16 November 2012, 7:30pm, Room 100
Willamette Hall, UO Campus**

Five years ago our November speaker, Dr. James Reichman, added Oregon to the long list of places where he has lived. Our interview could have lasted several hours, both of us having huge troves of well-rehearsed fishing stories, but we were able to get on with the business at hand after only ten or fifteen minutes. He told me that on a recent float trip in Alaska he had landed five different species of salmon, all on flies. Not having anything close to that good a tale, I suggested it was time we got down to business.

One reason Reichman's place-list is so lengthy is that he was a military brat: his dad was an Air Force pilot. So besides several places in the U.S., the young Reichman has lived in Japan, Morocco, and Germany. As a boy, Reichman camped, hiked and hunted with his family. Those adventures plus his time as a Boy Scout forged a love of the outdoors that ultimately led to his professional career as well as his piscatorial passion. He was born in Florida, where his dad was involved in the Cuban missile crisis (One night he overheard his dad tell his mom that that day he had loaded potent weapons on several planes, and that the next day she should take the family to a relative's place in the northern part of the state where they at least would not be at ground zero.).

Reichman wanted to join the Air Force, but a problem with his eyes kept him from pursuing that dream. After finishing a two-year program at a community college in Florida he enrolled in Texas Tech

University. His reasoning was straightforward: he wanted out of Florida and he had an uncle in Lubbock. During his senior year one of his professors asked him to be his graduate student, and, without much sense of what this meant, he agreed. So he got his M.S. from Texas Tech, and it was there that he began doing research on pocket gophers.

Reichman was the second Ph.D. student at the University of Northern Arizona. He worked with a classical mammologist, looking at the diets of desert rodents and the impacts of these animals on desert plants. But it wasn't until he became a postdoctoral fellow at the University of Utah that he actually began doing scientific research, Reichman said. At Utah, he was advised by James Brown, an ecologist who was a member of the National Academy of Sciences. In Brown's group Reichman learned how to address ecological questions by posing testable hypotheses and then testing them. He said the ten months he spent with Brown changed his life.



Next came a six-year stint at the Museum of Northern Arizona, where he and several colleagues were able to carry out important field research in fantastic settings. During one of those years he spent a total of 180 days floating the Colorado River through the Grand Canyon (and he was getting paid for it!).

Reichman then took a faculty position at Kansas State University. Rising through the ranks there he continued his research program, gradually moving its focus to two main areas: the impact on plants of burrowing rodents like pocket gophers and woodrats, and strategies of long-term food storage by these animals. During 1990-91 Reichman served as Director of NSF's Ecology Program – testimony to the high regard in which his fellow ecologists hold him. On his return to KSU he took on more administrative duties, serving as Associate Vice Provost for Research, and Interim Director of the Office of Research and Sponsored Programs, and then as Director of the Konza Prairie Research Natural Area.

Following two years as Assistant Director of Research in the National Biological Service of the Department of Interior, where he was frustrated by having to deal with an entrenched bureaucracy, in 1996 Reichman moved from NBS to the University of California at Santa Barbara, as Professor and Director of the National Center for Ecological Analysis and Synthesis. This position, in stark contrast to the NBS nightmare, was a wonderful experience due to the freedom he and colleagues and postdocs at the Center had to carry out meaningful research.

One of the many locations where Reichman and his students have done fieldwork is South Africa. He told me about an encounter with baboons on one of their trips. He, his wife, and several others stopped their vehicles at a field site. His wife stayed by the vehicle she had been in while the rest of the group spread out in the field. About 200 yards away was a baboon troop. The alpha male turned and looked at his wife and came straight toward her. It climbed onto the vehicle and began trying to get in, obviously knowing how the windows and doors worked. Then it got down and came around directly behind her. It reached up and gently unzipped her fanny pack, looking for food but finding only used tissues. By this time Reichman and several of the students had noticed what was going on and were headed back to her. The baboon put its teeth on one of her calves and very gently bit down – not hard enough to hurt, but apparently a nonverbal way of saying "I could really hurt you." Rangers had told Reichman that if you take off your belt and hold it like

you would a rifle the baboons will perceive it as a danger and will run away. He didn't have on a belt so he told one of the students to do it, and it worked: the big guy ran away. I can only imagine their relief.

