

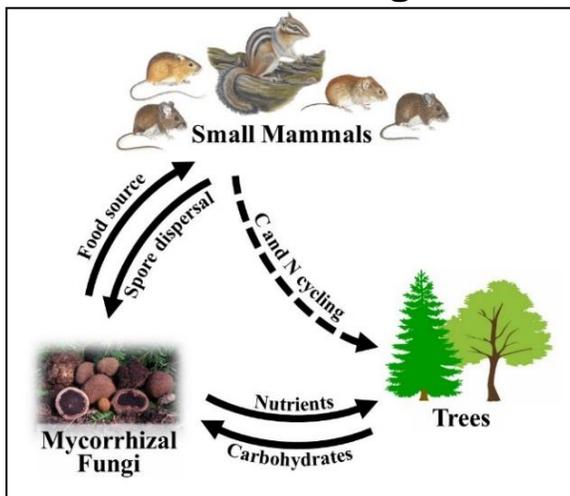
The North American Truffler

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Animal Impacts on Ecosystem Health Linking Trees, Truffles and Small Mammals



Ryan Stephens gave a slide show about his research into truffle diversity in the Northeast at the Society's potluck in Corvallis, Oregon in December. It included mechanisms by which truffles disperse. Ryan is a graduate student at the University of New Hampshire. The New Hampshire Agricultural Experiment Station funds his research. He also received the North American Truffling Society's Henry Pavelek Sr. Memorial Scholarship.

Most tree species require mycorrhizal fungi for growth and establishment. These fungi disperse to new areas by producing spores. Unlike mushrooms, truffles have lost the ability to disperse their spores through the air and require mycophagist animals for dispersal. Primary among dispersers are small mammals, which often consume truffles as a major food source. This mutualistic interaction between truffles and small mammals is extremely important in forest ecosystems.

Ryan Stephens' research objectives are: **1)** to assess diversity and variation in abundance of truffle-producing fungi across forest types during the summer fruiting season; **2)** quantify the role of small mammal species as dispersers of mycorrhizal fungal spores; and **3)** determine whether competitive interactions among small mammal species modify their dispersal of mycorrhizal fungal spores.

Objective 1: truffle diversity and abundance (Completed) — Ryan surveyed for truffles across hardwood, mixed, and softwood forest sampling grids in a combined sampling area of approximately 0.8 acre. He unearthed over 6,300 truffles of 16 species, including six new ones. He worked with a truffle taxonomist to formally describe five of these new species. There is a report in press regarding these new species of truffles. His research demonstrated that New England forests have some of the highest recorded truffle biomass in the world and that most biomass is associated with eastern hemlock, a tree species in severe regional decline due to an invasive insect.

Objective 2 & 3: Small mammals as dispersers of mycorrhizal spores — Ryan continues assessing truffle consumption by the five most common small mammal species in the region using scat analysis and isotopic analysis of hair. Microscopy of scat determines the number of spores present of each truffle taxa. He will use stable isotopic analysis of rodent hair to quantify the contribution of fungi to the overall diets of small mammals. Upon completing scat microscopy and isotopic analyses, he will determine the effectiveness of small mammal species in dispersing mycorrhizal fungi in terms of their overall truffle consumption, spore loads in scat and forest habitats used. Ryan will quantify the role that population density and competition among small mammal species has on spore dispersal. So far, his data suggest that small mammal species differ considerably in their consumption of truffles (both amount and kinds).

Ryan Stephens' research helps answer fundamental questions of how interactions among species contribute to ecosystem health and functioning. His results have relevance for sustainably managing forests in the Northeast, and maybe throughout North America. The mutualistic relationships among trees, truffles, and small mammals has important implications for forest health and nutrient cycling. Management needs to focus not only on timber, but also on the relationship between small mammals and mycorrhizal fungi. By maintaining habitat for small mammals which

Animal impacts on ecosystem health, linking truffles and small mammals (continued from front page)

disperse mycorrhizal fungi, forest managers can use small mammals to increase seedling establishment and tree growth after timber harvest. A more holistic management approach will make forests more resilient to disturbances and allow us to continue to enjoy economic opportunities and ecosystem services which forests offer.



