MushRumors

The Newsletter of the Northwest Mushroomers Association

Volume 27, Issue 2 July - September 2016

Fall Mushroom Season Strikes in Northwest Washington

Let's get ready to show off our mushrooms!

After a remarkable and unprecedented flurry of fall mushroom activity in the first two weeks of summer, things went dry for the entire month of August, and many of us wondered whether once the rains came, exactly what might our fungal friends do. Would there be a confused, and luke warm response with a relative paucity of fruiting bodies, or would the season simply reset, and be happily back into a normal cycle of activity? Early indications are the latter, thankfully, as the season is off to a running start after some decent rains, with more expected as this issue comes to press.

Photo by Jack Waytz

Honey's hit hard!

One thing is certain, as the climate continues to change, so are both the habits and the players in the Fifth Kingdom here in northwest Washington. There was a very significant fruiting of lobster mushrooms in the beginning of July this year, an unprecedented occurrence. Interestingly, as I reported this to David Arora, he informed me that in places like Arizona, northern California and southern Oregon, lobster mushrooms are a summer feature of the myco-scene. Apparently, as our weather continues to feature mild winters, and extended hot, dry periods in summer, this will likely become the norm in our area as well.

Photo by Jack Waytz

Lone *Mycena* in liverworts

Following 2013, the benchmark year for wild mushrooms in the past century, we have had what can only be described as two consecutive paltry years, especially for mycorrhizal mushrooms. This year, however, conditions are optimal, and the mushrooms are responding in droves. Our fungal friends have been spotted at all elevations throughout our area. The zenith of the season ought to be in full swing as the audacious members of the Northwest Mushroomers venture forth to assemble their collections for the 2016 annual Fall Wild Mushroom Show to be held October 16 from 12 - 5 pm at Bloedel Donovan Park here in Bellingham, Washington.

In years where conditions have been similar to this year, each day has revealed more mushrooms filling up the spaces on the forest floor, so by the time collecting for the show begins in earnest on Friday,

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there certainly will be a high degree of diversity of macrofungi in both the lowland forests and the alpine areas of northwest Washington.

Collecting for the show

A huge *Turbinellus kaufmanii* in the North Cascades

In the past two years, despite an only luke warm fall mushroom seasons, we have had enormous success in terms of number of species shown. This result is attributable in great part to the outstanding area coverage by the membership. We have an excellent opportunity in what looks to be an above average fall season, to shatter our old record, and show over 400 species. This will depend once again, on a concentrated effort at maximum area coverage, by a large number of members. It would be great to get collections from coastal areas, to include the Olympic Penninsula, if anyone is inclined to travel there. We should cover a wide range of lowland forests, each of which, although similar, has unique mushroom species within, and a good representation of species collected in the area alpines. This is an excellent opportunity to get out into the woods, assemble outstanding collections, and bring in your mushrooms!

How to assemble collections for the show

If possible, bring in at least three fruiting bodies to represent each collection. Naturally, if you only find one or two, that will have to suffice. Bring in only specimens which are in good to excellent condition. Leave half rotten, or slug eaten mushrooms in the woods! Bring a small spade with you, so that you are able to dig out the entire fruiting body. It is important that the entire stipe and base of each mushroom be included in each collection. Put each separate collection in its own container, so as to avoid mixed collections. This will also limit mushroom may damage in transit. Please put your name and contact info on the box in which you bring your collections. This will help us to recognize you in the event that you have turned up a rare, or even unnamed, mushroom. Bring your most excellent assembleage to the Pavillion Building at Bloedel Donovan Park any time between 5:00 and 10:00 pm.

Photo by Jack Waytz

Yet another *Cortinarius* mystery

Be a part of our show

Give yourself the opportunity to contribute your efforts to the event which teaches the members of our community about our passion: mushrooms. Learn something about them yourself, in the process. The more people that participate, the better the event will be. If you are unable to take part, please take some time on Saturday to collect, and bring your mushrooms forth. Hope to see everyone there!

Photo by Jack Waytz

Our awesome display from 2009

The Gator Swamp Foray

By Buck McAdoo

From the cozy confines of my boat in Squalicum Harbor I've often wondered about forays in radically different environments. Near the top of my list are the Badlands of North Dakota, the sand dunes of Lake Michigan, and the gator swamps of Florida. My brother lives next to Fernandina Beach in northeastern Florida, and on February 28, 2016, the gator swamp foray became a reality.

