

Nature Trails

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Roby and Friends

Living with Caspian Terns, Double-crested Cormorants, and Other Colonial Fish-eating Birds: Can Salmon and their Avian Predators Coexist?

Dr. Daniel Roby, Professor of Wildlife Ecology; Unit Leader - Wildlife, U.S. Geological Survey-Oregon Cooperative Fish and Wildlife Research Unit, Department of Fisheries and Wildlife, Oregon State University, Corvallis, Oregon

**Friday, 13 December 2013, 7:30pm,
Room 100 Willamette Hall, UO Campus**

Here is a list of places where Professor Dan Roby has done research on seabird ecology: Alaska, Hawaii, Greenland, South Georgia, Antarctica, China, and many places in our Pacific Northwest. After looking at this remarkable collection of locations, several of them a good way off the beaten track, I would not have been surprised to learn that he hailed from some sparsely populated neck of the woods. But no, Roby was raised a city boy, growing up in Germantown, a suburb of Philadelphia.

His fascination with wildlife began at an early age, though. Blessed with a set of tolerant and encouraging parents, the young Roby shredded the family set of World Book Encyclopedias, cutting out pictures of a large number of wild animals.

Roby developed his outdoor survival skills by canoeing in Northern Quebec, eventually leading extended trips both on rivers and lakes in that wild area. He sounded wistful as he talked about this segment of his past, saying the rivers he ran and the portages he made have been rendered unrecognizable by the dams constructed by Quebec.

After a year in Williams College Roby transferred to Antioch College, in Yellow Springs, Ohio, where he graduated with a B.A. in biology. Already convinced that he would become a wildlife biologist he headed to the University of Alaska in Fairbanks, which had one of the strongest wildlife biology programs in the country – some of the best researchers in the world were there.

He spent three years in Fairbanks getting his Masters; he said it took that long because of “lots of extramural activities.” At one point he lived in a log cabin with no electricity or running water and only a wood stove for heat, from which cabin he skied to school. Getting a fire going in the stove in the winter was a trial on those mornings when it was 30 to 40 below – inside.

Roby’s M.S. thesis research had dealt with caribou, and after completing his degree his advisor arranged for him to work some more on caribou – doing research on the West Greenland caribou herd. In the Sondre Stromfjord area of West Greenland there is a chunk of ice-free land about 100 miles wide, which supports this herd. It was there in Greenland that Roby’s research interests in seabirds began (although his general interest in birds began when he was eleven). Further north along the northwest coast of Greenland in the Thule District there were few mammals, but many, many seabirds. The most common is the

Dovekie, called Little Auk by the British. There are about 15 million of them in northwest Greenland. Roby wondered how they thrived there in an apparently inhospitable environment.

And so a career was born. Roby decided to continue his graduate education at the University of Pennsylvania, in Philadelphia, not because of a yen to return to his early haunts but because Professor Ricklefs, a Penn faculty member, was willing to advise him and to get a grant from the NSF Polar Programs division to support his graduate work on seabirds at high northern and southern latitudes. His PhD thesis work dealt with the relationship of diet to reproductive energetics in seabirds.

Prior to his appointment at Oregon State University in 1995, Roby held faculty posts at Southern Illinois University and at the University of Alaska, Fairbanks. He said when he returned to Alaska he was excited about being able to direct wildlife research in that great environment, but by then he was married with three children and his family did not share his love for central Alaska. He and his family are happy to have landed in Corvallis, where Roby is in one of the strongest programs in the nation. In fact, OSU’s Conservation Biology program is ranked number one in the country by the Society for Conservation Biology, and OSU is also ranked number one in the country in Wildlife Biology and number two in Fisheries. Roby’s efforts have certainly added to the excellence of these programs.

Roby’s primary research interest is the physiological ecology and conservation biology of birds, with an emphasis on seabirds. One aspect of his recent research, and the general subject on which his talk to us is based, is the impact of avian predators on Endangered Species Act-listed salmonids in the Columbia River basin.

Roby has advised over 35 MS and PhD students. He has received ample support for his research program from federal agencies such as the Departments of Commerce, Defense, Energy, and Interior. His research results are published in a variety of high-quality, peer-reviewed publications. In 2003 he received the Scientific Excellence Award from the U.S. Geological Survey’s Cooperative Research Units, and in 2005 the STAR Award from the U.S.G.S. Biological Resources Division. He served as Chair of the Pacific Seabird Group in 2005-2006 and was elected a Fellow of the American Ornithologists’ Union in 2008.