Ryan Stephens & Tyler Remick in the White Mountain National Forest of New Hampshire. Photo by T.Bentley.



Elaphomyces bartlettii is one of the new species of truffles that Ryan Stephens identified.

Ryan received his undergraduate and master's degree from Stevens Point – Wisconsin, where he studied small mammal community ecology. He is currently a PhD candidate working in Dr. Rebecca Rowe's lab at the University of New Hampshire. Upon starting field work for his PhD, investigating community ecology of small mammals in the White Mountains of New Hampshire, he realized that truffles were a major food source for small mammals. After a field survey, he and a crew of undergraduates discovered a number of new truffle species and found that truffles are extremely abundant in the Northeast. Ryan's work investigates the factors that contribute to truffle production in the Northeast and the small mammals that disperse their spores. You can find out more about Ryan and see some of his outstanding illustrations at his web page: <http://ryanbstephens.com/>.

Truffle Dog Training

by Ricardo Small, Editor



Iris, the Jack Russell, and her human, Esther McEvoy, learn to dig for a treat under a towel from Jeannine May.



Isis, Jeannine May's trained truffle dog, demonstrates how to find a truffle hidden in pipe.

Peavy Arboretum, December 10, 2016.

Jeannine May, renowned truffle dog trainer, provided expert information and training techniques during “A Beginning Truffle Dog Training Seminar” at the Forestry Club Cabin in Peavy Arboretum. The Cabin is located about 15 minutes north of Corvallis, Oregon. Five people with four dogs and two people without a dog attended the day long instruction. I was one of the audits without a dog.

Dr. Dan Luoma, one of North America’s leading mycologists, prefaced Jeannine’s instruction with a slide presentation about fungi in general, as well as rules and regulations governing truffle foraging in Oregon. Dan recommended the USDA’s “*Diversity, Ecology, and Conservation of Truffle Fungi in Forests of the Pacific Northwest*”. You can download the free 3.0 MB booklet from: <http://www.treearch.fs.fed.us/pubs/32697>.

The day was filled with fun people, fun dogs and excellent instruction. I learned important and subtle training techniques that I never would have thought of. Jeannine showed examples of equipment she’s found helpful and reliable. If you have a dog and are interested in finding truffles in THE best possible way, contact: Jeannine May. She is an excellent dog trainer: (503) 348-6988, jmay@goodlifedogtraining.com or www.pacifictruffledogs.com.

Training a truffle dog requires consistent repetition and persistence. The rewards can be remarkable, including saving truffle habitat from destruction by profligate raking. Jeannine provides advanced training, including individual lessons. She can train people how to train their dogs or train the dogs on an overnight basis at her home.

Here is a link to my photo essay about the training day. All photos are public domain (not for sale). <https://ricardosmall.smugmug.com/TRUFFLE-DOG-TRAINING-SEMINAR/>

The North American Truffling Society (NATS) offers truffle dog training only when a sufficient number of participants sign up for the classes. NATS offers truffle dog training to encourage the sustainable harvesting of mature truffles. Dogs do not detect immature truffles well, because the immature truffles have little to no odor and are useless for culinary purposes.

SCHEDULE OF EVENTS

January 10, 2017: General meeting, 7:30 p m. The speaker will be Dr. James Trappe, presenting "Native truffles, native truffle hunters: truffling through history." He is with the Department of Botany and Plant Pathology at Oregon State University. His research areas are taxonomy of hypogeous fungi, floristics of alpine fungi, mycorrhizal ecology and applications and fungal-animal interactions. See General Meetings information below for location.

