

The North American Truffler

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Pat Long enjoys the aroma of a truffle. Photo by Molly Harbarger for OregonLive

October 10, 2017 speaker: Pat Long

Dr. Long will give a talk entitled, "Farming truffles-a continual learning experience." He will discuss the challenges and lessons learned from 17 years of a Black Perigord truffle orchard.

Patrick Long is a semi-retired veterinarian turned farmer. He is the first reported to grow, harvest and sell Black Perigord truffles in Oregon. His orchard has produced Black Perigord truffles for 5 seasons but he continues to search for the best methods to produce mature saleable truffles.



Pat examines truffles with Kris Jacobson.

UPCOMING MEETINGS

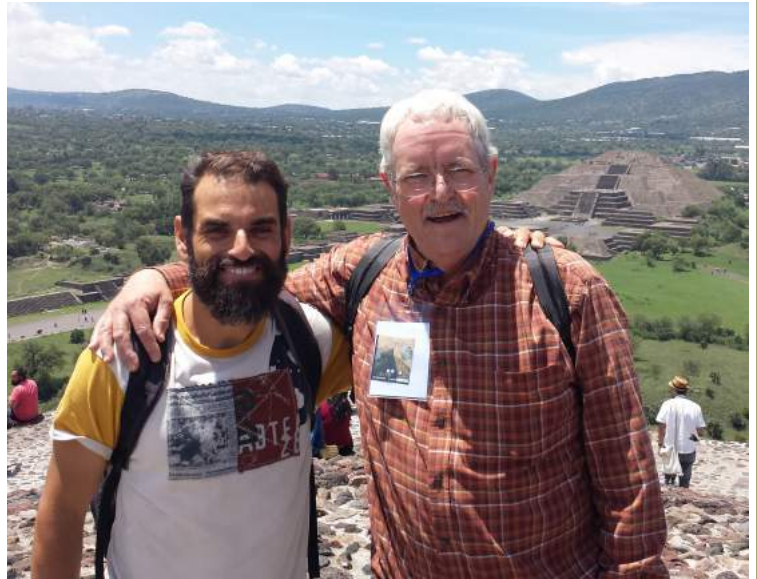
All general meetings are held at 7:30pm in room 2087 of Cordley Hall on the Corvallis OSU campus. Cordley is reached via Orchard Avenue east of 30th St; [click here for a street map](#). Room 2087 is on the second floor on the south side of the building; [click here for a building map](#). Parking in any of the A1 lots is free after 5pm.

UPCOMING FORAY

The next foray is tentatively planned for the first weekend in November at the HJ Andrews Experimental Forest. Please check NATruffling.org for information as plans are confirmed.

November 7, 2017 speaker: Pablo Martin
Mushrooms: an excellent opportunity to reduce fire risk

Dr. Martin from the Valladolid University Institute for Sustainable Forest Management will discuss how value can be added to forests by developing sustainable mushroom harvest practices. Non-timber resources in forests are integral to discussions about ecosystem-level fire management in Mediterranean climate forests. Therefore, we need to know the effect of fire on fungal communities, and how silvicultural treatments regarding fire could affect fungi. He presentation will feature photos from forest ecosystems in Spain.



Pablo Martin with Dave Pilz at Teotihuacan, Mexico

NATS annual holiday potluck speaker: Randy Molina
December 2, 2017

A Black Truffle EcoTour in Spain - Great truffle hunting, food, wine, and adventure



In February 2016, my wife Nancy and I participated in an inclusive, week-long truffle tour of the Castillo de Leon region of Spain, organized and led by Corvallis alumnus Chris Fischer as part of her Sitka Services Mycology EcoTour company (www.sitkaservicesllc.com/). After congregating in Madrid, we departed through beautiful countryside to a region of wild black truffle habitat surrounding Soria, home to the oldest commercial black truffle (*Turber melanosporum*) orchards in Spain and the center of Duoro Spanish wine production. Our travel brought new adventures daily, from visiting truffle orchards and wild habitats, searching for truffles with expert truffle hunters and their two-legged companions, to exploring old castles and ancient villages. Evenings usually found us dining in many a fine restaurant coupling outstanding, expertly prepared truffle dishes with excellent local wines.

Chris was a wonderful host sharing fantastic rapport with local truffle hunters and chefs. This trip was a magnificent way to enjoy the allure of finding and eating black truffles in this historic region of Spain where the culture remains strong and the people welcoming.

Mushroom of the Sea?



Well, not exactly, but mushrooms belonging to the genus *Pleurotus*, commonly called oyster mushrooms, are easy to grow at home.