Roby with Short-tailed Albatross in the Aleutians

Many of us are aware of the dangers faced by the anadromous fish in our waters: slackwater and turbines from dams, commercial fishermen, sport fishermen, sea lions, and not least, fish-eating birds. The last two entries in the list generate lots of head scratching since even though the fish are endangered, their predators are protected. Dan Roby knows as much or more about this clash as any person in the world. We are honored and fortunate he has agreed to talk with us on this topic. The full title of his talk is "Living with Caspian Terns, Double-crested Cormorants, and Other Colonial Fish-eating Birds: Can Salmon and their Avian Predators Coexist?" I asked him for a thumbnail sketch of what he would tell us. He said he and his group have shown that, "under certain circumstances, avian predators can have a significant negative effect on survival of juvenile salmonids (anadromous salmon and steelhead), including Columbia Basin salmonids that

are listed as threatened or endangered under the Endangered Species Act. Caspian terns and double-crested cormorants, two species of fish-eating colonial waterbirds that are native to the Pacific Northwest, have been implicated as the most efficient avian predators on out-migrating salmonid smolts. Is there anything that resource managers can do to reduce avian predation rates and help restore salmonid stocks short of lethal control of birds? Our research group thinks there are alternatives to killing thousands of native colonial waterbirds to benefit salmonids, such as reducing the consumption of fish of conservation concern by controlling where colonial waterbirds can nest."

Roby's presentation, cosponsored by the Lane County Audubon Society, is on Friday, 13 December, at 7:30 pm in room 100, Willamette Hall, on the U of O campus. See you there. 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.



Juvenile Bald Eagle

After spending years on the endangered species list, the Bald Eagle has made such a strong comeback that it was removed from that list in 2007. You don't need to go far now, to spot a bald eagle. There has been a nest on Skinner Butte for several years, and there are several nests downstream on the Willamette River.

Want help finding a local Bald Eagle? The Lane County Audubon Society conducts its annual Christmas Bird Count at the end of this month and one or more Bald Eagles are usually spotted at that time. Experienced and novice birders are welcome to participate. Call 541-485-BIRD to sign up.

A Sense of Smell by Reida Kimmel

John James Audubon the famous ornithologist and master painter of American birds wanted to test whether vultures hunted by sight or by scent. He hid a rotten pig carcass under a brush pile and when no

vultures came, he felt he had proved that birds do not use the sense of smell to get food. This is rather strange because for almost two thousand years naturalists had written down their observations of birds using smell to get food. Marcus Aurelius

Nemianus wrote on woodcocks hunting earthworms by smell in 280 A.D. In the late 1700s George Montagu wrote; “There [woodcock] are rambling through the dark directed by an exquisite sense of smelling to those places most likely to produce their natural sustenance.”

A good scientific experiment should be repeatable, but in this case, ornithologists took Audubon’s word. The famous anatomist Richard Owen dissected a turkey vulture’s brain and he concluded that judging by its anatomy, the bird had a well-developed sense of smell. His conclusion was ignored, as were the observations of other scientists who dissected the skulls of fulmars, kiwis and albatrosses, and found evidence that from the size of their olfactory bulbs, these species had to have excellent abilities to detect scents.

Over the years ornithologists did dissections and measurements of numerous bird species, continuing to see anatomical evidence that birds really must have a robust sense of smell. Finally in the 1960s Bernice Wenzel from UCLA began to use her expertise in physiology, anatomy and behavioral science to prove that all sorts of diverse species – pigeons, canaries, quail and kiwis, even those with very tiny olfactory lobes – can detect odors very well. In the past twenty years a flurry of research has opened doors to understanding the marvelous ways in which birds use their sense of smell.

It makes perfect sense that woodcocks and kiwis, when hunting earthworms in the dusk and dark, need a keen sense of smell. But why should storm petrels, small pelagic birds that feed by day on the ocean’s surface, need their comparatively huge olfactory bulbs? Why to find their way home! Petrels nest in colonies, returning to their burrows at night to feed their chicks. They land accurately, right in front of the burrow entrance. They can do this because in spite of the overall pungency of the colony, they can catch the particular scent of their own burrow when they fly in from upwind.

