SPORE ADDICT TIMES

The Newsletter of the Pike's Peak Mycological Society 1974-2018 Vol. XLV May 2018 Issue 2

Our President Mike Essam taking a blissful nap on a pillow of lionsmane mushroom at Outer Fungolia

PRESIDENT'S NOTES

Well, its been somewhat of a lackluster start to our mushroom season in the Pikes Peak region. There are a few out there though, as evidenced by member reports, but nothing in abundance. Venture north toward Denver (and more moisture) and numerous reports of morels and oysters. They will come with the rain. PPMS leadership members are actively scouting so our first foray can be a great learning experience. In the meantime, I look forward to Dr. Andrew Wilson's lecture this Monday, May 21st, covering the MycoFlora Project and collecting specimens for the herbarium. Our June TBD meeting is now set with a speaker, local mushroom cultivator, Steve Facello of Fungolia Farms in Fountain will talk to us about his experiences growing mushrooms, share some cultivation tips, and rumor has it locally grown mushrooms will be shared with members. Don't miss it. Until then wish for moisture from the sky and I look forward to seeing you all on Monday.

Sincerely,

Mike Essam, President

PIKES PEAK MYCOLOGICAL SOCIETY

CONTENTS:

2018 PPMS OFFICERS:

President	Mike Essam
Vice -President	Ben Kinsley
Treasure	Jessica Langley
Secretary	Jennifer Bell
Hospitality	TBA
Foray Coordinator	TBA
Newsletter Editor	Brian Barzee
Webmaster	Ben Kinsley
Herbariaum Liazon	Ed Elzarian

NEXT MEETING:

WHEN? - June, 25th
(Usually the 4th Monday of the month)

WHAT TIME? - 6:00 PM
The meeting will come to order at 6:30 pm.

WHERE? - Penrose Library
Carnegie Reading Room
20 N. Cascade Ave.
Colorado Springs, CO
80903

NEW WEBSITE!!
www.pikespeakmyc.org

CONTACT
info@pikespeakmyc.org

PROGRAM:
Collecting for the Herbarium and Mycoflora project.

Submissions for the next issue of Spore Addict must reach the editor, by June 10.

email to: editor@pikespeakmyc.org

2018 UPCOMING EVENTS

Monday, June 25 @ 6:30pm
Lecture: Fungolia Farms, Producing Gourmet Mushrooms
Location: Penrose Library, Aspen Room
20 N Cascade Ave, Colorado Springs, CO 80903

Monday, July 23 @ 6:30pm
Lecture: Medicinal Mushrooms and Personal Health, Eddie Elzarian, PPMS
Location: Penrose Library, Aspen Room
20 N Cascade Ave, Colorado Springs, CO 80903

Monday, August 17 @ 6:30pm
*note 3rd Monday of the month
Lecture: Britt Bunyard, Editor and Publisher of Fungi Magazine
Location: Penrose Library, Aspen Room
20 N Cascade Ave, Colorado Springs, CO 80903

Monday, September 24 @ 6:30pm
Lecture: Papermaking with Fungi, Jessica Langley, PPMS Treasurer
Location: TBA

Monday, October 22 @ 6:30pm
PPMS Potluck Dinner
Location: TBA

CLUB NEWS

2018 DUES are due!

Membership Renewals are due! Please remember while meetings are open to the general public, access to our identification services, this very news letter, valuable hands on forays, and last but not least attendence of our annual potluck/gourmet food dinner, are all limited to current members.

Plus we need your membership for support!

We changed the membership fees a tiny bit, adding new options for Individuals and Families. We also added a LIFETIME membership option!

New membership options:

Individual Membership: $25.00
Individual Membership + printed newsletter by mail: $30.00
Family Membership: $30.00
Family Membership + printed newsletter by mail: $35.00
Lifetime Individual Membership: $250.00
Lifetime Family Membership: $300.00

To Pay Online via PayPal: http://pikespeakmyc.org/join/

Send renewal checks to:
Treasurer c/o Jessica Langley
Pikes Peak Mycological Society
1010 N. Logan Ave.
Colorado Springs, CO 80909

Please make checks payable to PPMS.

