

Amazing Interactions with Fungi, Oaks, and Woodpeckers

by Susie Holmes and August Jackson



Artwork by Emily Poole

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As you are meandering down the labyrinth of trails in the Arboretum, you are likely to meet the celebrated fungus of this year's Mushroom Festival, the oak-loving maze polypore (*Daedalea quercina*). This fungus' perennial shelflike fruiting bodies grow most often from the dead wood of Oregon white oak, the most iconic tree species of the Willamette Valley ecoregion. It produces a conk-like mushroom that persists on the substrate for years. The perennial fruiting bodies of *Daedalea* have a light tan to gray brown top and the spore-bearing surface will give you a delightful surprise if you are expecting the smoothness of a typical polypore. Instead, the light colored pore surface is arranged in elongated ridges that branch and turn to form the pattern of a maze. This morphology inspired *Daedalea's* genus name, commemorating a figure from Greek mythology, Daedalus, the architect who built the labyrinth that trapped the Minotaur.

Beyond *Daedalea's* fun connection to myth, there are other cultural references of the usefulness of this fungus and research has revealed that it contains unique biochemistry. It is reported that its corky

texture and comblike pore surface make it a useful tool for brushing down horses. Additionally, it has been used to anesthetize bees with smoke from the smoldering conks. A 2019 study on the antimicrobial properties of this fungus revealed that it inhibits the growth of several bacterial types including *Escherichia coli* and *Staphylococcus* species. Research has also shown that it contains biochemical compounds with unique lignin-degrading properties and anti-inflammatory activities.

The distribution of the oak-loving maze polypore follows the spatial range of oaks worldwide, causing a brown heart rot in its host. This host preference is reflected in the epithet of the scientific name, *quercina* (*Quercus* is the genus for oaks). *Daedalea* is reported to grow from a few other hardwood species such as American beeches,

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ash, white elm and black walnut, although these tree species are not native to nor are these interactions documented in our area. When discussing the local abundance of this fungus with other local mycologists who have been observing fungi in our area for decades, most agree that its numbers seem to have increased in the last twenty years. It's a challenge to describe what the driving force behind this increased abundance is but a local population study would help address the question of whether the oaks are weakened by pressures that make them more susceptible to infection or what other ecological processes are occuring. When searching for records of this species in national herbaria, only 2 collections can be found from Oregon and these date from 1997 and 2018. Students in the mushroom biology classes at LCC have been observing the species every year in fungal diversity studies from forest plots on campus since 2011. Regardless of how and why this fungus has increased, there is value for other species when oak limbs and trunks expire. Species such as the Acorn Woodpecker benefit from the dead wood left behind by *Daedalea* and other pathogens.

Acorn Woodpeckers (*Melanerpes formicivorus*) are iconic denizens of oak and mixed oak-conifer woodlands from Western North America south to Colombia. The lives of these charismatic woodpeckers are intimately tied to the cycles of oak trees, which provide them with a critical winter food source in the form of acorns. Their reliance on oak trees has molded their strong site fidelity and spurred the evolution of some very unique behaviors.

While most woodpeckers lead relatively solitary lives, Acorn Woodpeckers are strongly colonial, with colonies maintaining territories that may last for generations. These territories are centered around granary trees in which they may drill tens of thousands of holes for storing acorns. Management of these granary trees is cooperative, with each colony member participating in the drilling of new holes, harvesting of acorns, and guarding of the granary. Holes are drilled to provide each acorn with a snug fit so they cannot be easily stolen by jays or squirrels. Tending to the acorns becomes an important task as they shrink during storage and need to be moved to smaller holes. Though acorns play a crucial role in their diet, particularly during winter, they prefer to feed on invertebrates and their specific epithet *formicivorus* translates literally to "ant-eater."

Breeding among Acorn Woodpeckers is also cooperative, and exceedingly complex. Some adults in a colony are not engaged in breeding and instead help with raising young and bear more responsibility for granary maintenance. Among breeding adults, females ensure shared parentage and prevent the emergence of dominant mating pairs through the collaborative destruction of one another's eggs.