Photo by Buck McAdoo

Teen gators avoid the algae

I didn't know what to expect. I felt lucky that it was winter and the pygmy rattlesnakes would mostly be underground. We had heard from some fishermen that oyster mushrooms could be found off the Greenway at Egan's Creek. So we drove out there, parked next to a jungle gym, and headed for the path. The first thing we saw was a sign urging us not to interfere with the alligators. Fishing in the creek was only permitted from bridges. Soon we were on the Greenway, a grassy path about 12 feet wide with meandering Egan's Creek on one side and a series of small ponds on the other. The Greenway ran about a mile and a half and connected one road to another. There were no fungi on it. It had been dry in northeast Florida. We would have to leave the well-trodden path and follow a winding trail through palmettos and live oaks to find anything at all.

Meanwhile, there were alligators up on the banks of the ponds. Why they didn't spring out of the water to snare poodles on leashes I may never know. Just above the largest gator perched a cormorant and a white ibis on different branches. They must have been waiting for the gator to eat something so they could get the scraps. Sometimes, I suppose, they get eaten themselves.

I know the suspense is becoming unbearable, so I must reveal that all we found for the day were three polypores. None were edible and none were known for medicinal value. Nonetheless, for those who follow such taxa, they were interesting. Here they are in no particular order:

Photo by Buck McAdoo

Trametes elegans

Trametes elegans – A showy white polypore that looks like porcelain plates shelving off logs. Caps can grow up to 35 cm wide and are white to cream to pale ochre in age. The surface is glabrous and concentrically sulcate. They are common all over the southeast and range west to the Mississippi River and north into New England. The pore surface can be typically poroid or sinuously labyrinthine to even lamellate. According to Fischer and the Bessettes it is easily recognizable because the pore surface changes from the base to the margin. Ironically, it is this same variable character that prompted early mycologists into thinking they were dealing with different species. T. elegans gets sworn at a lot. From a distance, many forayers think they are closing in on oyster mushrooms.

Photo by Buck McAdoo

Hexagonia hydnoides

Hexagonia hydnoides – An unusually hairy polypore that fruits on a number of hardwood logs. The caps are covered with a dense layer of black hairs. The pore surface can be grayish to dark brown. It is a successful tropical fungus. Besides Florida, it has been found in Louisiana, Texas, and even up into Kansas. My theory is that the densely hirsute cap cover retains moisture after a rain. This gives the hymenial surface more time to produce spores before the heat dries it up. I have also seen this in Belize. It even fruits on fence posts and fallen palm trunks. Microscopically, the hyphal system is trimitic and

Photo by Buck McAdoo

Full sized aligator hanging out at the swamp

the spores are cylindrical, measuring 11-14 x 3.5-5 microns. *Phellinus sp*. – There are 48 species of *Phellinus* described in North American Polypores, but this one didn't seem to be one of them. In fact I would like to thank Jim Ginns right here for even getting me to *Phellinus*.

This particular collection was fruiting on scrub oak. That could mean anything. Scrub oak in Utah, scrub oak in Massachussets, and scrub oak in Florida are probably three different species. This *Phellinus* harbored a few strong characteristics but I still ended up in Never Never Land. It had a grayish-ochre-brown pore surface that turned a bit lilac when dried. It had a glabrous and crustose cap surface with raised brown zonate ridges. The context was rusty and seemed annual rather than perennial. There were no setae but instead setal skeletal hyphae about 30 microns long with semi-flattened hooks at the apices. And the walls of the skeletal hyphae were pale turquoise in KOH.

Phellinus lamaoensis, a species not supposed to be in North America, has the same cap surface, but I could not find a written description for it. *Phellinus coffeatoporus* has cyanophilous hyphal walls, but the pore surface is dark coffee colored, and the caps are much more nodulose and turn blackish and rimose in age.

But there is a silver lining. It's always nice to leave one mystery behind for the next guy.

Photo by Caitilin Brondino

So begins a life long obsession. A 9 pound, 14 ounce puff ball!

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The Northwest Mushroomers Association meets 7–9 p.m. on the second Thursdays of Apr, May, June and Sept, Oct, and Nov. Meeting location is the downtown Bellingham Public Library.