On May 9, 2017, Kim Kittredge of Northwest Mycological Consultants led NATS meeting goers in a delightfully hands-on demonstration of how to grow oyster mushrooms at home. A number of *Pleurotus* species can be used including *P. ostreatus*, *P. sajor-caju*, *P. cornucopiae*, *P. djamor* and *P. eryngii*, as well as an additional, non-*Pleurotus* species belonging to the genus *Hypsizygos*. Variations in color, texture, and flavor of the different varieties make for a novel meal, even if cooking is not your strong point.

Fruit production can be achieved using a number of spawning methods (log inoculation, heat straw column, etc.). At the presentation, Kittredge provided materials necessary for use of the colloquial 'spawn bag' method, including: plastic grow bags equipped with handy filter-patches to accommodate gas exchange (necessary during mycelial production and fruiting); pasteurized straw as a substrate, and, lastly, grain inoculum of four different varieties of mushrooms.

Participants filled their grow bags with straw and added several scoops of inoculated grain to the bag. Then everyone took their bags home to try to get fresh mushrooms to fruit. See instructions for home care on the following page or on the NATS website: NATruffling.org/ for more.



Kim helps to tape up spawn bags after they are filled.



Some members of your household may be puzzled by the new life form.



Pink oyster mushrooms fruited prolifically for us.



Blue oyster mushrooms were not so blue.

Home Care for Oyster Mushroom Growing Bags:

Store grow bag in a warm place, 70-80° F. After 4-6 weeks, white mushroom mycelium should completely fill the bag. Check bag periodically during this time, as it may be necessary to open the bag and spritz with sterile water if the straw begins to dry out.

To pre-condition for mushroom production, place bag in the refrigerator or outside (if it's cool but not freezing) for 12 hours; return to your warm place. The pink oyster, *Pleurotus d'j'amour*, is a warm-room-temperature strain and does not need refrigeration prior to fruiting.

Poke five 1/4" holes on one side of the bag to increase airflow, the environmental signal indicating ideal conditions for production of fruiting bodies. The mushrooms will form pins near these holes and exit the bag through them as they mature.

Discolored mycelium (ANY color than white) indicates potential contamination; mushrooms may develop poorly, or not at all, but are not in any circumstances edible.



The *Hypsizygos* fruiting was quite robust.



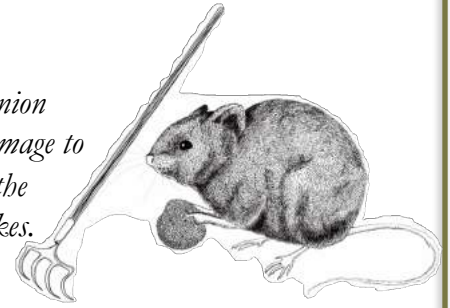
The yellow oyster mushrooms were beautiful!

To rake or not to rake

Recently, NATS received the following comment:

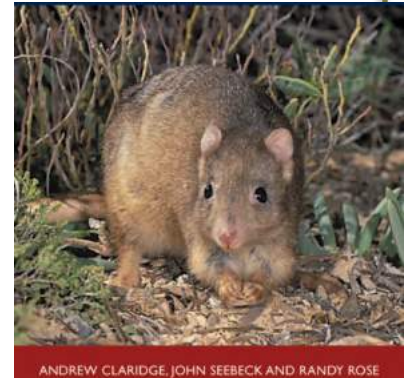
I read the last Truffler with much interest and was somewhat surprised to see no opinion attached to the bit about raking for truffles. 12 people with rakes can do a lot of damage to the truffle mycelium and it is highly unproductive, as you noted. I was wondering if the Truffling Society was ever going to change its attitude towards hosting forays with rakes.

Regards,
Danielle de Clercq



We appreciate it when our members draw attention to issues requiring careful thought. Thanks to Danielle's question, NATS has taken this opportunity to clarify its position on this important ecological issue.

When asked about the use of rakes during forays, Dr. Jim Trappe said, "Ecosystem and soil health depend on this kind of disturbance. The questions are how much, and what frequency of disturbance is conducive to health? A fascinating study was conducted in Australia on truffle-digging by bettongs, cute little marsupials about the size of a medium-sized domestic cat. During truffle season, one bettong makes 40 to 100 truffle digs per night; thus, in the course of one year, the animal displaces (i.e., 'cultivates') up to 4 metric tons of soil! And that's just one of several species digging truffles!" The Australian data emphasize that under Australian conditions, these native trufflers are extremely important to forest productivity.