His extensive list of publications in prominent journals, the many graduate students and postdocs he has advised who have gone on to prominent positions of their own, the many invited talks he has given, the awards he has received, the national committees and editorial boards on which he has served, together provide abundant proof of the excellence of Reichman's scholarship. From the photos and graphics he enthusiastically showed me I can assure all of you that we're in for yet another wonderful presentation. He will tell us about a group of animals that dig tunnels and burrows on five of earth's seven continents, excluding Australia and Antarctica (in North and Central America there are 35 species of pocket gophers). Their activities affect geology, hydrology, and soil chemistry. Because they eat roots and aboveground plant parts they influence plant survival, growth and reproduction, as well as alter plant communities and ecosystem-wide processes. Their activities generate interesting and important ecological patterns. These animals can also cause substantial damage to agricultural crops. Please join us on Friday, 16 November at 7:30 pm in room 100 Willamette Hall on the U of O campus to hear Dr. James Reichman's presentation, "Pocket Gophers as Ecosystem Engineers." John Carter

Tick Season by Reida Kimmel

Finally it is autumn, my favorite season for walking. The woods are rich with a multiplicity of scents, mushrooms, crushed ferns, leaf mold, and, irrationally, the smell of rain. I know rainwater does not smell, but the mist that bathes my face reawakens my poor weak human sense of smell. I'm sure the dog loves the newly damp world as much as I do. I envy her ability to sense all sorts of creatures with her nose. "There went a mouse! A squirrel's been digging here." I look, and neither see nor smell a thing. But not all that autumn brings is as lovely as the blazing gold maples or the charming newts migrating along our path. The Enemy lurks. It's tick season again. Willow the dog, because she is so much shorter and hairier than I, picks up four or five ticks every week from the onset of the wet season until things dry out in July. I am not likely to attract more than that in the entire season. But I am a human and I know what devastating harm ticks can do, so when the rare bite occurs, I go into panic mode. Until I was twenty-one, I lived in southeastern New England. For a couple of years I even lived just a few miles from Lyme, the epicenter of the first wave of the

illness that has ruined the health of so many since the 1970s. Ticks and tick bites were virtually unknown in the fifties and sixties, and seemed to me to be associated with sheep farms in Rhode Island and on the islands off the Massachusetts coast. What brought about the horrendous change? Why did this disease start to affect people, and why in such numbers? And more personally, what proportion of the ticks that I encounter carry the disease?

Recently I decided to learn more about ticks and disease, more than just how to dress for hikes and how to remove a biting tick. There are four species of hard-bodied ticks in Oregon, and all four can be vectors of Rocky Mountain spotted fever, chiefly in southern and eastern Oregon. But the one that will concern us here is a small black-brown tick, the Western black-legged tick, *Ixodes pacificus*, because it is the species that carries the spirochete *Borrelia burgdorferi*, the cause of Lyme disease. Elsewhere in the United States, another *Ixodes* species, *I. dammini*, is the vector for the disease. Like other species of ticks, *Ixodes pacificus* go through a life cycle that sees six-legged larvae hatching from eggs and eventually metamorphosing into eight-legged, sexually immature nymphs. The small ticks, whatever the number of their legs, feed mostly on small animals like mice, but will also attach to larger mammals like deer, dogs, and humans should the opportunity arise. The adult, sexually mature ticks feed exclusively on larger mammals. Ticks of all stages prefer to hang out in low grasses and vegetation, particularly in brushy disturbed areas and on game trails in the woods.

By now you are probably feeling pretty creepy crawly, thinking of ticks hiding everywhere, but there is hope. In the first place a tick has to be attached to its host for more than twenty-four hours for the spirochete to be transmitted, so prompt detection and removal of ticks is effective. Here, however, is the really good news. If you were exposed to ticks and bitten in Oregon, the chances that you were infected with *B. burgdorferi* are very slight. A 2008 study published in the Journal of Clinical Microbiology by J. S. Doggett *et al.*, documents the prevalence of *I. pacificus* in Oregon. The researchers did not find the species in Eastern Oregon, but it is present in the western part of the state and along the Gorge to about fifty miles east of Portland. The data collected between 1982 and 2004 clearly indicated that the highest incidence of Lyme disease cases is in Southwestern Oregon and the lowest is along the Willamette Valley corridor. In 2004, six percent of the hundreds of ticks sampled in the southwestern counties were infected. What are the odds that you will get Lyme disease from the tick that bites you, for instance, on Table Rock? Thirty-one

cases were reported from SW Oregon over the time period studied, caused by exposure to tick bites in Oregon, compared with the far fewer cases, nine, reported from Willamette-Valley exposure over the same time period, an average of 0.12 cases per 100,000 of the Valley population. Why are we so lucky? In addition to its many tables, the Doggett study explains a bit of natural history. In eastern North America, the white-footed wood mouse is the principal host for Lyme disease. Here, *B. burgdorferi* is maintained in populations of dusky-footed wood rats that are preyed on by *Ixodes neotomae* ticks. *I. pacificus* prefers to feed on Western fence lizards, whose body chemistry is such that the spirochete is killed and the lizard cannot be a reservoir for the disease.