Officers have new email addresses!

Mike Essam, President: president@pikespeakmyc.org
Ben Kinsley, Vice President: vicepresident@pikespeakmyc.org
Jennifer Bell, Secretary - info@pikespeakmyc.org
Jessica Langley, Treasurer - treasurer@pikespeakmyc.org
Eddie Elzarian, Newsletter Editor - editor@pikespeakmyc.org

We have a new website!

www.pikespeakmyc.org.

Please note, as you may have noticed our old website, unfortunately was bought by someone not affiliated with the club. They have stolen our info, and the site is appearing in searches. Do to our collective efforts we have won the cyber battle and our new site is the top google search result of the query "Pikes Peak Mycology." **Please update your bookmarks and direct any and all interested parties to our new website url: www.pikespeakmyc.org

ON THE ROAD TO NATIONALS

Last September, I was lucky enough to get a space at the 2017 NAMA National Foray. The NAMA National Foray moves all around the country, and is in a different location each year. It is a great chance to see different habitats, and learn a bunch of new species of fungi. Most, unframiliar to us here Colorado, along with the trees and soil types which are also different.

The 2017 NAMA location was held in Wisconsin's North Woods at Lake Namakagon, outside of Cable, Wisconsin. North Woods, are made up of mostlyMaples and Oaks and Birch trees, none of which are Colorado species. Near the Southwest side of Lake Superior, it rains in summer and fall, big winter snows insure a bountiful harvest of fungal life, most diverse. Our most gracious host and site location for this gathering was the Lake Woods Resort. It was a beautiful choice, on the shore, with all the amenities necessary for a glorious four day myco event of national proportions.

Piptoporus betulina

Tom Volk, U of Wisconsin, LaCrosse examines first collection tables.

Directed by our friend Britt Bunyard, the organizer of the Telluride Mushroom Festival and our guest speaker this coming August, this years NAMA was pulled off without a single hitch. He assembled a fantastic collection of Myco leaders, professors, and amateurs alike. Meals were well received, and many were fed in a cafeteria style setup with to much food to eat. In the evenings beer was flowing free from the donations of the Wisconsin and Minnesota

The crowd awaits the lecture of a lifetime, from Dr Michael Beug

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MEMBERS CHECKLIST:

Is your email & phone number up to date?

Send contact info to: Jessica
treasurer@pikespeakmyc.com

Have you paid your DUES?

If not, please send to:
Jessica Langley
1010 N. Logan Ave.
Colorado Springs, CO 80909

Care to Volunteer?

Reach out to: Mike Essam
president@pikespeakmyc.org

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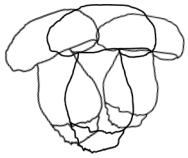
Pholiota squarrosa

clubs. And on one night, it was worth the wait to stay up and drink as much as one could to see an appearance of the "Northern Lights", as the aurora borealis danced on the skies just above the waters of the big lake, visible from the decks outside the bar area, a spectacular treat for a Coloradoan.

Hericium erinaceous

Foray locations included islands, moss covered deep woods, and lakeside areas. The mushrooms treated us to their presence everywhere up there. In all somewhere near 500 species were identified and registered, an all time record for most found at a NAMA event. For me personally it was the polypores! So many new and bucketlist finds, including Piptoporus betulina, Fomes fomentarius, and Fomitopsis igniarius Ötzi the Ice Man's fungi.

-Brian Barzee



Fungolia Farms Is Growing Top Quality Gourmet Mushrooms

Steve Facello smilling next to a beautyful flush of King Oysters

VISIT TO OUTER FUNGOLIA

In a world where good quality gourmet mushrooms are really hard to find, Fungolia Farms to the rescue. Austin Schaffer and Steve Facello have opened up shop at farmers markets, and myceliated there way into some of the best restaurants in the Colorado Springs area. After researching different markets around the country they decided on the front range, because of it's great farmers markets and massive gourmet mushroom void. They hit the ground running upon arrival last spring, bringing 15 years of fungal cultivation, wisdom and know-how, to Fountain when they moved from West Virginia creating, Outer Fungolia, their mushroom farm. They plan on being a mainstay at the Cherry Creek Market in Denver every Wednesday from nine to one and Saturday from eight to one, and will be looking for a second market in the south Denver metro area to frequent. Marigold, The Famous Steak House, Till, The Cliff House in Manitou Springs, and Four by Brother Luck, all currently feature Fungolia Farms mushrooms on their menus.