"We need to view human truffle hunting, be it for scientific or commercial harvesting purposes, in a way comparable to how we view the role of native trufflers in our forests as well. Truffles are avidly sought by most mammals in our Oregon forests; indeed, from flying squirrels to tiny red-backed voles, truffles are preferred to any other food. I estimate one flying squirrel can turn over more soil in 24 hours than I can. This incorporates and aids decomposition of soil organic matter, loosens soil structure to promote water infiltration and aeration, and encourages growth of fungal mycelium, soil microorganisms, and worms and arthropods, all important to soil health. Truffles have evolved a need to be excavated for spore dispersal in this way."

Dr. Trappe continued, "The kind of truffling done primarily for study of truffle diversity, taxonomy and ecology in the Pacific Northwest, a major goal of NATS, is benign. The raking is rarely more than an inch or two into mineral soil, nor is it extensive in any one place. NATS members are strongly encouraged to rake back duff when finished at a truffling site with the understanding that subsequent, natural litter fall will assist in the recovery process. NATS members typically rake 'a little bit here and a little bit there' with the goal of sampling different kinds of microsites."

Continued on next page

To rake or not to rake, continued.....

Trappe concluded, “The problem in the past has been with untrained commercial harvesters deeply raking extensive areas, in some cases ripping up seedlings and breaking masses of feeder rootlets. That is now illegal, due in part to NATS' objections, because it is destructive, in direct contrast to the NATS' approach for the study of truffles. That approach is well-captured by the phrase ‘treading lightly through the forest.’ My personal advice is: think like a squirrel when engaging in activities aimed to further knowledge about truffles.”



Photo: Wes Colgan

Adding to the dialogue, NATS President Marilyn Hinds noted that, as of July of 2014, Oregon Law (164.813) now includes “wild edible fungi, regardless of species” in the definition of special forest products. This means that one must have a permit to even transport truffles and must obtain the permission of land owners before gathering has begun. While 164.813 allows for an exception in cases where the quantity of mushrooms collected is less than one gallon, we suggest truffle hunters take care to obtain permission from landowners.

NATS member Frank Evans said, “I understand Danielle's concern- it would certainly be confusing to attend a NATS foray while simultaneously being lobbied to use dogs instead of rakes.”

This issue, as it pertains to NATS, is slightly more complex, however, and one must consider the following to understand the group's position:

- 1) NATS favors efforts to encourage the gathering of culinary truffles using dogs, and organizes training sessions to this end;
- 2) NATS is dedicated to the study of **all** truffles, be they of culinary interest or not;
- 3) Use of truffle dogs limits the truffles found to only those species for which the dog is trained. In a culinary context, this is beneficial for hunter and environment alike. The same is not true, however, in the context of collecting scientific information regarding the larger world of truffles.
- 4) As our region is home to hundreds of truffle species, it is uniquely suited for scientific research. As stated in the NATS' constitution, “The purpose of this organization shall be to enhance the scientific knowledge of North American truffles and truffle-like fungi.” Hence, it is appropriate to continue to use raking as a sampling method.

Lastly, the use of rakes during NATS' forays is not inadvertent; rather, it is a deliberate, well-examined choice as we seek to expand the collective body of knowledge for truffles as a whole. Thank you Danielle for providing the opportunity to clarify this potentially delicate matter. It will help us in the future to have already considered the issues.

The Pacific Northwest Truffle Industry Matures

David Pilz



Oregon black truffles, *Leucangium carthusianum*, have a fruitier fragrance than *Tuber* species, and are often used in sweet desserts.

©David Pilz

The Oregon truffle industry got off to a rocky start 30-40 years ago. Few people knew that native truffles with culinary value even existed. No dogs were trained to seek them; thus harvesters found truffles by scratching away forest duff and soil with garden rakes. Too often this disruptive method was used without landowner permission, let alone compensation. As a result, harvesters often sold unripe truffles. Few chefs would pay more than \$90/kg (if that) for a product that had little aroma, so the reputation of native truffles languished.

The first glimmer of recognition that Oregon had good culinary truffles came in 1977 at the Mushrooms and Man symposium¹ where famous chef James Beard declared the Oregon white truffle to be as good as the Italian white truffle. Subsequently however, little changed within the truffle industry, even as recently as 2005. If anything, more people were raking without permission, causing conflict and

perpetuating a reputation for poor quality truffles. Some of the more savvy harvesters were high grading raked truffles to sell only the ripe ones, but the practice remained wasteful and left unsightly messes and damaged tree roots in the forests.