If this seems wonderful, consider the case of wandering albatrosses. Gabrielle Nesbitt of UC Davis and Henri Weimerskirch of the French National Center for Scientific Research discovered just how albatrosses find food on their open ocean home. They can find prey from as far as twelve miles away, and they do it by scent! When phytoplankton die, largely because they are being consumed by zooplankton, they release the compound dimethylsulfide. This would smell like rotting cabbage, flatus, or worse to us, but to crustaceans and small fish, it smells like food, and they congregate at zooplankton-rich sites. The gathering of small prey attracts the larger

predators, fish and birds, including albatross, all attracted from a far greater distance than they can see.

Julie Hagelin from Alaska’s Department of Fish and Game studies crested auklets on remote islands in the Bering Sea. Auklets have comparatively small olfactory bulbs, but she has discovered that the sense of smell has profound meaning for these colonial birds, which appear to use it for social and probably sexual bonding. During the breeding season, pairs and small groups of auklets gather and strut about while pressing their faces deep into the feathers at the napes of other birds’ necks. At this time of the year those feathers emit a strong citrus scent, which Hagelin compares to the smell of a freshly peeled tangerine. She calls it their “olfactory ornament”. Hagelin does not know whether the auklets are assessing the fitness of males in the colony or reinforcing pair bonding, but she is sure that this dance and the sharing of their ‘perfumes’ are complex behaviors essential to the breeding process.

Researchers are convinced that seabirds, riparian species, and ground-feeding nocturnal birds have the most highly developed senses of smell. But increasingly, scientists are finding evidence that even songbirds, species whose brains have very small olfactory lobes, have and use the sense of smell in important ways. European starlings, and blue tits studied on the island of Corsica, choose strong-scented herbs like lavender and mint to line their nests. These pungent herbs repel insects and thus may contribute to the nestlings’ health and survival. Zebra finches can detect the smell of the nest in which they hatched even if they have been reared away from that nest. Pigeons’ heart rates spike when they are exposed to streams of scented air after they have been kept in a completely unscented environment. The list goes on.

I confess that I had never given much thought to whether the sense of smell was important to birds before my curiosity was aroused by a fascinating article by Michael Lipske in the August-September 2013 issue of *National Wildlife*. From there the wonderful Web led me to the works of some very interesting researchers, and to a book by Professor Tim Birkhead of the University of Sheffield, the ornithologist who did the study of starling nesting behavior. *Bird Sense – What It’s Like to be a Bird*, Bloomsbury Publishing Inc, 2012, is the perfect read for these long winter evenings.

But what about Audubon’s experiment? Where did he go wrong? In the 1960s Kenneth Stager from the Natural History Museum of Los Angeles repeated the experiment. He found that vultures can indeed find a

carcass under a brush pile, but if one places a “rotten” carcass under the camouflage, as Audubon did, the vultures ignore it completely. It seems that though they feed on dead meat, vultures prefer that it be

Edges by Tom A. Titus

At the edge of winter our end of the planet tips away from the sunlit center of its solar system toward the deepness of space. In November we endured yet another human-inspired time change – as though we could ever manipulate time – and on cue an expansive blue October sky was engulfed in basalt gray overcast, thick and cold and moist, erasing the sun and all of the lengthening shadows of autumn. At first I wanted that lost hour of daylight, the one that never left, but now that we are slipping further downward into the seasonal oscillation of light and are approaching the nadir of the winter solstice, I admit that the ride has become a little exhilarating.

This subtle feeling of delight makes no sense when most of the northern hemisphere is shutting down for the season. But here I am, perched in this river of time above the dark rapids of winter, waiting for the unrelenting current of astronomical events to propel me into the maw. Seeking no escape, I point my fragile craft downstream, dig deeply with the oars, and give myself over to the coming embrace of winter. I want the full experience of temperate-zone darkness ratcheting down on my chest, pressing out frivolous distractions, I suppose hoping that everything will be squeezed away except for some previously undiscovered essence. This seems both perverse and correct. In our wet, green corner of the world there is energy in these swirling eddies of darkness if they are properly negotiated. But winter bravado is cheap when I am sitting in a dry house next to a big wood stove with dancing orange flames aided and abetted by a chainsaw, a halogen lamp keeping the ever expanding night in check. Life is easy here, but real life lies beyond my walls.