We are still left with a mystery. Why did Lyme disease become so common after 1970, and why is its incidence increasing? A paper by Taal Levi and colleagues published in the Proceedings of the National Academy of Sciences and reviewed in Natural History

Magazine July-August 2012, offers a theory. People have traditionally blamed the spread of the disease on the exploding numbers of deer. This paper looks instead at the decline of the red fox, a major predator of small mammals. Their prey includes white-footed mice, masked shrews, eastern chipmunks, and short-tailed shrews, which are all reservoirs for *B. burgdorferi*, infecting eighty to ninety percent of ticks. The researchers did population studies that indicated that where coyotes were plentiful and foxes few, the prevalence of the disease increased. Foxes will not share territory with coyotes and the coyote population has been increasing all over the East. In western New York state, where foxes are still plentiful and coyotes few, the incidence of Lyme disease proved to be low in spite of large deer populations.

I have honestly enjoyed learning more that I thought I would ever want to know about the natural history of ticks. Nonetheless, I still hate them.

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.



Bird's-nest fungus
This is not your typical fall mushroom. It is small (~1/2" high and across), grows on dead wood, often on the ground, so it is easily overlooked. The name comes from its appearance and the "eggs" are seed-like cases containing parts of the reproductive spores. I don't think I'm giving away any secrets if I tell you to look for these in the popular mushroom-hunting area along the Brice Creek trail across from Lund Park.

President's Corner

Gratitude by Tom A. Titus

The rains came gently this fall. On a warm, windless day a high laminar sheet of clouds slid over the bright one hundred and something days of blue, followed by other layers, each one gliding beneath another, thick coats of gray paint forcing the ceiling lower and darker. Then came the shy scattered *ticks* of the first drops, wet pricks on my bare arms that increased gradually, then drove down with the intensity of rediscovered love, absolving the landscape of the accumulated grit of a summer gone too long and now taken for granted. Three days later the sky shook off that first wet blanket and the sun returned. But everything had softened. Footsteps fell silent on wet ground, limbs bowed slightly under their watery load of yellowing leaves, and I could feel the surge of new green grass beneath dead matted stems.

The rains have softened me as well. With each successive rainless day in autumn a subtle tension built, a feeling that I shouldn't have been watering tomatoes and squash and tender new salad greens planted for winter, a nervous alertness coming from the grating sound of my footsteps crunching loudly in dry forest. When the first soaking wetness settled over the land that accumulated tautness left my body like a deep diaphragmatic sigh, and everything in my corner of the universe was reset. The soggy soft greenness of our part of the world, with all of its peculiar cycles of reproduction, growth, and ensuing death, was reaffirmed. We are blessed in the Northwest by a confluence of the beginning of rain and the season of gratitude, and I am truly grateful for our fall deluge. I believe in the healing, soul-softening joy of gratitude.

But I have what is probably a character flaw, a propensity to wander to the other side of the hill, a need to look deeply into the dark spaces between stars. And beyond the sunny side of gratitude lie the shadows of discontent. Shadows can be good—they are cooling shade for ferns and mosses and calypso orchids and trilliums and salamanders. Likewise, discontent can be a positive force. It is often the engine that drives us to right the wrongs in our world, to act against environmental and social injustice, to make ourselves better than we were the day before. There is tremendous energy in discontent, and even more energy when discontent becomes anger. While I

distrust anger, it is often the state in which things that need doing tend to get done. One way or another.

Can gratitude and discontent ever be reconciled? Recently I returned from Hells Canyon, a 5,000-foot north-south incision cut by the Snake River that will forever separate northeastern Oregon from western Idaho. From a place near the top of the canyon on the Oregon side, I could look downward into the heads of two smaller canyons dropping beneath me, alternate routes falling away through gray basalt cliffs and blonde slopes of summer-scorched bunchgrass, descending to the distant blue coils and scaly white rapids of Snake River far below. But the landscape was so steep that from my perch I could not tell how these two canyons behaved, except that eventually the small creeks that drain them would empty into Snake River. I couldn't see their confluence, couldn't know how far down I must travel in the bottom of one or the other to find their larger unity, or whether these neighboring canyons would always remain apart, their mouths eventually opening separately into the larger passage of the river. For all I knew, the lower reaches of either drainage could be impassably impossibly rough. So I chose neither route, opting to stay high above the jagged ruggedness, uncommitted. And aloof.

