

LEEPfrog



The Newsletter of the
Lutherlyn Environmental Education Program

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The “Wood Wide Web” by Holly Schubert



If someone asked you to picture a tree, your mind would probably produce images of leaves, twigs, branches, a trunk - and maybe also roots. We can sometimes see large gnarled roots near the surface. If you have a good imagination you can envision the vast expanse of ever-smaller roots spreading out underneath each tree. The parts of trees that are underground, usually invisible to us, are immense and incredibly important, but the trees' roots are connected to something perhaps just as important as their own roots.

A vast network of thin threads of fungus called mycelium grows within the root systems of trees. The mycelium use some of the excess sugar produced by the trees to grow and at the same time they provide the trees with nutrients absorbed from the soil. This vast web is called the mycorrhizal network, and it is intricately interconnected with the roots of trees growing in the forest. This network is sometimes also called the Wood Wide Web.

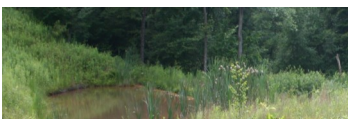
The networks of mycorrhiza extend from one tree's roots to the roots of other trees around it, connecting the trees in the forest together. The trees provide benefits to the fungus, and the fungus provides benefits to the trees. But the mycorrhizal network also allows the connected trees to communicate and help each other.

The idea that trees would work together goes against the conventional wisdom that trees are in constant competition for resources such as water, sunlight, and nutrients. Researchers began seeing evidence that this was not the whole story. During the 1990's, Suzanne Simard, a forestry researcher in British Columbia, demonstrated that unique isotopes added to only one tree in a forest plot ended up in neighboring trees, showing that resources inside one tree get passed to other nearby trees.



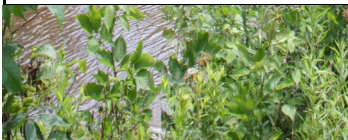
Further research has determined that chemical signals from trees get passed along the pathways provided by the mycorrhizal network. These signals trigger actions among the connected trees: to release and share resources, to draw on resources available, to grow or slow growth, to activate protective chemicals in

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the presence of a threat, and so on. The mycorrhizal network provides both a means for communication between trees and a means for sharing resources. It is an underground communication network that also allows trees to exchange water and nutrients, nurture seedlings, and even send warning signals.

In these networks, some trees have more resources and more connections than others. They are known as hub trees or mother trees. These trees tend to be the oldest and tallest in the area and have the greatest access to sunlight, which allows them to produce more sugar than they need. Trees that have extra resources are able to share their surplus through the mycorrhizal network and help nearby trees to thrive. Trees that are struggling and need more resources can draw upon this extra through the network. Hub trees also have the densest network of connections with surrounding trees. Identifying and protecting hub trees may be an important way to nurture the health of forests; hub trees keep the

whole forest healthier!

People have often felt a sense of connectedness when in forests. Thanks to Simard’s research on mycorrhizal networks, there is a growing public understanding that interconnectedness is a fundamental reality between the trees that we see and the intricate web of mycorrhiza that flourishes below the soil’s surface.

Project Update: Universal Access Trail by *Todd Garcia-Bish*



The marsh at the top of Miller (Upper) Lake is an educational destination for hundreds of students each year. The trail to get there has been used since LEEP’s inception in 1989. The large amount of foot traffic and the lack of drainage have made the trail a constant challenge to maintain. For many years, plank boardwalks were used to help students traverse the multitude of messy, muddy areas in the trail. Unfortunately, this type of trail is not accessible to those on crutches, in wheelchairs, or with balance issues.

To rectify this situation, Lutherlyn worked with Penn Trails, LLC of Carlisle to plan and begin construction of a trail to the marsh that would be accessible to many more of our students and to more people in general. The first fifty feet of gravel and first twelve-foot boardwalk were constructed in the fall of 2018. Since that time, 319 feet of gravel trail and 22 boardwalks have been built through generous contributions, and the work of volunteer groups

and Thrivent Action Teams. The trail is now over 50% completed and we anticipate that the trail will reach the marsh in 2025.