January 20-22: The 12th annual **Oregon Truffle Festival** begins with events in Oregon's wine country around the towns of Newberg and Yamhill, Oregon, including fine dining and truffle foray options. (http://www.oregontrufflefestival.com/event_location/newberg-mcminnville/)

January 26: The third annual **Joriad Truffle Dog Competition** in Eugene initiates two weeks of Oregon Truffle Festival activities. (<http://www.oregontrufflefestival.com/event/the-joriad-north-american-truffle-dog-championship-day-1-competition/>)

January 26-29: The main events of the 12th annual **Oregon Truffle Festival**, click this link for more: (http://www.oregontrufflefestival.com/event_location/eugene/) will be held in and around Eugene, Oregon over three brisk winter days. Created to celebrate the magnificent Oregon truffles as they reach the peak of ripeness in their native soil, it is the first festival of its kind in North America, dedicated to sharing the experience of the chefs, foragers and fans of Oregon's wild truffles, from their hidden source in the forest to their glory on the table. Festival events include educational seminars, truffle dog training, field trips, a truffle marketplace, and of course a variety of gourmet food events, culminating in the Grand Truffle Dinner.

February 7, 2017: General meeting, 7:30 p m. The speaker will be Benjamin Hart. Join us for a discussion about long term recovery of mycorrhizal communities associated with Ponderosa pine forest restoration in Eastern Oregon. Ben Hart is an Oregon State University Graduate Research Assistant of Dr. Jane Smith and the Forest Mycology Lab at the Pacific Northwest Research Station in Corvallis, Oregon. His research led him to an expanded understanding of the role of mycorrhizal fungi and the utilization of fire ecology and silviculture to restore fire suppressed regions of the Pacific Northwest. See General Meetings information below for location.

General Meetings are held in room 2087 at Cordley Hall on the Oregon State University campus in Corvallis. Cordley Hall is reached via Orchard Avenue east of 30th Street; click this link (<http://www.natruffling.org/cordleymap.jpg>) for a street map. Room 2087 is on the second floor on the south side of the building; [click this link for a building map](http://www.natruffling.org/2087map.png) (<http://www.natruffling.org/2087map.png>). Parking in any of the A1 lots is free after 5pm. See you there.

* * * INTERNET LINKS OF INTEREST * * *

The link below is to Friendly Fungus Photography, Mushrooms of the San Francisco Bay Area by Anna Towers. She is "your friendly neighborhood amateur mycologist and dedicated lifelong mycophile!" There are excellent images of fungi at her site: <http://www.thefriendlyfungus.com/>.

This link is to a Nat Geo Explorer article about a burial suit lined with spores to turn your body into mushrooms:

http://www.natgeoexplorer.com/article/suit-will-turn-dead-body-mushrooms/?utm_source=Facebook&utm_medium=Social&utm_content=link_fb20161226ngc-explorermushrooms&utm_campaign=Content&sf47534539=1

Here is a link to an interview of Peter Wollebhen, author of *The Hidden Life of Trees*. He says: "When one tree is attacked by insects, we can measure electrical signals that pass through the bark and into the roots and from there into fungi networks in the soil that alert nearby trees of the danger."

<https://boingboing.net/2017/01/02/the-sophisticated-hidden-ways.html>

This one is to an article about truffle season in Italy, Spain, Switzerland and France:

<http://www.travelandleisure.com/food-drink/winter-truffle-season-europe>

A Fun Facebook Forum

The Pacific Northwest Mushroom Identification and Information Forum on Facebook frequently has interesting photographs of fungi and entertaining / informative discussions. Here is the Forum's link: (<https://www.facebook.com/groups/207960656029435/>).

On Christmas Day 2016, Rob Snow started a thread with:

“If truffles grow underground, how do you find them? I'm on Vancouver Island.”

Too many comments to include all of them, but here are some interesting ones.

Comments

Yannis Bizakis You dig with a rake - or get a pig or dog to find them for you.

Stephen Kelland Raking is not sustainable.

Lee Swisher Very destructive to the environment

Spencer Edgren What they said! Raking destroys the mycelium.