At the edge of old growth at the edge of winter, I look out on a meadow cleared from the surrounding forest early in the last century. This afternoon there are no shadows, only gray diffuse light transiting to dimness. Beneath the trees the mycological explosion of autumn is waning and what remains is a profusion of drooping boletes and rotting russulas returning their short-lived bodies to the duff. Fresh hedgehog mushrooms sprout like fungal dollops of pumpkin cheesecake amid the dead needles. On the meadow the fall rains have stimulated green growth beneath dead forbs with drooping seed heads now black as the Reaper’s hood. Invasive meadow knapweed,

comparatively freshly dead. Not only do vultures have a fine sense of smell, they have discerning tastes. Even carrion eaters can be gourmets.

introduced into Douglas County over five decades ago for livestock feed, dominates these open spaces. When a human-made meadow has been overcome by a human-transported weed I suppose some tragic biological denouement is fulfilled.

Human-made or not, an edge implies a sharp demarcation. But natural edges are usually fuzzy zones of transition between two habitats. In the parlance of biology these are *ecotones*, which can be very local or very regional shifts in habitat: the margin of a moisture-filled crack in a vast expanse of concrete, the forest-meadow interface on which I now sit, or a broader change from Douglas fir rainforest to drier stands of ponderosa and lodgepole pine as we cross the Cascades. Ecotones are areas of increased diversity. Plants, animals, and fungi adapted to the habitat on either side of the interface mix here. For these species, changing biological and physical forces across the ecotone make life challenging. Other organisms thrive on these edges, apparently adapted to a life of flux.

I fancy myself an animal of the edges. Their instability, a chaos that seems to radiate energy, draws me in. Ecotones are imprecise, with no clear beginning or ending. Maybe they feed my weird attraction for gray areas in general. In summer I love walking from meadow to forest just for the sake of dramatic change, the sudden drop in temperature and light and the rise in humidity. I see ecotones everywhere: in the changing quantum states of atoms, the transition from muscles to tendons in our bodies, the mossy spaces between shingles on my roof, the solidity of earth and the vacuum of space, science and art, prose and poetry, and of course the transition from autumn to winter. These are the places in which I like to poke around.

At the edge of night at the edge of the forest at the edge of winter, our side of Earth turns from Sun like a chastised dog. There is a slow but accelerating dimming and daylight slinks away. In this ecotone between day and night, I imagine Screech Owl perched in the nearly dark. Dense overstory needles did not shed all of the afternoon rain shower. Owl turns her flat face, and a quick ruffle shakes beads of water from soft silent feathers. She considers dinner. Deer Mouse considers dinner also, cautiously emerging from his nest in a large decaying log, looking out through a narrow space toward the

darkening meadow beyond. He weighs the benefit of those few last seeds left out in the open against the possibility of becoming the bleached bones and gray fur of an owl pellet. Living on the edge requires guts, and Deer Mouse prefers to keep his.

At the edge of thought borne on the edge of night there lives a cougar, the one seen twice just up the road near the mouth of Prescott Creek. One night last month in Hells Canyon I stumbled upon the remains of a doe freshly killed and cached by a cougar. In the weak light of my headlamp her body was curled in a

“C”, her ribcage a bloody exclamation mark protruding above a thin layer of bunchgrass drawn over her like a tawny shroud. Tonight my memory of the doe makes me teeter between the ecotones of predator and prey, comfort and fear, rational and irrational. Looking back over my shoulder I move out of the forest, away from fear, toward the false security of my pickup. This evening my sentiments lie with the mouse. Perhaps I am not really cut out for life on the edge.

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.

Friday, 13 December, 7:30 pm. Living with Caspian Terns, Double-crested Cormorants, and Other Colonial Fish-eating Birds: Can Salmon and their Avian Predators Coexist? By Professor Dan Roby, Department of Fisheries and Wildlife, Oregon State University, Corvallis, Oregon. Room 100 Willamette Hall, U of O Campus. See above for details. Professor Roby's talk is co-sponsored by ENHS and LCAS.