We will inform you in advance of any changes in time or venue. Fungal forays and field trips are scheduled for the Saturday after each meeting. To stay apprised of forays, events and more, please join our googlegroups email list by signing up as a member.

Membership dues are $15 for families and individuals and $10 for students. Please make checks payable to NMA and mail "Attn: Membership" to the address above, or use Paypal online at northwestmushroomers.org/join-or-renew-membership/

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NEWSLETTER

MushRumors is published in the months of March, June, September, November, and January online at northwestmushroomers.org. Club members are encouraged to submit stories, photos, recipes, and artwork. Submissions should be made two weeks prior to the month of publication.

For newsletter content or comments, contact editor Jack Waytz above or mail to:
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Mushroom of the Month *Lentinus arcularius*

By Dick Morrison

Photo by Dick Morrison

Have you ever found the stalked polypore *Lentinus arcularius*? Well, you have if you identified your mushroom find as *Polyporus arcularius*, or *Polyporellus arcularius*, or *Favolus arcularius*, or any number of other names that this little mushroom has been given throughout its history in the scientific literature (6). The newest name change was made in 2010 based on molecular DNA studies in which the species was transferred from *Polyporus* to the related genus *Lentinus* (14). This mushroom was first named *Boletus arcularius* by the German biologist Batsch (2) in 1783. To understand how the *B. arcularius* of 1783 morphed into *L. arcularius* in 2010, we have to take a taxonomic journey, which illustrates a now often repeated story in the science of mushroom taxonomy as it has marched from the old descriptive era through the anatomical, genetic eras into the current molecular DNA era. The journey begins in Western Europe in the 18th and 19th centuries after Carl Linnaeus introduced his binomial system of classifying and naming organisms in 1753. During this time it became all the rage for explorers and naturalists to madly seek out, describe, and give scientific names to species of every kind of creature they could lay their hands on, and perceived were new to science. As a result, *L. arcularius* was the recipient of a slew of scientific names assigned to it by different authors during this period. As the 19th and 20th centuries unfolded, mushroom taxonomists began to apply more sophisticated microscopic and chemical methods to sort out and categorize mushroom groups and species that had been lumped together by the earlier taxonomic enthusiasts. It was recognized that groups or species which had been put together in the past were likely not natural fits, and changes needed to be made. The recent advent of molecular DNA methods has now allowed mushroom taxonomists to begin to uncover and reveal the genetic and phylogenetic relationships and complexity of their subjects. However, this knowledge has resulted in substantial changes to mushroom taxa not only at the level of genera and species, but also at higher levels such as orders and families. This reclassification of mushrooms and other fungi into their more natural groupings along with the plethora of new names and concepts in mushroom taxonomy has led to frustrated, even overwrought, everyday mycophiles; it also challenges applied mycology professionals, and, likely, some bona fide fungal taxonomists.

The following is a description of *L. arcularius* based on information from several sources (1, 3, 4, 5, 8, 10).

Field Characters:

Cap – 1-6 (8) cm broad, circular in outline, convex becoming depressed to vase shaped to umbilicate. Surface dry, golden brown to dark brown, azonate, often minutely scaly, margin thin, fringed with fine hairs (ciliate). Flesh thin, whitish, tough.

Pores– hexagonal to angular, relatively large, 0.5-1 (-2) mm long x 0.5-1 mm wide, radially aligned, white, turning light yellowish in age; tubes shallow, 2 (-)3 mm deep, sometimes slightly decurrent.

Stem – 2-6 cm long, 2-5 (-7) mm thick, central or slightly off-center, light to dark mottled brown, smooth to minutely scaly. Spore Print – white. Odor & Taste – odor none, taste mild. Habitat – solitary to gregarious in small groups on dead and decaying hardwoods, occasionally reported on conifers; sometimes arising from wood buried in soil. Found worldwide including subtropical regions. Common in Eastern US hardwood forests and in the Southwestern US; less common in the Western US.

Microscopic Characters:

Pileipellis – surface hyphae slender, thin walled, 1-1.5 microns diameter, with clamps.

Hyphal Structure – hyphae of two types (dimitic): generative hyphae hyaline, thin walled, 2.5-5 microns diameter, often branched, septate, clamps abundant; skeletal hyphae arboriform, thick walled, aseptate, only occasionally branched, 2-11 microns diameter. Spores – cylindric, straight to slightly curved, hyaline, smooth

walled, 5-9 (-11) x 2.5-3.0 microns. Cystidia – none.