Mikhaila Henson Nope, never rake any type of mushroom.

John Snedeker Look for evidence of other critters rummaging around.

Stephen Kelland DONT RAKE. On Vancouver Island, under Douglas firs, look where squirrels have dug. Dig carefully, replacing the soil. They might not even be ripe. That's what dogs are good for, saving all that destructive raking.

Leon Post Doggos. <https://www.youtube.com/watch?v=ZCYJLahNIOY&t=360s>.

EDITOR NOTE: The above link leads to a 21+ minute video. A segment at the 9:13 point is with Toby Esthay, truffle forager who lives in Oregon's Willamette Valley, and his dog in the woods. You might enjoy watching the whole 21+ minutes of this video. Very entertaining!

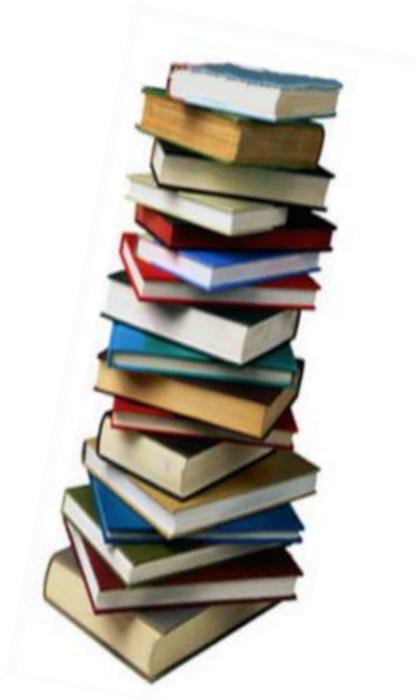
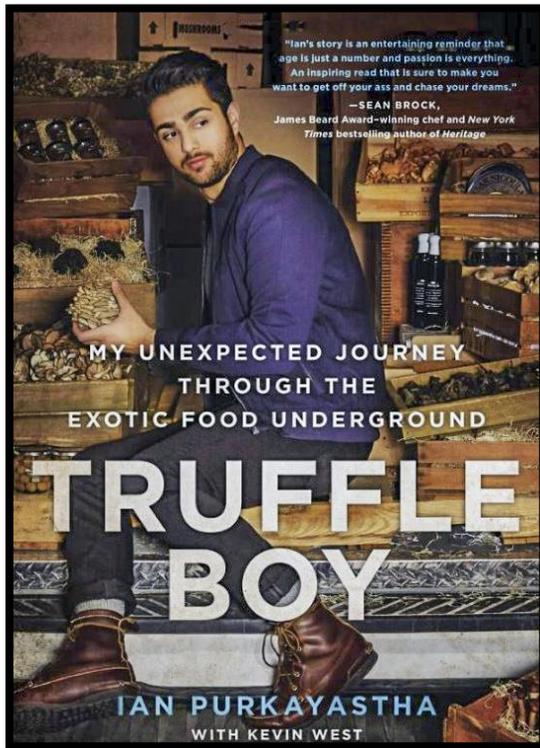
Dave Mitchell Research thoroughly. At upwards of \$1200+ a POUND, going a-wandering into someone's secret patch... in the woods...with no one around... may lead to "Accidents." Seriously. It's a ruthless business.

Doug Selby Flying Squirrels love truffles. They are really good at finding them.

Karen Keller Own a dog that wants to please you? Buy a truffle. Let him sniff it. Hide it in your house. Say where's the truffle? When he finds it give him something he really likes. When he or she gets good at finding your one little truffle, take him to a 15 year old doug fir forest and try it there. Try to find a place that does not have too much under-brush. Good Luck. Buy a book or two on truffles of the northwest.



A New Book:



Truffle Boy: My Unexpected Journey Through the Exotic Food Underground by Ian Purkayastha (author) and Kevin West (contributor) is scheduled to be released on February 7, 2017.