They are currently Producing some classic gourmet mushroom species utilizing strains with excellent genetics. Their Hericium Erinaceus(traditional lions main mushroom) yields great weight with an aesthetic appearance like it is naturally growing on dead wood in the wild, which isn't always the way it looks at the grocery store, that is for those of us who actually search long enough to find it. They grow king trumpet and regular blue oyster species of Pleurotus which have nice proportions' as they are grown in an ideal microclimate that coaxes out the full beauty of their genetic form. They are also increasing Shiitake and dabbling in a little Agrocybe agerita(Chestnut mushroom) production. They sell mushroom kits in the form of myceliated gallon size supplemented wood blocks, innoculated with your choice of species. If interested contact Steve at (719)357-2172. You can also find them on instagram with @fungoliafarms.

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Fungolia uses a traditional process of mushroom production, in which they first fill plastic filter patch bags with a mixture of carefully hydrated woodstove heating pellets and other nutrient rich supplements. The next step is a unique process of low temp sterilization, cooking the bags at our high elevation boiling point for 24 hours outside in an extra large drum. The bags of shroom food are then brought into the innoculation room where they use a laminar flow of hepa .3 micron filtered air to create a sterile environment for innoculation of each bag with a small amount of spawn. With so much cul-

Mike is really impressed as Steve shows of his flow hood

tivation experience, the farm has some really neat little innovations. If you look close the flow hood has it's filter on the celeing forcing the air straight down over the workspace as opposed to the traditional flow from back to front. This makes it a little easier when filling sterile bags because the veritcal flow allows for movement around the bag while still keeping the air above its opening sterile.

The innoculated sealed bags are then ready for the incubation stage. Durring this stage the fungi completely colonize the subtrate in the bags. It requires

Pleurotus eryngii(Homo sapien in the bokeh)

large sterilization drum full of sterilized substrate bags

an environment with a consistent warm temperature. Colorado does not provide this naturally, consequently the farm was forced to incubate inside, filling up the house. Mike mentioned something about the shelving and steve said, "My friends like to call me the shelf man, ha ha." With the warming weather the farm has built some spots for incubating in their barn granting them more livable space for the summer.

What comes next after incubation you might ask? Why fruiting silly. Once the mycelium has run out of food, the incubation period has ended and it is

A rack of recently innoculated spawn next to Mercades Whitman

ready to reproduce. This is known as fruiting, and the fruiting room at Fungolia Farms is heaven for a fungiphile. When a patch of mycelium has a vigorus fruiting, producing many mature fruit bodies, it is known as a healthy flush. You gotta think as a farmer you would want consistent healthy flushes. That is exactly what they end up with, and since this is a publication by and for fungiphiles, the next few pages are devoted to great looking Fungolia Farms fungi. -Ed Elzarian

Hericium erinaceus

Pleurotus eryngii

Pleurotus ostreatus

Pleurotus ostreatus

Pleurotus ostreatus

If you love the way these fungi look, make sure you come to next months meeting where Fungolia Farms will be presenting. The meeting will take place on June 25 at 6:30 at the Penrose Library in downtown Colorado Springs.

Pleurotus ostreatus

Lentinus edodes

FROM THE WEB:

Genetic analysis finds leafcutter ants originated in South America

Pulled From www.sciencedaily.com

Date: May 9, 2018
Source: Rice University

Like humans, leafcutter ants grow crops, and like humans, farming allows the ants to produce enough food to support millions of individuals who work at specialized jobs. But while people invented agriculture at the dawn of civilization about 10,000 years ago, leafcutters began cultivating massive subterranean fungus gardens more than 10 million years ago.