The species name arularius is Latin for the maker of a small box, cabinet or vault, and refers to the somewhat large angular open pores of the fruiting bodies. *L. arcularius* causes a white rot of dead hardwoods, and occasionally conifers (5). Mushrooms are produced on decaying limbs, branches, twigs and other woody tissues. When the woody substrate is buried in soil the mushroom may appear terrestrial, so it is important to dig down under the fruit body to look for the stem attachment. *L. arcularius* is not considered of much economic significance to humans, unless we consider the decomposition of its woody substrates and release of nutrients and organic matter into the soil to be of value as part of the natural recycling process.

Fringed Polypore is the common name given to *L. arcularius* by Arora (1). However, in Europe this common name is applied to a different polypore species, *Polyporus ciliatus* (9), currently named *Lentinus substrictus* (6), a species found in Europe, and also reported from South America and southeast Asia. *L. arcularius* has also been called the Spring Polypore (3) because it often appears early in the spring. However, the specimens pictured in Fig. 1 were fruiting in August near desert-arid Richland, WA, under a canopy of recently irrigated cherry trees. With the recent application of water after a dry period, the mushroom apparently sensed it was spring and time to reproduce. There is no internationally accepted official system for giving common names to mushrooms as there is for scientific names. No matter the name, we might pause to consider that in spite of human efforts to label, categorize and classify it, this little polypore will continue to dutifully fulfil the role that evolution has assigned to it.

Photo by Dick Morrison

A number of species and genera in the *Polyporaceae* e. g., *Ganoderma*, *Trametes*, and *Lentinus*, are known to produce compounds of significant medicinal value which have such as antitumor, immunomodulation, antiviral, and antihyperlipidemia effects (15). These properties have apparently not been studied in *L. arcularius*.

In the PNW, Trudell and Ammirati (13) discuss four superficially similar polypore species which might be confused with *L. arcularius*: *P. badius* and *P. melanopus* (both now in the genus *Picipes*), and *P. elegans* and *P. varius* (both now in the genus *Cerioporus*). These all have very small round pores and a black crust on a portion or much of the stem. *Favolus alveolaris*, described from the Eastern US, is now recognized as a synonym of *L. arcularius*.

L. arcularius is a member of the Polyporaceae, a diverse and heterogeneous family of saprobic basidiomycete fungi which typically produce spores in a layer of tubes with open mouthed pores. The type genus of the family is *Polyporus*, which is characterized by stipitate fruiting bodies, hyphae of two different types (dimitic), smooth cylindrical basidiospores, and vegetatively produce a white rot decay of woody substrates. There has been a good deal of interest in uncovering the phylogeny of fungi in *Polyporus* and related genera. Recent studies using molecular DNA techniques (7, 11, 12), have concluded that *Polyporus* is polyphyletic in origin, i. e., has originated from more than one common ancestral lineage. One of several clades (a lineage from a single common ancestor) have been identified in *Polyporus* (11, 12). *L. arcularius* is included in the *Polyporellus* clade along with *L. brumalis*, and *L. ciliatus* (11). Although placed in this same clade, *L. arcularius* has rather large angular pores, compared to *L. brumalis* which has small rounded to angular pores, and *L. ciliatus* which has small round pores. Seelan, et al (11) in discussing the broader *Lentinus/Polyporellus* clade, which includes the *Polyporellus* clade and gilled *Lentinus* species, suggest the ancestral hymenial pore layer of these species was likely round or circular and that independent transformations to angular pores and gills evolved over time. Note that although *Lentinus* species have gills, they phylogenetically belong with the polypores, not the gilled agaric mushrooms, a demonstration of the evolutionary power of genetic plasticity in the adaptation of organisms to their environment.