Sunday, 29 December, Eugene Christmas Bird Count (ECBC). This will be the 72nd ECBC and the 114th National Audubon Society Christmas Bird Count. Dick Lamster is the Coordinator again this year, supported by the Steering Committee (Dan Gleason, Barbara Gleason, Allison Mickel, and Herb Wisner), 27 great birdwatchers as Team Leaders, and—we hope—you! Watch for more information in the December-January issue of *The Quail*, or contact Dick Lamster at 541-343-8664.

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

Thursday, 12 December, noon-1 pm. Park Watch Training. At the Visitor Center. Volunteer as the eyes and ears in the parking lots around Mount Pisgah and earn a Lane County Parks Annual Parking Pass! Petty crimes have been significantly reduced thanks to the Park Watch Program since 2009. RSVP: 541-747-3817 or office@mountpisgaharboretum.org Park Watch volunteers can work in pairs, signing up for 2-hour shifts. At the end of the training, we'll walk up to the office to show you where and how to get supplies each time you do a shift...and then we'll have a party! Bring a small dish to share.

Sunday, 14 December. Winter Bird Walk. Call or go to office@mountpisgaharboretum.org for details.

Friends of Buford Park and Mt. Pisgah

Sunday, 8 December, 1-4 pm. Tour the Nature Conservancy's Willamette Confluence Project with Chaz Dutoit, FBP Board President. To register go to <http://www.bufordpark.org/tours/>

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. Enjoy a family-paced walk in the woods followed by cozy fireside nature tales and seasonal crafts in the Hendricks Park shelter. Meet at the Wilkins Shelter in Hendricks Park. FREE for members. Non-members \$2/person, \$5/family. Pre-registration required: 541-687-9699.

Saturday, 14 December, 1-4 pm: Lessons in the Learnscape Workshop -- Draw Your Own Nature-Themed Holiday Cards. Taught by David Wagner, held at NN's Yurt, Alton Baker Park. Pre-registration is encouraged and space is limited. The workshop cost is a sliding scale: \$17-\$30 for members, \$20-\$35 for non-members. Work trades available.

Native Plant Society of Oregon, Emerald Chapter

Thursday, 19 December, 7:30 pm. Holiday Social and Slide Show. Bring 10 to 12 digital photos and a snack to share if you wish, to the Conference Room at Lane County Mental Health, 2411 MLK Blvd. For more information call 541-349-9999.

North American Butterfly Association, Eugene–Springfield Chapter

Monday, 9 December, 7 pm – refreshments; 7:30 pm – presentation: Chasing Butterflies in Paradise, A Visit to Costa Rica, by Neil Bjorklund. Note the change of speaker. Robert Michael Pyle, originally scheduled for the December meeting, suffered a family tragedy and was unable to come. Neil Bjorklund graciously agreed to speak in Pyle's stead.

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. Take a "road trip" through the American West to discover the fossils in our midst and the stories they tell about evolution, extinction, and life on earth!
- Site Seeing: Snapshots of Historical Archaeology in Oregon. From a nineteenth-century working-class family in Portland to a Chinese mining community in Jacksonville, this exhibit tells the stories of five historical sites recently excavated by museum archaeologists.
- Oregon - Where Past is Present. Experience 15,000 years of Northwest cultural history and 200 million years of geology. Realistic environmental displays portray four geographic regions of Oregon, each a different time in history and a different season of the year.
- Tradition Keepers: Cornhusk Weavings by Kelly Palmer and Joy Ramirez. MNCH showcases the work of two awardees from the Traditional Arts Apprenticeship Program: cornhusk weaver Kelli Palmer and her apprentice, Joy Ramirez.

WREN

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

Tuesday, 10 December, 9-10:30 am. Wetland Wander. Explore the West Eugene Wetlands at our monthly Wetland Wander held this month at Golden Gardens Ponds. Meet at the intersection of Golden Gardens Street and Jessen Drive. Participants should 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>

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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): _____

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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: _____

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

ENHS Schedule of Speakers and Topics for 2013

- 13 Dec. 2013** – Daniel Roby – Living with Caspian Terns, Double-crested Cormorants, and Other Colonial Fish-eating Birds: Can Salmon and their Avian Predators Coexist?
- 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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