Meanwhile, Oregon State University and the adjacent laboratories of the Pacific Northwest Research Station (USDA Forest Service) had long been recognized as a center for research on the biodiversity and ecology of hypogeous fungi². The modern era of truffle research was first managed by world-renowned truffle expert Dr. James Trappe from 1965-1985 and continued under the direction of Dr. Randy Molina from 1985-2007. The Mycology Team consisted of many professors, researchers, graduate students, post-docs, and employees over these years. Critically for the Pacific Northwest (PNW) truffle industry, one of Dr. Molina's graduate students, Dr. Charles Lefevre, earned his Ph.D. in 2002 studying the ectomycorrhizae of *Tricholoma magnivelare*, the American matsutake. In a move that would reshape the regional truffle industry, Dr. Lefevre switched his focus to truffles shortly after graduation.

Applying his knowledge of ectomycorrhizae, he started a nursery (www.truffletree.com) where he inoculated tree seedlings with European culinary truffles and sold them to entrepreneurs who braved the risk of establishing truffle plantations in this new region. But Charles and his wife Leslie Scott also had a larger vision of promoting a vibrant, sustainable, and ethical truffle industry throughout the PNW (including northern California, Oregon,



Dog-harvested Oregon white truffles (*Tuber oregonense* and *gibbosum*) for sale in January 2015 at the Oregon Truffle Festival during the Sunday Marketplace event in Newberg, Oregon. ©David Pilz

Washington, Idaho, and British Columbia). To foster this vision, they established the wildly successful Oregon Truffle Festival (OTF) in 2006 (www.oregontrufflefestival.com).

Importantly, the OTF focuses both on truffieres with European species and on the sustainable harvesting of native truffles³. The annual festival brings together chefs, harvesters and consumers to create a culture of quality. Central to this effort is the training of truffle dogs so that only ripe truffles will be harvested and sold. Years of truffle dog training by OTF participants have culminated during the last three years in the annual Joriad™ Truffle Dog Championship competition.

Two other organizations participated in efforts to reform the industry. Dr. Trappe founded the North American Truffling Society (www.natruffling.org) in 1978 to enhance the scientific knowledge of North American truffles and truffle-like fungi and to promote related educational activities. Although not focused specifically on culinary truffles, the organization has increasingly become involved in promoting a sustainable industry through its educational activities and by sponsoring truffle dog training sessions. Similarly, the Truffle Association of British Columbia was founded in 2004 to promote sustainable native and European truffle industries in that Canadian province (www.bctruffles.ca).

How have these ongoing efforts changed the PNW truffle industry?

- Four native culinary truffle species^{4,5,6} are now recognized and commonly harvested in the PNW. These are the two “white” truffles, *Tuber oregonense* and *gibbosum*, the “black” truffle, *Leucangium carthusianum*, and the newly named “brown” truffle, *Kalapuya brunnea*.
- PNW truffieres have been established with seedlings inoculated with three cultivated European species; *Tuber melanosporum*, *T. aestivum*, and *T. borchii*.
- Over a hundred truffieres are now established in the PNW and many have begun to produce European truffles. Yields are expected to grow as trees mature and managers improve plantation management.
- Over a hundred trained truffle dogs are now finding wonderfully ripe native truffles and restaurateurs are using them to further enhance the innovative reputation of PNW cuisine. While most native truffles are still harvested without dogs, chefs are increasing their demand for high-quality dog-harvested truffles and shifting the market towards superior harvesting practices.
- Current prices for dog-harvested PNW truffles (approximately \$1400/kg)⁷ are now an order of magnitude greater than original prices. This increased price adequately rewards harvesters for sustainable harvesting practices and provides sufficient income to collaborate with landowners.
- Trained dogs are greatly expanding the known range of the native culinary truffles far beyond Oregon; finding them throughout the west coast forests of their ectomycorrhizal host trees, Douglas-firs.
- The cadre of trained truffle dogs and their owners are now also available for harvesting in truffieres as their production increases.

- PNW native truffles fruit most abundantly in young Douglas-fir forests. However, thinning when the trees get too crowded has the potential to extend the period of abundant truffle production by restoring vigorous tree growth. Annual truffle harvesting might, therefore, provide small woodlot owners with the additional income and incentives needed to thin young forests and implement longer rotations between timber harvests. A range of associated environmental benefits, including healthier streams, wildlife habitat diversification, and carbon capture would result from such extended rotations.

