



**FEBRUARY 16**  
General Meeting Speaker  
**Stefan Catona**



### ***Armillaria gallica*: An Exe Island Odyssey**

Colonies of the species *Armillaria gallica*— a “honey mushroom”—are among the largest and oldest organisms on the planet. Arising from a single mating event between two haploid mycelia, individuals of this species extend vast networks of mycelial cords, called “rhizomorphs”, across the forest floor, opportunistically infecting hardwood tree root systems.

*Armillaria* species have caused billions of dollars in losses to the lumber industry, yet little is known about the growth dynamics of these fungi because of the cryptic nature of mycelium, which is hidden in the soil and in its food sources. Stefan Catona’s presentation will focus on the methods used to study these giants of the forest: to obtain pure cultures; grow them in vitro; differentiate between individuals of different species and between individuals of the same species, and map their territories using GPS and molecular techniques. Mr. Catona will also share some insight gleaned from his own research into the biogeography and unique life cycle of this truly humongous fungus.

#### **About the speaker:**

*Stefan Catona grew up in Ontario where he completed a Bachelor in science and a Master’s degree in Ecology and Evolutionary Biology at the University of Toronto. He completed a Juris Doctor at the University of Alberta in 2015 and currently practices criminal law in Edmonton, Alberta.*

*Stefan continues to be involved in mycological research independently, as well as through the Mycological Society of Alberta. In his free time, he enjoys songwriting, painting, and kickboxing.*

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### **Mushroom of the Month: *Candy Cap: Lactarius rubidus and rufulus***

by *Ken Litchfield*

Northern California is blessed with the candy cap mushroom, an endemic fungal treat not found in the rest of the country. This sweet little copper-top mushroom is packed with an extraordinary flavoring agent most folks find indistinguishable from maple syrup, but without all the high overhead tree tapping and sap boiling required to make the syrup in nonlocal New England. Some folks may characterize the fragrance as the spice fenugreek seed, burnt sugar, butterscotch, curry, or maybe certain flavored commercial products, but regardless, one little dried candy cap mushroom sitting on your dashboard is enough to odorize your vehicle for over a year. Herbarium specimens decades old have been known to retain the fragrance, to the delight or distraction of visiting researchers.



*Lactarius rubidus* © Fred Stevens

Though the local mycological community has been in the know about this fungal seasoning for over twenty years, those in the supersillyus culinary trade are still just beginning to exploit the candy cap for its potential in sweet treats like candy cap cheesecakes, candy cap ice creams and crèmes, custards and brûlées, cookies and

## PRESIDENT'S POST

by Brennan Wenck

Hello MSSF Members,

We're back!!! After a very dry 2015 we are finally getting the long anticipated soaking we have been promised. It has been a blast to see what the rains have brought. The bounty has certainly been plentiful, so get out there.

January bore witness to a wonderful Fungus Fair put on by our nearest myco-society to the South in Santa Cruz, the [Fungus Federation of Santa Cruz](#). We also had a wonderful multiday extravaganza hosted by our nearest northern myco-society, the [Sonoma County Mycological Association](#) (SOMA). Both events are not to be missed. I highly recommend that you mark your calendars for next year and make an effort to attend both of these January events. It is through ties with both of these societies that the Bay Area is such a Mecca of mushroom culture. I certainly hope that the newest mycological society, the Marin Mycological Society, puts together yet another opportunity for us all to converge for the charisma of the mushroom.

January is also the restart of the monthly general meetings hosted by MSSF at the County Fair Building in Golden Gate Park. We were enchanted by Robert Dale Rogers, who spoke to us about the "21 Myths of Medicinal Mushrooms." A very informative talk indeed. The next speaker is Stefan Catona, who will be sharing his knowledge on *Armillaria gallica*, the honey mushroom, which will take place on Tuesday February 16th, also at the County Fair Building in Golden Gate Park. Please feel free to bring guests as meetings are open to the general public.

You can see by a theme of this issue that we are in love with the candy cap mushroom. As a society we are eager to collaborate with all the other California myco-societies to push for a California State mushroom. So far there isn't one for California, and we'd like to see one on the books. There are a number of reasons any mushroom should be elected this honor, and we will need your cooperation in trying to narrow it down to just one mushroom. You can look forward to having an opportunity to present your case in naming your favorite mushroom, and why you think it should represent this great state.

I thought I might share what I know about the Randall Museum—in short, not much. Those of you who have been members for more than 6 months will remember that we used to hold our meetings at the Randall Museum in Corona Heights. The museum started a renovation project last summer forcing us to look for a temporary home at the County Fair Building. The renovation is not moving as fast as expected, and it seems we will not be moving back to the Randall in the near future. They have finished with the demolition, now a group has been tasked with removing the asbestos. Once that is completed the construction will commence. Meanwhile the County Fair Building has been very accommodating for us, and we will just enjoy being back in the historic building that has housed the MSSF many times over its 50+ years of mushroom education.

Happy Hunting Everyone, and I look forward to seeing you at the next meeting,

-Brennan - [president@mssf.org](mailto:president@mssf.org)

## CALIFORNIA STATE MUSHROOM

by Jackie Shay

### Letter to California Mushroom Societies

Greetings Esteemed Mushroom Enthusiasts!

My name is Jackie Shay. I am currently the Vice President of the Mycological Society of San Francisco, and I have a proposition for all of your fungal networks. I recently discovered that the Lichen Society has spent the last four years choosing and implementing a California State Lichen, *Ramalina menziesii*. I think it would be wonderful if all our organizations came together to create a California State Mushroom! Here is what I think we need to do:

1. Survey your societies to see what people want, and come up with one mushroom your group thinks represents California the best! Make sure to check with the other states to see which mushrooms are already taken!

Remember that a state mushroom should be recognizable, ecologically significant for the area, and pleasing to the eye (think of the future stamps!)

2. Write a brief summary as to why your group believes this is the best option.

3. Send the results back to me at your leisure. This is not going to happen in a day, and it is best we work together to make it happen, so take your time finding out and let me know when you can.

I will let everyone know the status of the results as they come in. If your society does not wish to participate in choosing a California State Mushroom, then please let me know so I don't pester you too much.

Thank you so much for all of your fungal endeavors! I hope we can make this happen together!

Yours in spores,

Jackie Shay

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cakes, candies and confections. Even better is its potential in savory offerings like ham glazes, duck stuffings, and candy cap honey butter. When speaking with any haughty cuisined chef, you yourself can still out-snooty them with your rendition of candy cap unicorn ice cream if you imagine that you're speaking to them with your little finger pressed to the tip of your nose.

The candy cap mushroom has several identifying characters that distinguish it from its bitter, inedible, *Lactarius* lookalikes. The nonzonate, uniformly rusty brown, cinnamonish or copper topped caps of *L. rubidus* are usually the size of quarters or half dollars, though young ones might be as small as dimes or the mature as large as silver dollars. There is a secondary *L. rufulus* that is a "true" or sweet edible candy cap in that it has a sweet taste without as much of the extraordinary fragrance of *L. rubidus*, but with up to twice or more the size. The true candy caps also have a uniform, mildly rough, newt or toad skin texture rather than a slick salamander or frog skin surface feel. The underside of the cap has multitudes of tightly packed radiating gills. And when you "snap the cap" by bending it vertically, where the gills crack open, the sap that oozes out of fresh specimens is of a light white skim milk translucence without the opacity of whole milk. The stipe is hollow and will also bleed when cut or broken. It is often recommended to pinch the base of the candy cap to remove the bottom dirty part when you are harvesting so that you can "feel the snap" as another confirming ID character for the "snappy" genus *Lactarius* as opposed to some fibrous or mushy LBM.