Adjacent to the marsh at the top of Miller Lake has been an outdoor classroom area containing several benches. Alex Miller, from Boy Scout Troop 115 in Penn Hills, took on the task of upgrading the classroom area and making it more accessible, as his Eagle Scout project. Alex worked hard organizing, designing, and executing his project. The result is a fabulous new area that will be attached to the universal access trail and provide a wonderful learning space for hundreds of students each year.





Terra Dei Homestead: Sweet Partners - Honeybees @ Lutherlyn

by Holly Schubert

There's a lot to love about honeybees. They are fascinating creatures with intricate lives of productivity and communal effort, and they bring us the sweetness of honey. Caring for honeybees can be a way of caring for the earth.

Honeybees are essential pollinators, especially of agricultural and domestic plants. Honeybees increase the productivity of about 75% of food crops, and are especially important to fruits, nuts, and berries. In recent years, die-off of honeybee hives has increased, making nurturing healthy honeybee populations even more important. (Wild native species of bees are important pollinators in the wider ecosystem, too.)

Several years ago Pastor Nathaneil Christman, who had begun beekeeping as part of Oak Grove Lutheran Church's community gardens ministry, started giving presentations about honeybees during Lutherlyn's summer camps. He used a mobile demonstration hive to give campers a



glimpse into the lives of these fascinating and important creatures.

In spring of 2021, Pr. Nathaneil and fellow beekeeper Christian Schaffer established 4 hives here at Lutherlyn in order to share the benefits of honeybees with Lutherlyn. While we have had a honeybee hive behind the house at Terra Dei Homestead in the past, it had been many years since the hive was active and had someone to care for it. Rather than place the new hives at Terra Dei, the beekeepers decided on a spot away from the main activities of camp.

While it may feel a little disappointing that Lutherlyn guests can't visit the bee hives, it is for the safety of both guests and the bees. Honeybees are territorial, and they

work together to protect their hives from perceived threats. Beekeepers have developed ways to protect themselves and not be perceived as threats, but campers and other visitors are less predictable! They may trigger the bees' threat response without meaning to and risk getting stung. So a demonstration hive is best for observing and learning, and active producing hives are best kept separate from visitors.

After being established in the spring of 2021, the hives produced honey in their first year - just enough for us to have a little taste! Bees need their honey to survive when the hives are first being established, so

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Register now for summer camp
at Lutherlyn!

www.lutherlyn.com/summer



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Contact us: Lutherlyn Environmental Education Program, Box 355, Prospect, PA 16052
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LEEP Public Programs: Saturday Safaris

Lutherlyn Saturday Safaris are a great way to spend part of a Saturday! They are designed for groups and families of all sizes and shapes. Safaris are \$10.00 per person and all of the programs involve outdoor adventures! Please check LEEP's website (www.lutherlyn.com/EE) or contact the LEEP office for more information.



- **September 9, 2023** - Intro to Mushrooms and Edible Plants, 9:30-12:00
- **November 4, 2023** - Archaeology and the Venango Trail, 9:30-12:00
- **February 3, 2024** - Birdhouse Building, 9:30-12:00
- **March 2, 2024**- Maple Sugaring, 9:30-12:00 or 1:00-3:30

Sweet Partners (cont'd from page 3)

we left most of the first summer's honey for the bees. We were delighted that all four hives survived their first winter!

In 2022, Christian Schaffer took over the care and maintenance of the hives. The first batches of honey were harvested in 2022. It is sweet and delicious, and feels a little like eating a concentrated spoonful of summer sunshine! When the honey is harvested, Lutherlyn gets to keep enough to use here in the dining hall, and Christian sells the rest through Honey So Good Apiary.

We are grateful to have these sweet partners nurturing the land at Lutherlyn!



Saturday, May 13, 2023

Join us for a day of FUN that highlights all that Lutherlyn has to offer.

The best part.... EVERYTHING IS FREE!