But wind and snow would soon be kicking up on the high ridges, eventually forcing me down. Does anyone have a map? I don't know this country. Honestly, I am not enlightened enough to see the confluence of the streams of gratitude and discontent. Holding these two emotions together in my mind and body seems impossible. Yet I need them both; the rain-soaked peace in believing that my world is a good place worthy of celebration alongside the engine of discontent in also knowing that my world is not a *perfect* place. Perhaps it is enough that I simply accept these two feelings as different parts of my larger emotional landscape and that I learn how to travel easily between the two. Options are good, after all. And I do know this: I am capable of choosing.

So I shoulder my load and drop off that high ridge of cool detachment, checking the lay of the land as I go. Here in western Oregon a huge apple crop is fully ripe, and there is cider to press. Salmon are on the move, golden chanterelles are poking up through dark duff, the smell of leaf mold lights up my sniffer, and the Willamette River is flanked by wide butterscotch bands of cottonwood and big-leaf maple. The rains have returned.

For now I choose gratitude.

Events of Interest in the Community

Lane County Audubon Society

Tuesday, 27 November, 7:30 pm. Texas Gulf Coast Treasures. Last March and April, professional photographer Dave Stone took a road trip to the Texas Gulf Coast to find and photograph birds we can never hope to see here. He visited ten birding hotspots in Texas and the Southwest. He saw and photographed such exotic (to us) birds as Roseate Spoonbill, Black-bellied Whistling Duck, Chachalaca, Great Kiskadee, Green Jay, and many more. Come to the meeting and experience a multimedia slide and music tour of the best birding spots on the Gulf Coast. 1645 High St.

Christmas Bird Count. It's not too early to mark your calendars. This year it will be on **Sunday, 30 December**. For more information see the December/January issue of *The Quail* or call Dick Lamster at 541 343 8664.

Mount Pisgah Arboretum

34901 Frank Parrish Rd., Eugene, 97405. Call Peg Douthit-Jackson at 541-747-1504, email mtpisgjp@efn.org, or look at <http://mountpisgaharboretum.org/> to find out about current Arboretum activities.

Saturday, 10 November, 10 am-3 pm. Play in the Rain Day. Come on out to MPA for our community's 5th annual Play in the Rain Day. Discover how fun, easy, and rewarding it is to spend time outdoors in nature – in ALL kinds of weather. The day's activities will include hikes, horses, tree climbing, nature crafts, scavenger hunts, seed planting, campfire cookery, and more! Last year this fun event was attended by over 1,000 people. Sponsored by the Youth in Nature Partnership, a collaborative of local organizations that work closely with youth in the outdoors, Play in the Rain is a free family event for all ages. The event will go on rain or shine, so dress for the weather.

Saturday, 1 December, 8-10 am. Winter Bird Walk. Enjoy a guided morning walk with Arboretum Site Assistant and bird enthusiast August Jackson. We will venture along the riparian forest of the river bank and the mixed forests of the arboretum hillside observing wintering birds in their native habitat, including kinglets, chickadees, nuthatches and, if we're lucky, a brown creeper. Along the way, you will learn about the bird ecology of the site. Dress warmly, and bring binoculars if you have them. Rain or shine. Meet at the Arboretum Visitor Center. Fee: \$5. Members free.

Nearby Nature

Saturday, 10 November, 10 am-3 pm. Play in the Rain Day. This event is also sponsored by the Arboretum and WREN. See the entry above, under MPA, for details.

Saturday, 10 November, 10 am – noon. Rainwater Harvesting Workshop (Sponsored by the City of Eugene). Want help designing a rainwater harvesting system for your yard? Sign up for a 2-hour workshop with local expert Sarah Whitney that will cover design, installation and maintenance. Specific topics will include different types of systems, how to calculate your rainwater resource, water budget and storage needs, and what to do with overflow. Following the presentation, we will look at two rainwater-harvesting systems installed at the Alton Baker Park Water Wise Garden. Location: Nearby Nature Yurt in Alton Baker Park. Fee: \$10. Registration required; check the Nearby Nature website for details.

Monday, 12 November, 8:30 am – 3 pm. Feathers, Fur, and Fat No School Day Program. Explore Alton Baker Park in search of animal activity and winter homes. Learn the tricks creatures use to stay warm during the cold season. Play games and make your own cozy fort to keep winter's chill at bay. For children ages 6 – 9, class size limited to 12. To register call 541-687-9699 or go to their website.

Thursday, 15 November, 6 – 8 pm. Cheers for Volunteers Party. At the Nearby Nature Park Host Residence.