*Lactarius rubidus* © Boleslaw Kuznik

Often growing right among the true candy cap patch, you may find several species of false or bitter candy caps. Roughly of the same size, these often have non uniform lighter and darker dorsal concentric rusty rings giving them a bull's eye appearance. Their oozing milk is an opaque whole milk white, sometimes immediately staining yellow at the ooze or on paper over time. Though older specimens of any of these true or lookalike candy caps could be lacking for oozing milk, you can also identify the false candy caps by their bitter or acrid taste whether fresh or dried, while the trues are rarely bitterish.

Being as the candy cap could be considered to be a little brown mushroom, LBM, there could be one other mushroom of confusion concern, though it doesn't seem likely for the well or semi well educated mushroomer. That would be the saprobic deadly *Galerina*. Be sure to educate yourself to that mushroom's characters and habitat in addition to the mycorrhizal false candy caps that are more likely to be confusing. [Mykoweb.com](http://Mykoweb.com) is a good place to begin your education.

Often in the fresh state folks can't detect the maple aroma, or any aroma, from either of the true candy caps. For more on this characteristic of the candy cap please see the associated article in this MN issue by Darvin DeShazer "[Candy Cap Odor – The Mystery Solved](#)".

When dried crispy in the dehydrator even the most fragrant of candy caps seem to lose their maple flavor, and sniffing the opened jar of stored dried specimens often doesn't elicit maple tones. Take one out and put it on the kitchen table and allow it to reabsorb some atmospheric humidity and the maple manifests.

When cooking with dried candy caps the best results happen by powdering the crispy dried mushrooms in a coffee grinder dedicated to other things besides coffee. A quantity of the powder, depending upon how candy cappy you want the flavor, is then reconstituted in the skillet with the addition of a little sherry. One or two or more average sized candy caps are enough to flavor a typical cheesecake or a half to a gallon of vanilla ice cream. Allow the powder to fully moisten in the sherry for a few moments and then add some butter to the pan. Heat the pan slowly to melt the butter and stir the powdered sherry until the butter melts. Then simmer off the sherry so the butter absorbs the candy cap flavors. Then add the fatty and liquidy ingredients of the candy cap concoction you are creating.

For instance, to create candy cap honey butter, add one to four or more chopped or sliced up sticks of butter to the pan of sherried, buttered, powdered candy caps, depending upon how much candy cap honey butter you wish to make. Heat until all the butter is just molten. Then take the molten butter off the heat and add about one third of the amount of cold honey to the molten candy capped butter. The cold honey will impart its volatile components to the but-



*Lactarius rubidus* © Pascal Pelous



*Lactarius rubidus* © Boleslaw Kuznik

ter as the honey warms up and the butter cools down. Due to their fatty and aqueous nature the butter and honey tend to separate if both are warm and liquidy, but to mix and set as they chill down. To encourage gelling you can finish the mixing of the honey and the butter by immersing the mixing bowl in a bigger bowl of ice water. Sometime before the full gelling takes place add a shot of vanilla extract, enough to help carry the candy cap flavor but not enough to characterize the candy cap honey butter as vanilla flavored. Also add a dash of powdered smoked sea salt, enough to just stimulate the taste buds, but not give the spread a salty or smoky overtone. For added richness to the candy cap honey butter, as if it needs it, you can add some bacon fat and/or duck fat in your preferred quantity. You could also add coconut butter for an added dimension or use that straight up instead of other animal fats if you are vegetarian. Candy cap coconut concoctions are quite tasty and have a nice ring to the names.

Most baked goods work best if the powdered candy caps are added to the bowl of wet ingredients for reconstitution before the combination of the wet and dry. Candy cap corn bread is easy this way, added to any commercial mix. You can also make a nice homey candy cap corn bread from scratch with one part masa harina, one part corn meal, one part corn flour, two parts whole wheat flour, one or more parts sugar or brown sugar (or honey in the wet ingredients), a couple dashes or more of baking powder, and a dash or so of smoked salt for the dry ingredients.

For the wet ingredients bowl use three to five eggs per five parts dry ingredients if the parts used were cups. Depends upon the size of the eggs. To the eggs add also one part vegetable oil or molten butter, bacon fat, and/or duck fat. Add honey to sweeten. Add a shot of vanilla extract and candy cap powder as appropriate to the volume.

Add the dry ingredients to the bowl of wet ingredients and mix. If not liquidy enough add just enough milk in increments to get the desired consistency. If too wet add a little more of one or all of the dry ingredients to thicken. When mixed, pour into one or more greased pans and bake at 350 degrees until golden brown.

Not many folks know about this, but it may be that the candy cap mushroom is psychoactive – in more ways than how good it makes you feel when you eat candy cap culinary delights. This is anecdotal information but I think there may be something to it, since many herbs with volatile compounds do have psychoactive influences in larger doses. A few years ago, back pre-drought when the rains were producing more mushrooms, a friend that moved up north from the bay area that I hadn't seen in a while, called me to ask if it was possible that fresh candy caps could "get you high." I, of course, wanted to know why he would ask such a question. He related a story about how he and his father had picked so many candy cap mushrooms that, rather than drying all of them, they made a main course of a big pan of them for dinner since they were both vegetarians. Since they had never cooked with them fresh before, they figured that they may not have cooked them long enough. Perhaps the volatile compounds had off gassed in their stomachs like undercooked morels. He said that both of them had some wine for dinner but that the high was more and different than what they would have expected from that amount of alcohol. Mostly it had to do with train-of-thought processes and mellowness attitudes, maybe something similar to the thought processes for psilocybin giggles, substantial enough to notice but not something that either of them could put their fingers on. We conjectured more and I filed the info away hoping to do some experiments in future seasons when I had some free time and extra freshies. Of course with the drought the last few years I concentrated more on replenishing my dried stashes than testing excess freshies.

Then, a couple SOMACamps ago, David Gardella and I were demonstrating how to make some candy cap honey butter at MycoSOMAMondo. We used quite a bit more dried powdered candy caps than needed even for the bigger batch of a couple pounds of honey butter we made. The candy cap component could probably have been diluted by five or ten times of butter and honey and still been really candy cappy. After the Mondo activities we joined the even-later-night activities at the campfire. I had carried the jar of honey butter up to the fire rather than back to the cabin. There was left over honey butter coating the jar and it was coating my hands for the remainder of the evening, or rather, predawn morning. When I finally crashed at the cabin I left the honey butter jar sitting on the bunk next to the bed where the fragrance continued to infiltrate my dreams for the couple hours of sleep I got before going to breakfast.