Though strictly colonial, Acorn Woodpeckers disperse from time to time in search of food or breeding opportunities in other colonies. Acorn Woodpecker populations in the Eugene-Springfield area appear to have increased considerably within the last several years—an observation supported both by eBird data and by consultations with local birders. Within only the past few years, new colonies have been established at Dorris Ranch in Springfield, Wayne Morse Park in Eugene, and on the southeast side of Mount Pisgah. As with *Daedalea*, it is unclear why Acorn Woodpecker numbers may be increasing locally, but it is a good sign for the integrity of our oak habitats.

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Mount Pisgah Arboretum is a nonprofit organization with a mission to engage people with nature through interactive learning and stewardship.

Mount Pisgah Arboretum is located on the traditional homelands of the Kalapuya people. The Kalapuya people were forcibly dispossessed of their homeland and moved to reservations in western Oregon by the United States government following treaties in the 1850's. Today the Kalapuya people are largely citizens of the Confederated Tribes of Grand Ronde and the Confederated Tribes of Siletz Indians. We acknowledge that the Arboretum is on occupied lands, and express our respect for the Kalapuya. We humbly honor their past, present, and future, and are committed to finding meaningful ways to recognize their enduring legacy in the region.

Mushroom Festival!



Artwork by Emily Poole

Sunday, October 30th 10AM-5PM

ADVANCE TICKETS REQUIRED

- A Huge Mushroom exhibit where you can learn about hundreds of local species!
- Edible and Poisonous Mushrooms Display
- Live Music
- Guided Nature Walks by local naturalists
- Mushroom Vendors
- Local foods, arts, and crafts
- Cider pressing and scarecrows

For more info and tickets, visit: https://bit.ly/3UIKTeK

Presented by:
Mount Pisgah Arboretum
Cascade Mycological Society
Lane Community College

Education Report

by Sara Spoden, Education Manager

Jumping into summer programs has been exhilarating as the new Education

Manager here at the Arboretum. It has been wonderful to meet families and Summer Club kiddos, many of whom are returnees to our programs. We were happy to have welcomed a total of 230 kids into our summer club: a 3-hour program where we explore different nature-based topics along the trails. From river explorations to learning how to navigate with a compass, our groups built many



Photo by August Jackson

new skills and made long lasting connections. Whole Earth Nature School and Nearby Nature were also on site this summer, which provided more day camp opportunities for kids to connect with the natural world.

Thanks to a CATCH grant from the American Academy of Pediatrics and additional funds from Oregon Association of Education Service Districts, this was our first summer working alongside the Migrant Education Program. Together 11 local high school students were trained to lead bilingual nature walks for local youth. We plan to continue these walks for families and groups into the fall and winter.

We are eager to continue our educational programs with the return of school field trips. We will explore all that the season brings: how animals and plants prepare for winter, decomposition, and seasonal shifts in our environment. We look forward to working with Nature Guide volunteers who lead many of our school field trips and provide the necessary support for our education department!

Site Report

By Patrick Wegner, Habitat and Trails Manager

Spring rains brought the Arboretum a beautiful show of summer wildflowers. Now, the green meadows have turned gold and camas seeds fall from wispy pods. White oak seedlings dot the meadows and new fawns have lost their spots. After two years of generally smokey summers, relatively good air quality brought many people to enjoy the trails and swim in the river.

Staff and volunteers have been hard at work. Summer projects have included a new finish on the White Oak Pavilion floor, drainage improvements to the Riverbank Trail, and necessary maintenance to our tractors and mowers. Work parties created a new lumber rack at the barn and bluebird nest boxes for our meadows.

One of the many joys of working at the Arboretum is helping with the education

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programs. At the Arboretum Summer Club we helped students learn about our ecosystems, and through the Migrant Education Program we saw a group of high schoolers become bilingual walk leaders. Whole Earth Nature School helped us with service projects including sheet mulching the Patricia Baker Wildflower Garden and removing invasive plants.

As dry weather eases and rain softens the ground, site staff are starting trail work. University of Oregon student, Liza Holtz, mapped our trails to show barriers to accessibility. Now, with a grant from the Oregon Conservation and Recreation Fund and in collaboration with local disability advocacy groups, we will be improving trails to provide universal and barrier free access to park visitors. The Riverbank Trail, Great Meadow Road, and Water Garden will all see improvements to meet universal access standards. This work will create two loops to better meet the needs of visitors with disabilities.