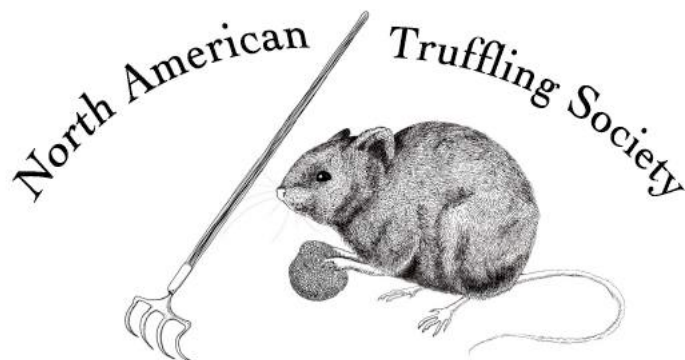
In a world of increasingly stressed natural resources, it is heartening to recognize examples where dedicated individuals and organizations have succeeded in creating a winning strategy for all non-wood forest product stakeholders. They deserve our appreciation and we can learn from their experiences.

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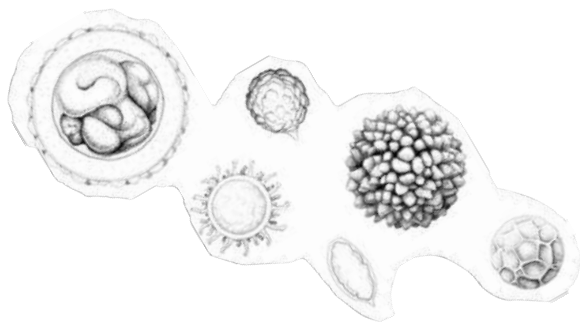
David Pilz is a semi-retired forest mycologist whose research focuses on the sustainability of commercial harvesting of wild edible forest mushrooms. You can contact him through his web site: www.pilzwald.com (www.pilzwald.com/)

This article originally appeared in a slightly different format in the FAO NWFP Update, November 2016, Issue #9



WANTED

Creative suggestions for newsletter topics, comments about articles, your opinions about any truffle and/or fungi related topic. Send contributions to: newsletter editor Sarah Shay at NATrufflingsociety@gmail.com



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 presented herein. If you are unsure of mushroom identification or safety, **please** consult an expert! 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.

UNIDENTIFIED TRUFFLE?

What to do?

Send dried specimens to the Forestry Sciences Lab. Fill out a field data card, which you can find at the Field Data Card link on the lower left (<http://www.natruffling.org/>) or describe where you found it on your own piece of paper. When possible, include a color digital image showing a surface view and an interior section, cut top-to-bottom, through the center to:

Jim Trappe
USFS Forestry Sciences Lab
3200 Jefferson Way
Corvallis, OR 97331

The data that Jim likes to have includes significant characteristics of the habitat in which the 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 your specimen.

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.

The North American Truffling Society, Inc.

The North American Truffling Society is a non-profit organization based in Corvallis, Oregon that brings together amateurs and professionals who are interested in fungi that fruit below ground. The mission of NATS is to enhance the scientific knowledge of North American truffles and truffle-like fungi, and promote educational activities related to truffles and truffle-like fungi.

NATS is the only organization of its kind in the world devoted to gathering truffles and enhancing our knowledge about them. Primary activities include educational meetings and truffle-collection forays. NATS members collect truffles worldwide, thereby contributing to our understanding of their habitat and range, identification and classification, and edibility. NATS specialists also provide truffle identification services.

NATS offers:

- Forays (field trips) to collect truffles.
- Monthly educational meetings (autumn through spring) on varied mycological topics.
- A periodic newsletter, "The North American Truffler: Journal of the North American Truffling Society", describing recent truffle finds, program meetings and other topics.
- An annual potluck dinner.
- The excitement of participating in valuable scientific research.
- New and interesting friends.

NATS welcomes new members. As a nonprofit, membership dues are tax exempt and deductible. Dues may be paid by cash (in person) or by check (US Mail). If you pay by check, please retain your canceled check as your receipt for tax purposes. You can also pay online with a credit/debit card via Paypal at www.NATruffling.org/renew.htm.

For further information on truffles and membership, contact NATS and **START TRUFFLING!**
Please return completed form (with check made out to NATS) to:

THE NORTH AMERICAN TRUFFLING SOCIETY, INC.
P.O. BOX 296
CORVALLIS, OREGON 97330
www.natruffling.org



Name(s): _____ Phone: _____

Address: _____

City: _____ State: _____ Zip: _____ Country: _____
(Province) (Postal code)

Email address(es): _____

Annual membership fees: \$15 first family member, \$10 each additional family member in the same household. Businesses: \$15. Individuals/Businesses from other countries: \$20, **payable in US funds.**

Annual contribution categories: Donor: \$15-\$49; Contributor: \$50-\$499; Sustaining \$500+