In a study published this week in Molecular Ecology, biologists from Rice University, the University of Texas at Austin (UT Austin) and Brazil's São Paulo State University analyzed genetic data from samples collected at leafcutter nests throughout South, Central and North America and concluded that the ants originated in South America and owe their success to something more than their choice of crops.

"The ability to grow domesticated crops was a major turning point in human history and evolution, and we thought, until recently, that a similar thing was true for leafcutters," said study co-author Scott Solomon, an evolutionary biologist at Rice who collected many of the study's samples as a graduate student and postdoctoral researcher at UT Austin and the Smithsonian Institution in Washington, D.C. "Our findings suggest that several of the things we thought we 'knew' about leafcutters are not true."

The research, led by co-author Ulrich Mueller, Solomon's longtime UT collaborator and mentor, is available in both the newly published paper and a 2017 companion study, also published in Molecular Ecology.

"This study started 20 years ago as a collaboration between Brazilian and Texan labs and developed into a huge collaboration involving 22 labs surveying leafcutter ants in 17 countries," said Mueller, the William Morton Wheeler-Lost Pines Professor in UT Austin's Department of Integrative Biology. "Because of this international effort, we now have a comprehensive understanding of leafcutter ecology and evolution."

leafcutter ants

leafcutter ants
Credit: Brandon Martin/Rice University

Leafcutter ants are found only in the Americas. More than 40 species range from Argentina to the southern United States, and they are a dominant ecological player in any forest or grassland they inhabit.

"They aren't the only ants that grow fungi, but if you compare leafcutter ants with other ants that grow fungi, there are many differences," Mueller said. "For starters, no other ants use freshly cut leaves to grow their fungi."

Ants that grow fungus on dead and decaying leaves have been around even longer than leafcutters, probably about 50 million years, Solomon said. But leafcutters' ability to use living leaves was a quantum leap in evolutionary terms because it opened up the entire ecosystem. For example, Solomon said, the ability to consume plant matter they cannot directly digest allows a nest of leafcutters to consume about as much vegetation each year as a full-grown cow.

"Once you can use fresh leaves, it gives you access to so much more food," Solomon said. "If you can grow and raise your crop on any leaf that's growing out there, then the sky's the limit."

In comparison with other fungus-growing ants, leafcutter colonies are enormous, Solomon said. "They're on the order of millions of individuals. Some leafcutter colonies are so large that they show up on photos taken by satellites in space."

Leafcutters also have specialized tasks. Individual worker ants come in different sizes, and they have different jobs.

"Some are specialized on raising the young," Solomon said. "Others are specialized on removing weeds and disease inside the nest. Others are specialized on going out and finding food,

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RECIPES:

This months recipe is a great spring simple gourmet preperation of asparagus and morels, which we just may be able to take advantage of this yet if the morel season hangs on. We will just have to see what the rain brings.

This recipe comes from a great book titled "Mastering Simplicity" by Christian Delouvrier. This book is great for anyone that would like to prepare gourmet meals but find them intimidating.

can you find the Morchella?

ingredients:

8 to 10 jumbo stalks green asparagus

1/4 cup light olive oil

3 tabtespoons unsalted butter

5 shallots, peeled and finely diced

3 tablespoons chopped fresh flat-leaf parsley

Coarse salt to taste

Freshly ground pepper to taste

16 morels, cleaned

1/4 cup crème fraîche

Directions:

1. Cut off the hard white bottom from each asparagus stalk, leaving a stalk about 5 to 6 inches long. Using a vegetable peeler, peel off the tough outer skin, taking care not to remove too much of the flesh.

Morchella from Virginia

2. Bring a large pot of salted water to a boil over high heat Add the asparagus and cook for about 4 minutes or until al dente. Drain well and refresh under cold running water. Pat dry.

3. Heat the olive oil in a saute pan over medium high heat. Add the asparagus and saute for about 4 minutes or until they are a golden brown color on all sides. Remove the pan from the heat and drain off all of the oil. Add 1 tablespoon of the butter and half of the shallots and parsley and stir to combine. Season with salt and pepper to taste. Transfer to a serving platter and tent lightly with aluminum foil to keep warm.