Your help makes everything possible! Thank you and we look forward to seeing you out on the trails.

Supporting Our Parks

By Brad van Appel, Executive Director

On the November ballot this year, voters will be asked to support a five-year local option levy to help fund Lane County Parks. The Mount Pisgah Arboretum Board of Directors has endorsed this measure.

Lane County parks have been underfunded for years, resulting in a growing backlog of deferred maintenance and countless missed opportunities to better serve the community and the land. The Parks Department receives no money from the County's general fund, and other funding sources have proven to be inadequate. This measure would add less than \$40 a year to the property tax of the average Lane County household, but would make a huge difference for our parks and for future generations.

Mount Pisgah Arboretum and the Friends of Buford Park & Mt Pisgah have long partnered with Lane County Parks to stretch their limited resources by securing grants and individual donations, and engaging the community in thousands of hours of volunteer service at Lane County's largest park. These partnerships will continue to ensure that levy funds are leveraged to maximize benefits to the community. Among other things, this measure will support nature education for children and engaging underserved communities in our parks, including right here at Mount Pisgah Arboretum

Previous generations made substantial investments in our parks and natural areas. Thanks to those investments, we now enjoy a variety of beautiful, engaging, and ecologically diverse parks. Like anything of value, the County's investment in parks requires an ongoing commitment of care.

You can find out more about the ballot measure, make a personal or organizational endorsement, or contribute to the campaign at www.yesforlanecountyparks.org. We hope you'll vote yes, and ask all your friends to do so as well.



Photo by Patrick Wegner

Volunteers constructing bluebird nest boxes for placement in the Arboretum.



Photo by August Jackson

Silo and oak savanna along the Meadow Rd. at Mount Pisgah Arboretum.



Photo by Alma Lopez

A bilingual walk with the Migrant Education Program.

iNaturalist Mycoblitz!



Upload your photo observations of fungi in Lane County to iNaturalist from October 20th-October 29th. Your photos will be identified by experts, and these observations will augment the mushroom display for this vear's Festival! Check out the project here: bit.ly/3Si43Xt



Photos by August Jackson

Welcoming New Team Members

By Brad van Appel, Executive Director

The last few months have brought some new faces and new roles to the Arboretum staff. In the spring our Venue Manager, Leisha Wood took on a new position as the Arboretum's Development and Communications Coordinator. As with most small organizations, our staff all wear a lot of hats. Leisha has supported the Arboretum in a variety of ways since joining the team five and a half years ago, but her super power is people skills. Our members can expect to be hearing more from Leisha in the future.

Replacing Leisha as Venue Manager is B. Rothweiler. B. came to us with a strong background in professional customer service for very discerning clientele. She's demonstrated an exceptional attention to detail and done an amazing job through her first events season with the Arboretum.

Jenny Laxton was the Arboretum's much beloved Education Manager for eight and a half years. She and her family moved to Corvallis this summer, and we will miss her creative spirit and dedication.

We were pleased to welcome our new Education Manager, Sara Spoden in July. Sara brings a passion for environmental education and more than eight years of experience teaching about nature and engaging volunteers for environmental nonprofit organizations on both the east and west coasts.

After finishing a degree in accounting, Julie Hubbard, our bookkeeper of nine years, took a professional position with a local accounting firm this summer. Julie was an incredible asset to the organization, and someone we will all miss working with.

We were very fortunate to find Olivia Kasama to step into the bookkeeper position. Olivia has been bookkeeping professionally for nine years and studied accounting at Lane Community College. She has a strong interest in botany and conservation, and brings the potential for many new community connections.







Sara Spoden



Olivia Kasama

Contributions

April 1st, 2022 to August 31st, 2022

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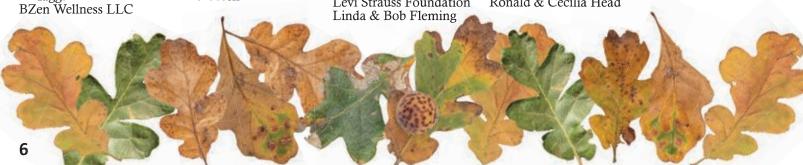
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