Literature Cited
1. Arora, D. 1986. *Mushrooms Demystified,* 2nd Ed. Ten Speed Press, Berkeley, CA.
2. Batsch, A. J. G. K. 1783. *Elenchus Fungorum*: p. 97, Halle.
3. Bessette, A., et al. 1997. *Mushrooms of Northeastern North America*. Syracuse Univ. Press, NY.
4. Breitenbach, J., and F. Kranzlin. 1986. *Fungi of Switzerland, Vol. 2: non-gilled fungi.* Verlag Mycologia, Lucerne, Switzerland.
5. Gilbertson, R. L., and L. Ryvarden. 1987. *North American Polypores*. Gronlands Grafiske, A/S, Oslo, Norway
6. Kirk, P. (Editor). 2015. *Species Fungorum. http://www.speciesfungorum.org/Names/Names.asp*.
7. Kruger, D., et al. 2008 . *Notes on the molecular phylogeny of the 'Polyporellus' group within Polyporus: identity of collections from Canada and Ecuador, and relationships with Lentinu*s. Sydowia 60: 213-233.
8. Kuo, M. 2015. *Polyporus arcularius. Mushroom Expert. Com*: http//mushroomexpert.com/polyporus_arcularius.html.
9. O'Reilly, P. 2011. *Fascinated by Fungi*. First Nature Publishing. Wales, UK.
10. Overholts, L. O. 1967. *The Polyporaceae of the United States, Alaska and Canada.* Univ. of Michigan Press, Ann Arbor, MI.
11. Seelan, J., et al. 2015. *Phyllogenetic relationships and morphological evolution in Lentinus, Polyporus and Neofavolus, emphasizing southeastern Asian taxa.* Mycologia online at: dol:10.3582/14-084.
12. Sotome, K., et al. 2008. *Phylogenetic relationships of Polyporus and morpholgically allied genera*. Mycologia 100:603-615.
13. Trudell, S. and J. Ammirati. 2009. *Mushrooms of the Pacific Northwest*. Timber Press, Portland, OR.
14. Zmitrovich, I. V. 2010. *The taxonomical and nomenclatural characteristics of medicinal mushrooms in some genera of Polyporaceae.* Int. J. Medicinal Mushrooms 12: 87-89.
15. Zmitrovich, I. V., and A. Kovalenko. 2016. *Lentinoid and Polyporoid Fungi, Two Generic Conglomerates Containing Important Medicinal Mushrooms in Molecular Perspective.* Int. J. Medicinal Mushrooms 18: 23-38.

Identity of the Truffle in Övn's Truffle Salt

By Fred M. Rhoades

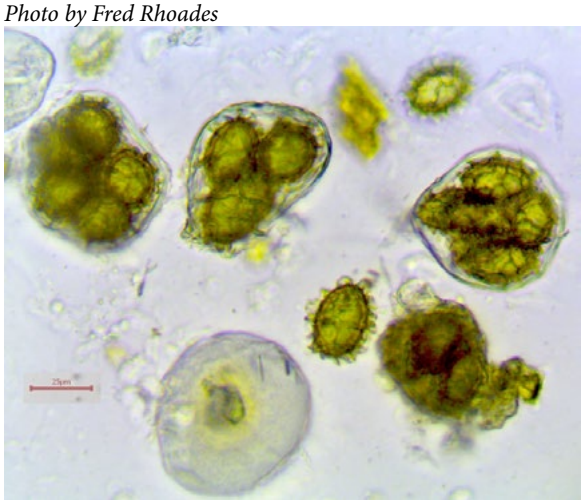
Photo by Fred Rhoades

***Tuber aestivum* for sale in Florence, Italy, July 31, 2012 (next to the octopus, of course).**

In case you are unaware, Övn is a small restaurant in Fairhaven that produces delicious hot-oven-fired pizzas and serves some of them with a small dish of truffle salt. In the salt are small black flecks and I was curious as to their identity.

Most likely it is bits of the "summer truffle," *Tuber aestivum*. This species is commonly available in Italy and elsewhere in Europe during the mid - late summer. See the photos below, the second being a microscope view of a teensy-tiny piece from one of the black bits in the truffle salt. The spores of this genus of truffle (Tuber) are very distinctive. They occur in enclosed sacks (asci) in various numbers. Each spore is covered by a network of ridges (the exact form of the ridges is somewhat species specific) and the spores vary in size depending on the number in a sack. The spores only are released from inside the truffle by being eaten by a small mammal. Dogs are now mostly used to hunt for them by smell. *Tuber aestivum* is a relatively inexpensive species.

Photo by Fred Rhoades



Spores and asci from *Tuber aestivum*? from Övn's truffle salt. 25 µm = 1/40 of a millimeter