4 Place the same saute pan over medium heat Add the remaining 2 tablespoons of butter and heat for 3 minutes or until it begins to foam. Add the morels and season with salt and pepper to taste. Saute for 5 minutes or until just soft. Stir in the remaining shallots and parsley along with the crème fraîche. Remove from the heat.

5 Remove the foil from the asparagus. Fan out the asparagus *au flute* on the platter and spoon the morels over the top. Serve warm.

Selected by -Ed Elzarian

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and yet others are specialized on defending the colony.

"All of the specialization is unique to the leafcutters," he said. "With other fungus-growing ants, the workers are basically interchangeable. They don't have these specialized tasks.

"One of the long-held truths of our field was that leafcutters grow a special and unique kind of fungus that no other ant could grow," Solomon said. "It was thought that something about that unique crop allowed them to do these things that other fungus-growing ants couldn't do."

The new studies, which are the first to analyze the genes of fungi from hundreds of leafcutter colonies across the Americas, found instances where other ants grew the specialized "leafcutter-only" fungus, as well as instances where leafcutters grew more generic fungal crops.

"It's not the crop that makes them special," Mueller said. "We found that leafcutter ants and their fungi have co-evolved, and while that's not a surprise, the evidence suggests that this co-evolution occurred in a more complex way than previously believed.

"For example, we found that the type of fungi that was long thought to be unique to leafcutters can be grown by other ants on dead plant material," he said. "In one case, it'll be grown on fresh vegetation, and in another case, it won't."

Atta colombica workers transporting leaves
Credit: Bandwagonman at English Wikipedia CC BY-SA 3.0

Solomon said, "The question is what gives this fungus the ability to digest freshly cut leaves? It's not something that is inherent in the fungus. There seems to be something about the way the leafcutter ants are cultivating the fungus that gives it that ability."

Solomon began collecting leaf-cutting ants and their fungi in Central America in 2002 as a graduate student in Mueller's lab. In 2007 Solomon expanded his work, thanks to a National Science Foundation (NSF) international postdoctoral fellowship that allowed him to spend a year working with study co-author Mauricio Bacci Jr. at São Paulo State University in Rio Claro, Brazil. Solomon's samples and dozens of others gathered over the years by Mueller's and Bacci's teams allowed the researchers to pinpoint the origin of leafcutters to South America, probably in the grassland plains of what is now southern Brazil and Argentina, Solomon said.

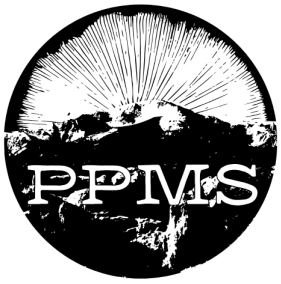
"We sampled tons of different nests of leafcutter ant species throughout the entire range of all leafcutters, which goes from Texas in the extreme north down to Argentina," Solomon said. "What's novel about our approach is how much sampling there was, particularly in South America. In the past, there has been a lot of sampling, but it was focused in just a few different regions, particularly in Costa Rica and Panama.

"It turns out the leafcutters in those places don't represent species that live elsewhere," he said. "By going and sampling in other places, especially in the open grasslands of southern Brazil, Paraguay and northern Argentina, we were able to show that the greatest genetic diversity of leafcutter fungi is in South America. Usually, wherever there's the greatest genetic diversity is where a group originated. That is true for humans, and that's just generally true of other species, and that leads us to believe the leafcutters originated in the grasslands of South America."

Mueller said, "The study illustrates the importance in science of re-evaluating entrenched assumptions, amassing large data sets and collaborating internationally before reaching conclusions."

Journal Reference:

Ulrich G. Mueller, Melissa R. Kardish, Heather D. Ishak, April M. Wright, Scott E. Solomon, Sofia M. Bruschi, Alexis L. Carlson, Maurício Bacci. Phylogenetic patterns of ant-fungus associations indicate that farming strategies, not only a superior fungal cultivar, explain the ecological success of leafcutter ants. Molecular Ecology, 2018; DOI: 10.1111/mec.14588



PIKES PEAK MYCOLOGICAL SOCIETY

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