Once we were packed and ready to leave camp one of the folks who couldn't make it to the Mondo event but knew we were going to make candy cap honey butter wanted to sample it. I took it out of the car trunk and when I opened the jar the maple aroma was suddenly overpowering to me. The other person thought it was fine but I was having a weird reaction. We then left camp and almost immediately I fell asleep in a fitful nap. I was in a weird dream state where I was completely surrounded by hovering honeybees that formed an egg shaped geometric patterned globe surrounding me with all their bodies vibrating with an irritated hum that might be what real bees sometimes do when you are opening their hive. As a beekeeper I've experienced a strange situation in reality where the bees react in an odd way when you bring them supplemental honeycomb for feeding. They hover around at a relatively equal distance in semi-defensive but not aggressive mode as you come forward with the comb that they also detect as non threatening food. But in the dream each "honeybee" was a

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simultaneous tick hovering and humming with all the tick honey bees heads aimed at me like they were oriented to suck my blood. And simultaneously each honeybee tick was also a drop of blood turned sideways with the drop's tip pointed at me. This hovering geodesic globe of vibrating honeybee tick drops of blood seemed to last the duration of my napping dream with nothing else happening so I could actually examine each little entity hovering in the globe. I would say that this was a sleep deprived, candy cap induced psychoactive experience that melded into a wild forager's hallucination.

If candy caps are actually psychoactive it may or may not be due to the active aroma constituents of quabalactone III or sotolon or something else.

For info on cultivating candy caps and other fruit of the root of the oak associates be sure to go to this month's "Cultivation Quarters" later in this issue.

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## 'SHROOMS IN SAN DIEGO?!?

by Eric Multhaupt

Many of us Northern Californians view San Diego County as consisting of two disparate segments: (1) the spectacularly beautiful and appealing swath of coastal towns and great beaches extending from Carlsbad in the north to Coronado in the south; and (2) the Interior Wasteland. To our minds, neither segment carries much mycological potential.

It turns out upon closer inspection that this regional stereotype is both inaccurate and unfair. In fact, interior San Diego County has significant mycological appeal. I and a group of 'shroomers learned this lesson the easy way exploring the Elfin Forest Recreational Reserve in early January 2016. Much of the interior of San Diego County is dry and desert like. The local vegetation generally consists of a variety of small scale drought tolerant plants that are frequently described generically as "chaparral", "coastal scrub", or more quaintly, as "Elfin Forest". That name was conferred by a Santa Barbara botanist who surveyed the flora at the request of the then-owner of some of this habitat, and who noticed that the specimens of vegetation were both small for their species, and kind of cute, hence the name Elfin Forest. The plants include manzanita, sumac, and riparian oak. It is about 45 minutes northeast of downtown San Diego.

The Elfin Forest Recreational Reserve is a 784 acre protected area managed by the local water district. The key to great mushroom picking in this area is to find a creek and follow it. We joined up with the Escondido Creek, which rises in the hills east of Escondido at Lake Wohlford and flows westward until it empties into the Pacific north of Solana Beach. Along the section of the creek that passes through the Elfin Forest, the groundwater provided by the creek coupled with some El Nino rain has produced a profusion of mushrooms, some familiar to us and some more exotic. The farther the vegetation is from the creek, the fewer the actual trees and more consistently low growing chaparral. The trees growing along the creekside include "riparian oak", which means "creekside oak".

Familiar species included *Agaricus californicus*, *Russula sanguinea*, and *Omphalotus olivascens*. The edibles found in early January included a variety of lesser-known boletes, including *Boletus flaviporus* and *Boletus dryophilus*. The \$64,000 question that we discussed during this foray was whether the extensive stands of riparian oak support chanterelle mycelium. We didn't see any in early January, but then Bay Area chanterelles have been reticent, at least up until mid-January when they started appearing. According to spokespeople for the San Diego Mycological Society, chanterelles do exist in the area, albeit sparsely.

One enjoyable aspect of San Diego mushrooming is that it feels more like a stroll than a struggle. Many of the creeks have established paths along them, from which you as a mushroomer can diverge to explore the adjacent chaparral, but there is nowhere near the same amount of heavy brush, impenetrable thickets, or other problematic terrain features that we are so familiar with in northern California. There is some poison oak.

Picking is prohibited within the Recreational Reserve ["**No collecting allowed.** All natural resources and wildlife are protected"], but there are long stretches of Escondido Creek that are outside of the reserve. For further information up close, you might check out the next [San Diego Mycological Society Fungus Fair](#) on Sunday, February 21, 2016, in Balboa Park.

## SWEATING THE SMALL STUFF

*by David Arora & Wendy So*

There is a local legend here in Zambia about how the Bisa people once lived together in one village. Then during the rainy season one woman found a lot of mushrooms. Neighbors asked for some and she refused. A feud ensued that split the village. A big group of people left to become The Crocodile Clan, while those who stayed with the woman and their descendants were – and still are -- called The Mushroom Clan. The mushrooms at the heart of this feud were not eye catchers and headline stealers like *tente* or *chikalowa* (giant *amanitas* and termite mushrooms), as you might guess. Instead, they are specified as being *samfuwe* – tiny termite mushrooms smaller than *enoki*!

We became friends with a local farmer named Luke who grows coffee but also has his own *samfuwe* farm – inside his house! Once a year, *samfuwe* spring by the thousands from the floors and walls, and also from the outside walls of the house, and in the lawn and garden. As Californians we are conditioned to associating termites with house decay and worried calls to the exterminator. But here, the termites are viewed as providers, not pests. The houses here are made of brick, mud or stucco, so the termites pose no threat to Luke's house. They feed on woody material from the garden and bring it, partially digested, to the *samfuwe* mycelium growing inside their colonies. This particular kind of termite does not build mounds. Instead, they spread. Their mud casings can be seen inside Luke's house, under the lawn and in the garden. Luke did not introduce them intentionally – they appeared on their own outside his house, and then spread inside. Four of Luke's photos are posted showing the termite mud casings inside his house, then some of our own photos of outdoor colonies.

Luke says, "Our family looks forward to harvesting them every year as they are delicious." Luke carefully watches for the pin heads on the creeping mud casings that the termites make in his house. When he sees the pin heads, he enforces mushroom protection from dogs and people until they mature (1-2 days). Once the mushrooms are ready for harvest, everyone in the house helps collect them. Cleaning them is labor-intensive, involving pinching off the ball of dirt at the base of each stem for thousands of mushrooms, then rinsing them. They do this while chatting together, cook some with onions and eggs, and then chill the rest for later use.

We also found *samfuwe* in the garden where we are staying, growing, as usual, in "cities." In southern China, this species is known as "ji zong hua" or "termite mushroom flower" because of its purity and daintiness. You can sometimes see heaps of them for sale in roadside markets. We had a craving for Chinese food so we decided to have them prepared in a traditional Chinese style, i.e., in soup. We emphasized that the tiny whole mushrooms must dominate in quantity. The chef had never prepared them this way but did a spectacular job, using only a cube of vegetable boullion and bits of onion plus the mushrooms. The sweetness and delicate beauty of the *samfuwe* really shone this way. They had the consistency of bean sprouts but with a burst of sweet mushroom flavor far superior to *enoki*. With sides of whole tilapia and *tente* stew it was one of the most memorable meals of our trip.