According to Amazon.com (link below), Ian Purkayastha is New York City's leading truffle importer and boasts a devoted clientele of top chefs nationwide. Before he was purveying the world's most expensive fungus to the country's most esteemed chefs, Ian was a food-obsessed teenager in rural Arkansas--a misfit with a fascination for rare and exotic ingredients.

The son of an Indian immigrant father and a Texan mother, Ian learned to forage for wild mushrooms in the Ozark hills. That led to learning about the elusive truffle. His first truffle taste at age 15 sparked an improbable adventure through the strange--and often corrupt--business of the exotic food trade.

Rife with tales from the hidden underbelly of the elite restaurant scene, *Truffle Boy* chronicles Ian's high stakes dealings with a truffle kingpin in Serbia, **meth-head foragers in Oregon**, crooked businessmen and maniacal chefs in Manhattan, gypsy truffle hunters in the forests of Hungary, and a supreme adventure to find "Gucci mushrooms" in the Himalayan foothills--the land of the gods.

Truffle Boy is a thrilling coming-of-age story and the incredible but true tale of a country kid who grows up to become a force in the world of fine dining.

https://www.amazon.com/Truffle-Boy-Unexpected-Journey-Underground/dp/0316383953/ref=sr_1_11?s=books&ie=UTF8&qid=1483457094&sr=1-11&keywords=truffles



Hello, Trufflers.

I am the new editor of *The North American Truffler*, which will be a quarterly publication into the near future.

The Truffler is the fourth newsletter I've edited during the past 30 years or so. Most recently, I edited *Wild Goose Tales* for the Friends of the Willamette Valley National Wildlife Refuge Complex here in Oregon. The other two newsletters were also quarterlies, one for a commercial real estate brokers' professional organization and the other for a selected group of real estate property owners. Both of those were in Tucson, where I used to live.

Photography has been my main hobby for decades, since I was a teenager. I currently volunteer as a photographer for the Oregon Parks and Recreation Department.

Learning about fungi and foraging for chanterelles became new hobbies after I moved to Oregon at the end of 2009. I write photo essays about various topics pertaining to hikes and other adventures in Oregon and Arizona. Those essays are on my SmugMug website. All my photos are public domain, not for sale. My wife and I spend five winter months in Tucson and seven warm months in Oregon. You can say we are snow solar birds.

My education includes a bachelor's and a master's in wildlife biology from the University of Arizona (1969 and 1971). I retired from real estate brokerage and appraising before moving to Oregon.

I am looking forward to editing future editions of *The Truffler* for you.

Ricardo Small

<http://www.ricardosmall.smugmug.com/>

What do you do with the truffle you can not identify?

You can send them in dried to the Oregon State University Forestry Sciences Lab. Fill out a field data card or describe where you found it. When possible, include a color digital image showing the surface view and an interior section cut top-to-bottom through the center to:

Dr. James Trappe
USFS Forestry Sciences Lab
Corvallis, OR 97331

The data that Jim likes to have included are significant characteristics of the habitat in which a truffle is collected. Please provide the location (GPS data if available) and describe the dominant vegetation species in the immediate area and the slope / exposure.

Please dry the specimens thoroughly before sending them. If you would like to be notified of the identification, you must include your email address or a self-addressed stamped postcard with the specimen you send in.