Sunday, 18 November, 1 – 3 pm. Nature Quest: How to Hide Outside--Critters in Camouflage. Go a family-paced nature walk in Alton Baker Park in search of critters in camouflage! Play camouflage games and meet one of our favorite camouflaged Kinder Critters! Meet in the Learnscape at Alton Baker Park. FREE for members. \$2/person, \$5/family. Pre-registration required: 541-687-9699.

Saturday, 1 December, 1 – 4:30 pm. Near Lessons in the Learnscape -- Draw Your Own Nature-Themed Holiday Cards. Adult workshop taught by David Wagner. The event will be held at the Yurt in Nearby Nature's Learnscape in Alton Baker Park.

Sunday, 2 December, 1 – 5 pm. Volunteer Action Training Workshop. This workshop is designed for community members organizing a volunteer project. Participants will learn the basics of watershed restoration and how to plan a successful volunteer project. Specific topics include volunteer recruitment and management, project logistics and safety, preventing volunteer burnout, working with the media, and fundraising. This training is free for those planning or partnering on a cleanup or watershed restoration project.

See Nearby Nature's website for information on these interesting events: <http://www.nearbynature.org/events>

University of Oregon Museum of Natural and Cultural History, 1680 E. 15th Ave.

Free Admission Wednesdays, 11 am – 5 pm.

Fridays, 1 pm and 3 pm, Guided Tours.

Ongoing Exhibits: 1) Out in Space Back in Time; 2) Tidewaters by Rich Bergeman; 3) Nick Sixkiller, The Man Behind the MIC; 4) Scientific at the Core; 5) Oregon: Where Past is Present

Native Plant Society of Oregon, Emerald Chapter

For information on current activities contact ngap@emeraldnpsoregon.org or look at <http://emerald.npsoregon.org/>
Monday, 19 November, 7:30 pm. Little Shops of Horror: Carnivorous Plants of Oregon. Charlene Simpson will present a slide show featuring the lures and traps of carnivorous plants including the cobra lily, sundews, bladderworts and butterworts in Oregon's bogs and fens. Location: WEB Training Room, 500 E. 4th Avenue, Eugene. Information: 541-349-9999.

WREN

For information about upcoming events call 541-338-7047 or email info@wewetlands.org. You can also go to their website: <http://www.wewetlands.org/>

Tuesday, 13 November, 9 – 10:30 am, WREN Wetland Wander at Golden Gardens Ponds.

Tuesday, 11 December, 9 – 10:30 am, WREN Wetland Wander at Stewart Pond.

Cascade Raptor Center

The CRC is located at 32275 Fox Hollow Road. Fees are \$7 for adults, \$6 for teens and seniors, and \$4 for children under 12. Winter hours are Tuesday – Sunday, 10 am – 4 pm. Handler talks are on Saturdays and Sundays at 1 pm. Check out their website to find out about all the good things that have happened to them. <http://eraptors.org/index.htm>

Thank you Kris! The ENHS Board thanks Kris Kirkeby for donating 25 gift cards of her exquisite, engaging nature illustrations and paintings, which we use to thank our speakers. We are indeed fortunate to have Kris as an ENHS member and we very much appreciate her generosity.

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*. Our web address: <http://biology.uoregon.edu/enhs/>

MEMBERSHIP FORM

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

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: _____

INTERESTS: ___ Archaeology ___ Astronomy ___ Bird Study ___ Botany ___ Conservation ___ Geology ___ History of Science ___ Herpetology ___ Meteorology ___ Mosses & Lichens ___ Mushrooms ___ Nature Walks ___ Wildflowers ___ Zoology ___ Other _____



Mole rat (*Bathyergus suillus*)



Naked mole rat (*Heterocephalus glaber*)

ENHS Schedule of Speakers and Topics for 2012-2013

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|------------------------------------|--|
| 16 Nov. 2012 – Jim Reichman | – Pocket Gophers as Ecosystem Engineers |
| 14 Dec. 2012 – David Craig | – Avian Predator Ecology |
| 18 Jan. 2013 – Marge Helzer | – Rimrock Draw Rock Shelter: Stones, Bones, and Seeds.
– What Artifacts Tell Us About Life 10,000 Years Ago |
| 15 Feb. 2013 – Ray Lowe | – Tidal Marsh Restoration on Bandon Marsh National Wildlife Refuge |
| 15 Mar. 2013 – Gail Baker | – A Plant Ecologist’s Dream Trip: The Floral Diversity of Australia |
| 19 Apr. 2013 – Josh Roering | – A Landscape Shaped by Instability: Using Lasers to Decipher Landslides,
– Ancient Lakes, Outburst Floods, and Fish Evolution in the Eel River, CA |
| 17 May 2013 – Jason Dunham | – Will Climate Change Extirpate Bull Trout in the Pacific Northwest? |

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