## CULINARY CORNER

by Heather Lunan

The Culinary group started out the New Year with a celebration! Team captains Anna Danich and Heather Lunan created the entrée and vegetarian option worthy of a happy new year (said with the barest modicum of modesty). The entrée was roasted pork loins, butterflied and stuffed with a three mushroom blend of porcini, king trumpet mushrooms, and shiitake, fresh sourdough breadcrumbs, and lots of herbs and aromatics, and sauced with a port wine and tart cherry reduction. The vegetarian entrée was whole portobello caps stuffed with the mushroom and sourdough dressing, and topped with golden browned comté cheese. Mac McCracken prepared “left-handed mashed potatoes” with mushrooms sautéed in red wine, red peppers, and cheese. Mary Ann Swazo braised shredded ruby cabbages with a splash of wine vinegar from an old Irish recipe. Dasha Bell brought a refreshing salad topped with bright tomatoes and crunchy pepitos, and Jane and George Collier prepared perfectly al dente green beans with butter as a foil to this rich and succulent dinner. Peggy and Dave Manuel baked a decadent warm walnut brownie pudding, made from very dark chocolate and espresso. Carol Reed rounded out the dinner service with fresh hot coffee. Paul Lufkin and Virgilio Cardona arranged the room setup and breakdown. Many thanks to the dinner team for a harmonious and memorable night.

Be sure to register for the February dinner, a homage to the famed chef Yotam Ottolenghi by team captains Jeanette Larson and David Eichorn.

This month’s recipe can be used as a starter for a dinner, as nibbles with wine around the fireplace, or for a delightful treat after foraging. Mushroom frittata bites with prosciutto are the perfect accompaniment to either red wine, Prosecco, or whiskey, if it happens to be a very rainy day. The mushroom choice is up to you, I have made this with fresh shiitake, black trumpets, or chanterelles.

### MUSHROOM FRITTATA BITES WITH PROSCIUTTO

#### Ingredients:

- 2 tsp. unsalted butter
- 1/2 cup minced shallots (about 2 - 3 large shallots)
- 1/2 pound sliced mushrooms (your choice - fresh shiitake, black trumpet, chanterelle or any mixture is suitable)
- 1 1/2 tbsps. chopped fresh tarragon
- 2 eggs plus 6 egg whites
- 1/4 cup grated Parmesan
- 1/2 tsp. Salt
- Fresh ground pepper
- 8 slices prosciutto
- Fresh chives, chopped

#### Method:

Preheat the broiler.

In a large skillet over medium heat, melt the butter and sauté shallots and mushrooms together, stirring occasionally. Cook until the mushrooms have given off their liquid and the liquid has evaporated, and the mushrooms are tender and golden. Stir in the tarragon.

Lightly beat the eggs and egg whites together and add the Parmesan cheese and salt and a few grinds of fresh black pepper.

Pour in the egg mixture to the mushroom and shallot mixture in the skillet and cook over moderate heat, stirring frequently, until the eggs are lightly scrambled. Reduce the heat to low and, using a spatula, form the frittata into a clean square in the center of the skillet. Reduce the heat and cook it until the bottom is set, about two minutes. Slide the skillet under the broiler, and broil until the frittata is firm to the touch and barely golden, about two minutes.

Please note, if your skillet does not have a metal handle, wrap the handle well with tin foil before sautéing the mushrooms. Using a spatula or two, transfer the frittata to a cutting board and let cool slightly. Trim off the edges of the frittata to form a clean square (the trimmings are lagniappe for the cook) and cut into 24 small rectangles. Cut each piece of prosciutto into three long slices. Wrap each square with a slice of prosciutto and decorate with chopped chives.

You can make this ahead if you like, and chill on a plate and cover with a damp paper towel and loose aluminum foil. Bring the frittata to room temperature before serving. Add the chives before serving.

If you wish to make this into a larger serving, cut the square into larger squares and wrap with whole prosciutto slices and decorate with chive spears or generously sprinkled with chopped chives.

## CANDY CAP ODOR – THE MYSTERY SOLVED

by Darvin Deshazer

For years mushroom hunters have actively sought the “candy cap” mushroom, *Lactarius rubidus*. When it is dried, this mushroom has an intense and persistent fragrance. Because of the distinctive and pleasant smell of these mushrooms, they are frequently used as flavoring in dessert foods, such as cookies, cakes, breads, or ice cream.

The mushroom’s scent is usually described as being like maple syrup, but has also been said to smell like butterscotch, fenugreek, or burnt sugar. The chemical responsible for the smell of these mushrooms has been recently identified. This discovery resulted from collaboration between Darvin DeShazer, the scientific advisor of the Sonoma County Mycological Association (SOMA), and William Wood, a chemist at Humboldt State University.

Wood and DeShazer started this project over 25 years ago. The identity of the compounds responsible for the maple syrup odor proved elusive. Early attempts to identify the odor compound in extracts of dried candy caps failed. Finally, the gases escaping from the dried mushrooms were trapped and analyzed. A chemical called quabalactone III was identified as a major volatile compound. On contact with water quabalactone III changes to another compound that has the name sotolon. Sotolon is a commercially available flavoring used in food and other products. At low concentrations sotolon has a pronounced maple syrup-like odor. Surprisingly, the chemicals found in this mushroom are not in natural maple syrup.

The volatile chemical that flavors candy caps was originally identified in the flowers of the Mexican tree, Rosita de Cacao. The Aztecs were known to mix these flowers as a flavoring in chocolate drinks. The name quabalactone III is derived from the scientific name of this tree, *Quararibea funebris*.

The odor causing chemical, quabalactone III, is not present in living candy cap mushrooms. It is only found in dried mushrooms. Wood and DeShazer theorized that on drying, free amino acids in the fresh mushroom react to form quabalactone III. This research was published in the journal, *Biosystematics and Ecology* [Volume 43, 51-53 (2012)]. The abstracts, highlights and chemical formulas for this article are online at <http://www.sciencedirect.com/science/article/pii/S0305197812000385>.

### Reference:

William Wood, Jay Brandes, Brian Foy, Christopher Morgan, Thierry Mann and Darvin DeShazer. 2012. The Maple Syrup Odour Of The “Candy Cap” Mushroom, *Lactarius fragilis* var. *rubidus*. *Biochemical Systematics and Ecology* 43: 51-53.

<http://dx.doi.org/10.1016/j.bsc.2012.02.027>

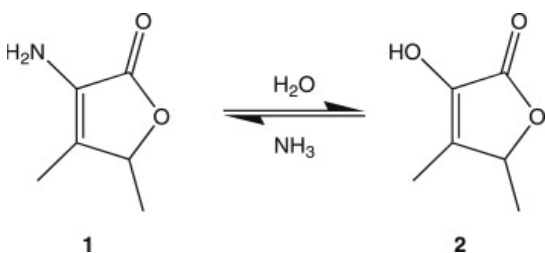
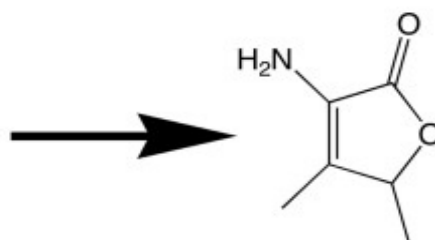


Fig. 1. Interconversion of 3-amino-4,5-dimethyl-2(5H)-furanone (1) and Sotolon (2).