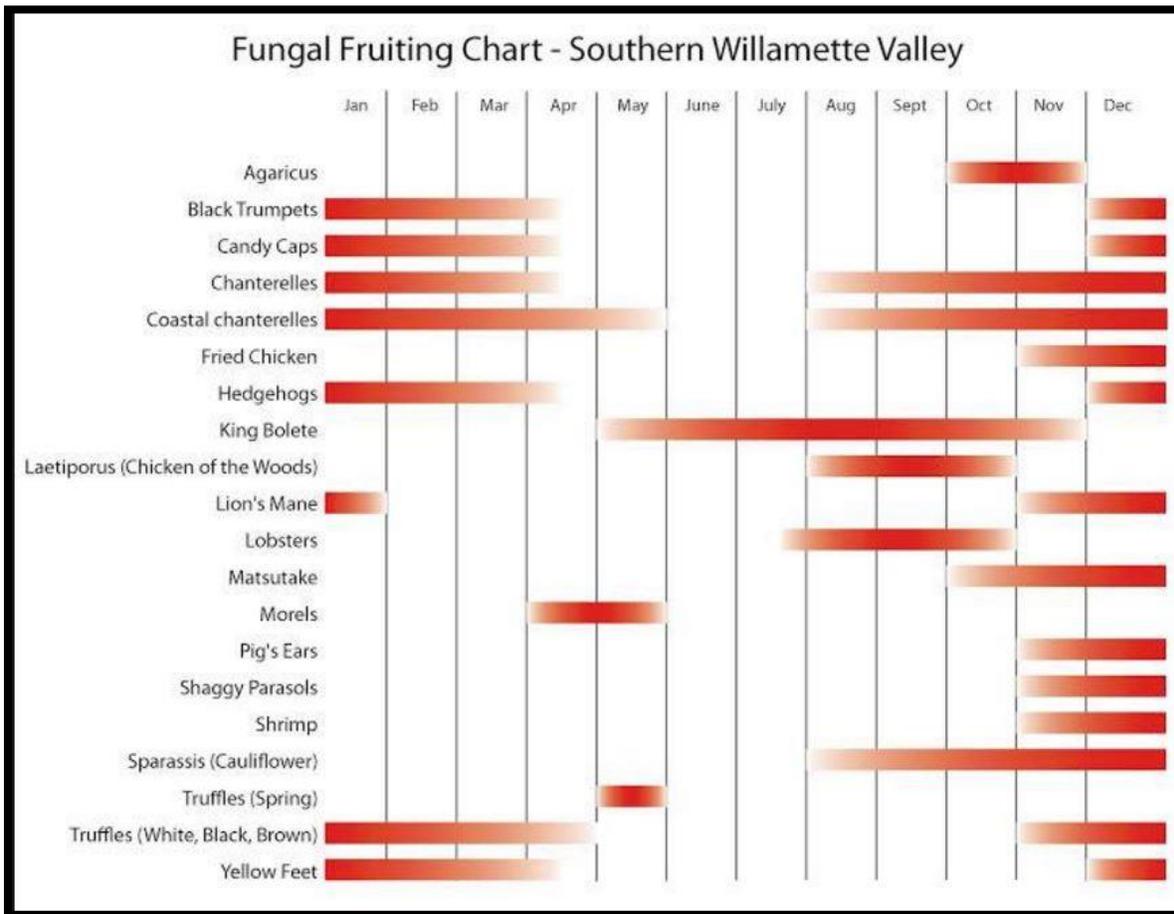
If you don't have a food dehydrator, truffles can be dried by leaving them in the refrigerator in a loosely closed paper bag for a couple of days. They'll dry much faster if you cut them in half first. The outer skin serves to keep moisture inside.

WANTED: Your suggestions for newsletter topics, comments about articles, your opinion about any truffle and/or fungi related topic are wanted. Please send them in.

All should be emailed to me at:

ricardosmall@comcast.net.





The above chart is from the Cascade Mycological Society (<http://cascademyco.org/>).

THANK YOU



A huge thanks to **Frank Evans**, editor emeritus of *The Truffler*. Past editions of our newsletter contain informative and valuable information. Frank's service is deeply appreciated by all of us.

Disclaimer

The information contained in *The Truffler* is to be used at your own risk. NATS Inc., its officers, editors, and members are not responsible for the use or misuse of information contained in the newsletter. If you are unsure of mushroom identification or safety, please consult an expert. Better safe than sorry!

In addition, attending and participating in a NATS event is entirely at your own risk. No person associated with NATS is either directly or indirectly responsible for anything that occurs during, or in transit to/from, a NATS event. Be responsible.