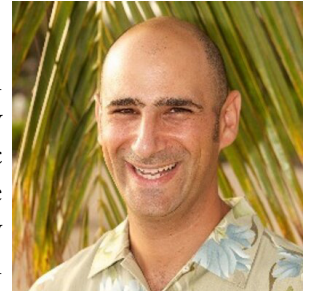


**ACADEMIC QUADRANT** *by Jackie Shay*  
Featuring *Dr. Anthony Amend and Dr. Nicole Hynson*

This dynamite team of fungal fascination have such a wonderful story. They are a married couple that research and teach in the Department of Botany at the University of Hawai'i at Manoa. They are spearheading two labs, both very different, that are taking advantage of the natural lab that is archipelago of Hawai'i. Together they span the breadth of fungal research from the evolution of mycorrhizal symbiosis to saving endangered snails by identifying their fungal diets! Please read on to learn more about the research these two are conducting in Hawai'i.

### ***Dr. AMEND RESEARCH***

Dr. Anthony Amend's lab focuses on a variety of aspects from the fungal and microbial communities. His lab studies the factors that shape diverse microbial communities, and why differences in these communities matter. They are particularly interested in studying symbiotic microbes (such as fungi that associate with plants and corals) and how these microbes mediate their hosts' interactions with the environment. They are also interested in biogeography and how microbial distribution patterns compare to those of plants and animals. They work at spatial scales ranging from centimeters to continents, including the oceans between them.



#### **I. Diversity and Evolution of Fungal Endophytes in Native Hawaiian Plants**

Found inside the healthy leaf tissue of every plant species yet examined, foliar fungal endophytes have been shown to play a critical role in mediating how hosts interact with their abiotic environment and with other organisms. Though invisible to the naked eye, endophytic fungi form ubiquitous and hyperdiverse communities spanning hundreds of millions of years of evolutionary history. It is suspected that these cryptic symbionts comprise a large portion of the estimated 98% of fungal species diversity that remains undocumented.



Combining culture-based methods, next-generation environmental sequencing and stored banks of genomic DNA from critically endangered (and extinct) species, we plan to survey foliar fungal endophyte communities from every habitat on each major island in the Hawaiian archipelago, including at least a single representative of most of the 165 native eudicot genera. Plants from two of Hawaii's most species-rich adaptive radiations will be sampled near-completion to enable insight into evolutionary aspects of host-symbiont dynamics.



Ultimately we hope to develop phylogenetic hypotheses for Hawaiian endophytic fungi and their plant hosts in order to study the evolution of specificity among endemic symbionts.

#### **II. Biogeography of Small Organisms**

Despite the longstanding dogma that "everything is everywhere, but the environment selects" in microbial biogeography, very few studies have actually tested this directly. Our work examines the roles that reproductive strategy, dispersal limitation and environmental selection (such as temperature or moisture tolerance) play in shaping population structure, species ranges and community composition. We've worked at scales ranging from centimeters to continents, including the oceans between them.



#### **III. Linking Evolution to Ecosystem Function**

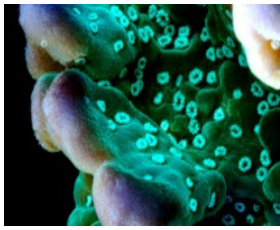
Soil fungi provide many ecosystem services including symbiotic interactions with plants and decomposition of complex carbon sources like lignin, cellulose and chitin. Predicting how soil fungi will respond to changing climates is an important question for understanding future nutrient cycling rates. Because there are probably millions of soil fungal species, however, it is difficult to predict how any single fungus will fare in future climates. To make this problem more tractable, we make use of the fact that the more closely



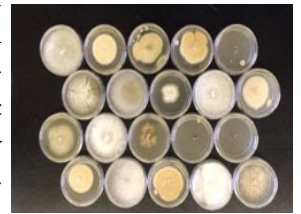
[Continued on page 10](#)

related are two species, the more similar will be their response to global change. By combining phylogenetic information about evolutionary relationships with field and microcosm manipulation experiments, we can better understand how shifts in soil fungal communities will affect our changing world.

#### IV. Microbial Diversity and Thermal Tolerance in Reef Building Corals



While researchers have focused considerable attention on fungal symbioses in terrestrial systems, marine fungal symbioses have remained largely unexamined. Corals have long been portrayed as a model mutualistic symbiosis consisting in a colonial invertebrate and a photosynthetic dinoflagellate. Our recent research has shown that microbial diversity within corals contains a surprisingly high diversity of fungi that are distinct from those located in the adjacent water column. We are interested



in how these fungal communities are structured and whether they mediate the interaction between the coral and warming oceans.

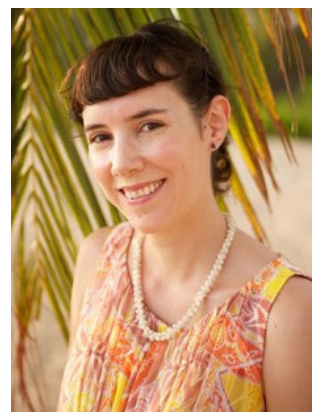
#### V. Diet and Conservation of the Endangered Tree Snail, *Achatinella Mustelina*

*Achatinella mustelina* is one of several tree snail species in a genus endemic to Oahu that make up a spectacular adaptive radiation. Multiple labs and agencies are working to conserve this species via predator exclosures, captive breeding programs and population modeling. We are using high-throughput sequencing technology to assess the fungal diet of this species, and how this varies across sites and among host plants.



#### VI. Tibetan Traditional Knowledge and Conservation

During 2004 and 2005 I collaborated with researchers from the Missouri Botanical Garden and The Nature Conservancy China Program to document Tibetan traditional ecological knowledge. Among other things, we focused on land use patterns, conservation viability of Tibetan sacred sites and the diversity and marketing of medicinal plants. More information about this ongoing project is available [HERE](#).



#### Dr HYNSON RESEARCH

Dr. Nicole Hynson's lab studies the ecology of plant and fungal communities. They are especially interested in the symbiosis between plants and fungi known as mycorrhizas. The goals of their research are to: (1) better understand how mycorrhizal plant and fungal communities assemble in nature, (2) examine the ecophysiological interactions between plants and their fungal partners, and (3) synthesize how various biotic and abiotic conditions alter the ecological outcomes and evolutionary trajectories of plant-fungal interactions.

#### I. Co-invasions of mycorrhizal fungi and their host plants

##### *Do plant invasions alter symbiotic soil microbes' species-area relationships?*



With the Oahu Army Natural Resources Program (OANRP), we are working to understand how plant invasions modify mycorrhizal fungal communities, and how those modifications may feed back on the success of native plant restoration efforts. Most plants in Hawaii, both native plants and exotic, form arbuscular mycorrhizal (AM) associations. AM interactions have historically been assumed to be broad, with most plants interacting with most fungi, and vice versa. However, recent research has indicated that specific interactions among AM fungi and host plants are not uncommon, and that different fungi can provide different benefits to hosts. This raises the possibility that plant invasions may alter AM fungal community composition to the extent that they provide little benefit to native plants. Using Illumina next generation sequencing to test this, we are examining the species-area relationships of AM fungal communities in highly invaded and relatively less invaded sites. The goals of this research are two-fold: (1) determine how aboveground plant invasions alter belowground AM fungal communities and (2) provide local land managers with information on how AM fungi may alter native plant restoration success.

## II. Island Biogeography of Fungi

### *Are the distributions of some host plants limited by those of their mycorrhizal symbionts?*

All orchids rely on a specific functional guild of fungi known as orchid mycorrhizal fungi to germinate and survive in the wild. Some orchids form relatively specific mycorrhizal associations either as mycoheterotrophic germlings or as adults. However, the determinants of this specificity are still relatively unknown. Currently we are examining the fungal specificity of the three species of endemic Hawaiian terrestrial orchids—*Anoctochilus sandwicensis*, *Liparis hawaiiensis*, and *Platanthera holochila*. All three of these orchids appear to be in decline, especially the endangered *P. holochila*. We hypothesize decline of these orchid species is in part due to obligate and specific associations with fungi that may be sparsely distributed across the Hawaiian Islands. Relative to mainland communities, orchid mycorrhizal fungal communities in Hawaii may be species-poor, ostensibly forcing Hawaiian orchids into specific fungal partnerships. To test this, we are using DNA sequencing to identify the mycobionts of the Hawaiian endemic orchids and their mainland congeners. We are also using the stable isotope profiles of these orchids as an assay for their dependency on fungal nutrition. The goal of this work is to aid in the preservation and conservation of these threatened species.



### *How do fungal aerobiota communities change over time?*

In collaboration with NOAA and USGS we are using next generation sequencing to analyze the community composition of airborne fungi sampled from the Mauna Loa Observatory on the Big Island of Hawaii over the last decade. These samples were collected and preserved at regular intervals from one of the most remote field stations on the planet and represent one of the longest time series experiments for aerobiota. Using fine-scale climate data we can relate fungal community composition to prevailing wind, rain, and periodic storm events. The outcomes of this research will provide baseline line data on how fungal communities change over relatively long time periods and in relationship to global change parameters.

## III. Fungal Diversity, Biology and Ecology

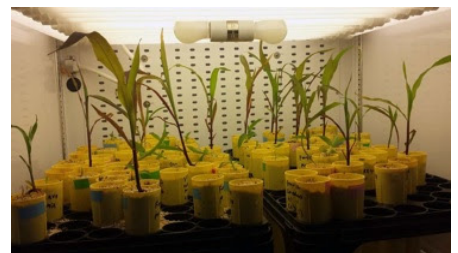
### *What is the diversity of macrofungi in Hawaii?*

We are continuing the efforts to catalog the diversity and distributions of fungi in the Hawaiian Islands. By leveraging the data in existing fungal collections and adding new specimens to UH's Joseph F. Rock Herbarium we hope to create comprehensive distribution maps for common fungi to the Islands as well as document previously unrecorded or unknown species of fungi. We supplement the fungal collections in herbaria with DNA sequences of the fungal barcode "ITS" which will be made available to researchers around the world. We're regularly organizing "mycoblitzes" to search different habitats of Hawaii for fungi. Some of these efforts have been in collaboration with state and national parks such as the 2015 Bioblitz. If you find mushrooms in Hawaii feel free to send us detailed photos with location information, or better yet, bring them by so one of our experts can identify them and preserve them for future research.



### *How long can AMF spores remain viable?*

Arbuscular mycorrhizal fungi (AMF) are one of the oldest lineages of plant symbionts and partner with over 70% of land plant families. Due to their long evolutionary history in association with plants, they appear to have largely given up on sexual reproduction and rely instead on the production of asexual propagules for dispersal. However, relatively little is known about the longevity of these propagules in the soil. About 50 years ago professor emeritus Dieter Muller-Dumbois collected soil strata from various kipuka (habitat islands fragmented by lava flows) on the Big Island of Hawaii. These kipuka are inhabited by a diversity of native Hawaiian arbuscular mycorrhizal plants. Dr. Muller-Dumbois saved these soil profiles and has now donated them to our lab so that we may assay them for viable AMF spores. We're excited to see what we find! If we find that our bioassays become colonized with AMF this will prove that the viability of these fungi is in the realm of decades.



**Assessing the role of mycorrhizal fungi for plant restoration success*****Does inoculation with specific mycorrhizal fungal communities increase the survivorship of Hawaiian native plant species?***

The majority of Hawaii's native plants are in peril due to habitat fragmentation, global change and invasive species. As such, Hawaii has some of the most active native plant restoration efforts in the world. There are many success stories for Hawaiian native plant restoration, but equally as many failures. Because the vast majority of Hawaii's native flora form obligate partnerships with mycorrhizal fungi, inoculating plants prior to reintroducing them to the wild may increase their survivorship. To test this we are working in collaboration with the Plant Extinction Prevention Program, Oahu Army Natural Resources and the Department of Forestry and Wildlife. We are interested in testing local (ecotypic) effects of inoculating plants with their native mycorrhizal communities versus their non-local ones as well as the priority effects that these different mycorrhizal inoculums may exert once reintroduced to the wild. The outcomes of these experiments will provide useful tools and information for land managers attempting to restore some of Hawaii's most threatened habitats.

**PUBLICATIONS**

For a list of Dr. Amend's publications visit this web page : <http://www.amendlab.com/pubs.php>

For a list of Dr. Hynson's publications visit this web page : [http://www2.hawaii.edu/~nhynson/Hynson\\_Lab/Publications.html](http://www2.hawaii.edu/~nhynson/Hynson_Lab/Publications.html)

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**FUNGUS FAIR POSTSCRIPT: AN UNSUNG HERO**

*by Carol Hellums*

For more than a decade, volunteers at the fungus fair have been eating well, thanks largely to the efforts of this man, Alvaro Carvajal. (And, in the early years, his wonderful wife Sherry.) Now it's time for him, and the rest of his crew, to move on.

As part of that crew over the years, I've seen how much time and care Al puts into preparing an evening dinner for the setup volunteers that will please both vegetarians and carnivores. And then there's the early rise to have coffee and pastries ready for the hungry and uncaffeinated hordes on the morning of the fair. And all the drinks, sandwich makings, salads, and sweets that it takes to keep over a hundred volunteers going all day. (A tip of the hat here to Jane Collier's wonderful carrot cake, which has been a fixture for some years now.) And for days in advance, the shopping – always keeping an eye on costs. And the schlepping, the loading and unloading of ice chests, steam trays, coffemakers, dishes and glasses and cups...and on and on. And setting up the break/lunch room, and managing the flow of people to keep things comfortable for the fair volunteers.

And now Al and his main helpers – George and Jane Collier, Bill Hellums, and I – are planning to hang up our aprons. Next year we're hoping a new crew will step up, to learn the ropes and take over the whole enterprise in the coming years. If you would like to be a part of that for the 2016 Fungus Fair, please contact Jackie Shay at [vice-president@mssf.org](mailto:vice-president@mssf.org). The planning committee will have their first meeting in April.

Great job, Al. Thank you!



## ANNOUNCEMENTS / EVENTS

**MSSF Quick Start Forays***by Paul Koski*

About 30 fungal foragers showed up on **Sunday, January 10**, at 9:30 to look for mushrooms in the Presidio. Most in the enthusiastic group were new to wild fungi and interested in learning about mushrooms found in and around the Bay Area. After introductions and discussing regulations, techniques and etiquette of foraging in the Presidio, we broke up into smaller groups and hunted for mushrooms in areas where collecting is allowed. After an hour and a half or so we reassembled and spread out our finds. There were more than 30 different species collected. We were able to identify about 20 species with an acceptable degree of confidence by examining the morphology, odor, bruising and habitat characters of the specimens. Another 5 or 6 species could be narrowed down to a genus level and others were of the LBM variety. Some of the more interesting finds included blewitts (*Clitocybe nuda*), the Amanita-like *Volvopluteus gloiocephalus*, *Agaricus bitorquis* or tork, and our local big laughing gym (*Gymnopilus junonius*). Wood chips and downed logs also provided habitat for finding *Tapainella (Paxillus) panuoides*, *Leratiomyces ceres*, false chanterelle, sulfur tuft and honey mushrooms.

The next Quick Start Foray is in the planning stage for **Sunday February 21** at Point Reyes National Seashore. Details are posted on the calendar page of the [MSSF website](#), or contact Paul Koski at [pkoski04@yahoo.com](mailto:pkoski04@yahoo.com) to get more info.

**Herbal Mead Making***by Ken Kitchfield*

7pm-10:30ish Every Wednesday Night  
at Omni Commons Lab  
[4799 Shattuck Ave, Oakland](#)

Contact [litchfield.ken@gmail.com](mailto:litchfield.ken@gmail.com) for more information

A new 501c non-profit called  
the *Mycological Society of Marin County* is formed!

The next meeting will be held at the **Mill Valley library** on  
February 10, 2016 at 7:30 PM

**Dave Campbell** will be giving a talk on  
“*Truffle hunting in Italy and Croatia*”

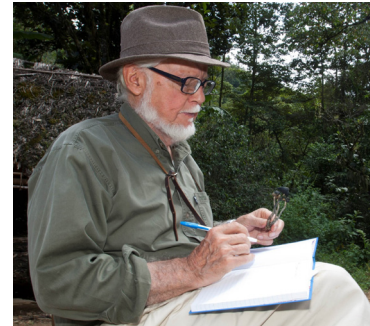
Check for the speaker and Register for this event [online](#)

For more information call Kevin Sadlier at 415-389-8333.

**GASTÓN GUZMÁN***by Enrique Sanchez*

The MSSF would like to acknowledge the passing of Gastón Guzmán on January 12, 2016 and send our condolences to his family.

He was a renowned mycologist and anthropologist, and one of the world's greatest authorities on the genus *Psilocybe*.

*By Dr. Gastón Guzmán*

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via Wikimedia Commons

**MSSF VOLUNTEER OPPORTUNITIES**

Join the Council leadership, learn the inner workings of the MSSF and help make decisions that shape the future of the society. Do your part by contributing your time to this 100% volunteer organization!

To learn more about all council and committee positions, go to: [www.mssf.org](http://www.mssf.org) members-only area, file archives, council member position descriptions. Or email [president@mssf.org](mailto:president@mssf.org).

**Valentine's Day**

at the Omni Commons Lab,  
[4799 Shattuck Ave in Oakland](#)

All day and into the evening there will be many Valentine and spring-is-coming fertility themed activities and workshops exploring the world of nature and the use of the lab facilities including the mushroom lab.

[Meetup link](#)

## CULTIVATION QUARTERS

*Ken Litchfield*

This month we'll look at the cultivation tricks for candy caps and their fruit of the root of the oak associates. It appears that most forecasts are for a continuing winter of El Nino rains at least through March. This means that you should continue to find candy caps and their oak associates, chanterelles and amethystinas, at least that long, as long as the rains continue regularly. These three associates are slow, long term developers, unlike porcini or rachodes that can pop up overnight from a quickie rain or fog drip by hidden buttons. Should you encounter a patch of any of these mushrooms under oaks, they, along with saprobic blewits in the oak leaf litter, are indicators for the presence of each other. If you find one of these look for the others.

Blewit bases can be added to oak leaf litter under unblewitted oaks in the vicinity or taken home and added to the straw or wood chip mulch in your garden. Once it takes off, with the regular rains we have been having that keep the ground surface wet, you can often see the blewit mycelium emerge from the mulch and creep as a purple blob across its surface and onto logs that may be in the garden for berms or raised beds. It is one of the few mushrooms that can be recognized by its mycelium due to its lavender or bluish cast.

As a cultivator, when collecting candy caps, chanterelles, and amethystinas in good shape for the skillet, you could dunk them in a 5 gallon bucket of water, swirl them around gently to rinse off any dirt and the loose spores for a spore slurry. The mushrooms can be strained out carefully not to damage them and they can then be dehydrated or cooked in the skillet. To the spore slurry can be added the bits and pieces of mushroom cleanings and old past prime mushrooms and any whole good mushrooms you are willing to sacrifice for the slurry. This will add more spores and also mycelium.

Some folks get into an elaborate procedure to bubble the slurry with an aquarium aerator and add a dollop of molasses to get the spores to germinate and keep it going for days. This is not only unnecessary, it is counterproductive. The liquid culture produced will be adapted to the cultural conditions in the bucket where it has been growing for many generations since germination, and not adapted to the conditions in the wild where it should have been poured at the initial mixing. You won't find molasses hanging around in the wild, but adding it to the bucket will feed certain yeasts and other microbes that like that.

Slosh the slurry around the base of the trees you would like to inoculate. Rake off the mulch down to the tree root layer so the roots are exposed and maybe a little broken, and sprinkle the slurry over the area and then cover over with the mulch. Then water to settle the mulch and kickstart germination.

If you find a good patch of candy caps, chanterelles, or amethystinas, there are some experiments you can perform that could help in your harvesting of these mushrooms. This may seem superficially greedy or un stewardship-like at first, but whenever you find a patch of chanterelles, candy caps, or amethystinas you should clear cut all the mature ones, and those past prime too, by either pulling them up completely or cutting them at the base without disturbing any little younger ones that may be attached so they can continue to develop. The reason for removing all the harvestable and past prime mushrooms is that this is similar to what is called with garden plants "deadheading." With plants, when you remove their spent or soon to be spent flowers and young green seed heads then they will continue to bloom even more generously to make more reproductive seeds.

Similarly, this allows the mushroom mycelial blob on the underground roots of the tree to detect or feel that there is some spore dispersal organism removing its spore distribution fruit bodies in an impactful way. If the rains continue regularly then in about five to six more weeks you can come back to the same patch and find more chanterelles developed and ready to pick. The time delay may be more short for the candy caps and amethystinas as they can develop more quickly once they have started to fruit for the season. For those two smaller less meaty mushrooms, more like a week or two is all that is necessary between checkings. However if you are a regular visitor to the wildlands passing by the vicinity, you can make more detailed observations of the development of these mushrooms. You can still be picking other patches in the vicinity in the same manner but on a different schedule if they have a different initial maturity for the initial deadheading.

Let's imagine for a moment that there must have been some sort of organism that would have coevolved with our local giant, meaty golden California chanterelle way back before nonexistent humans made up a name for this terrain. What might have been the spore dispersal agent for the chanterelle mushroom that is notorious for not at-

[Continued on page 15](#)

tracting insects or being worm eaten. It's likely that your typical golden chanterelle is just the right size to provide a mouthful morsel for some sort of megafauna that may have coevolved with it. Maybe a *Megatherium*, a *Mammuthus*, or a *Mastodon*?

What would be the logistical impact of megafauna foraging in a mushroom patch? What might a *Mammuthus* mushroom foray have looked like?

Living elephants today and frozen or mummified mammoths and mastodons from melting glaciers indicate that those animals are quite well endowed with enough nasal sensors to "spot" a chanterelle at eighty mammoth paces that many humans can't locate when standing amongst a patch.

Imagine that perhaps the fragrance of chanterelles is a *Mammuthus* pheromone that coincides with their mating season. Or maybe their nonmating season to get them horny for spreading chanterelle spores.

So you're out for a jaunt with your herdmates and there comes wafting by the aroma of your last roll in the hay from over there in that grove of oak trees up ahead and upwind. You turn and see your herdmates are behind you with their proboscidia all raised erect to sniff the strangers dallying in the grove. And at that moment of synchronicity, bubbling up out of the depths of proboscidian memory, comes the united realization that there is a chanterelle patch there and that patch is MY patch. You and your herdmates all mammoth gallop down to be the first to snatch and snort and gobble up those golden buttery blobs of simulated mammoth nookie.

What would the terrain look like after a mammoth culinary orgy trample? How many grizzly bears equal one mammoth herd? Or how many wild pig herds equal the biomass of one mammoth herd? How many human mushroom pickers equal that much biomass impact of any of those other organisms? Did this terrain really not evolve to be able to handle that much disturbance?

So now that you and your herd are wandering on to check around for more of your old patches on your regular route those chanterelles are now incorporating themselves into your digestive tract with their raw rumbling herbal mammoth laxative properties influencing your microbiome to tell your collective mammoth butts to wander over to this nice grove where the microbiome doesn't detect any of its fellow microbes or chanterelles through your proboscis. It releases, so you and your herd mates release. The chanterelles now have the ideal baby chanterelle nursery in mammoth plops under shady oaks they need to raise their young.

Of course it could be that you and your *Mammuthus* mates are very careful to tiptoe around the chanterelle patches so as not to disturb the sensibilities of the humans thousands of years into the future. Those same humans who overgrazed the same terrain with bazillions of inferior bovine poop producers. And clearcut the 20-mammoth-deep living redwood tree mulch that collected the fog drip in the summer. And held the moisture in the ground so the water table was a mammoth proboscis deep, instead of overpumped by those sensitive humans so it is now sunk many times deeper than the original redwood mulch that stocked it. And ripped out the oak forests, that are contiguously connected by underground grafted roots and mushroom mycelia that feed each other water and nutrients, so that they can put in subdivisions and vineyards.

You and your *Mammuthus* herdmates know to conform to the sensibilities of future humans and daintily tippytoe through the chanterelle and candy cap and amethystina patches gently proboscidially plucking the tiny mushrooms to offer to your sweet pachydermal Valentines rather than tusking up the chanterelle orgy patch in a mammoth lust party.

It would be an interesting experiment to collect some locally foraged chanterelles, either from the wildlands or the grocery and take them to the zoo with permission of the elephant keepers to see how the pachyderms react to the offers. And perhaps do the same to see if the hanging sloths have any of the same sloth metabolic desires of their giant *Megatherium* relatives.

So on your chanterelle forays for this long delayed rainy season, remember to keep your eyes peeled and your nose to the ground seeking those big golden buttery blobs of delectable simulated mammoth nookie.

Happy Valentines.

**MUSHROOM SIGHTINGS IN JANUARY 2016**



*Cantharellus californicus* - Woodside, CA



*Armillaria mellea* - Woodside, CA



*Amanita muscaria* - Pescadero, CA



*Omphalotus olivascens* - Woodside, CA



*Tremella mesenterica* - Orinda, CA



*Clitocybe nuda* - San Francisco, CA

Send photos of your findings to [mycenanews@mssf.org](mailto:mycenanews@mssf.org) to be published in the next newsletter.



## MSSF Calendar February 2016

### Monday, February 8, 7:00 p.m. - Culinary Group Dinner

Hall of Flowers, County Fair Building  
Golden Gate Pk., 9th & Lincoln, S.F.  
Advance registration required at [mssf.org](http://mssf.org).  
Email [culinary@mssf.org](mailto:culinary@mssf.org) to volunteer.

### Tuesday, February 16, 7:00pm - 10:00 pm - General Meeting

7pm - Identification, potluck, library access...  
8pm - General Meeting  
Speaker: **Stefan Catona**  
Topic: *Armillaria gallica: An Exe Island Odyssey*  
Hall of Flowers, County Fair Building  
Golden Gate Pk., 9th & Lincoln, S.F.

### Sunday, February 21, 10:00 a.m. - 2pm- Quick Start Foray

The next Quick Start Foray will be in the Point Reyes National Seashore in west Marin County. The exact meeting place is not yet decided but you can sign up and get details during the week before the foray. Advance registration required at [mssf.org](http://mssf.org).

Check the MSSF online calendar at:  
<http://www.mssf.org/calendar/index.php>  
for full details, latest updates  
and schedule changes.

### Councilors for the 2015-2016 term

**Councilors:** (1 year term) Julia Cabral and Joe Soeller  
(2 year term) Tyler Taunton and Madhu Kottalam

## HOSPITALITY

The Hospitality Committee gives a shout-out to guest chef Eric Multhaup himself for his excellent appetizers at the January General meeting. Eric prepared a mixed mushrooms spread as well as an herb goat cheese spread.



YOU TOO can be a guest chef for a hospitality hour. Just e-mail George at [george\\_willis@sbc-global.net](mailto:george_willis@sbc-global.net), or Eric at [mullew@comcast.net](mailto:mullew@comcast.net). You will have an \$80 food budget from the MSSF, and Hospitality Committee members available for advice and support.



## Mycena News

February 2016, vol. 67:6

*Mycena News* is the members' newsletter of the Mycological Society of San Francisco, published monthly from September to May.

Please e-mail photos, comments, corrections, and correspondence to [mycenanews@mssf.org](mailto:mycenanews@mssf.org)

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Zachary Mayes:  
[Membership@MSSF.org](mailto:Membership@MSSF.org)

Past issues of *Mycena News* can be read online at [www.mssf.org](http://www.mssf.org)

Mycological Society of San Francisco  
The Randall Museum - 199 Museum Way, SF, CA 94114

Submit to *Mycena News*! The submission deadline for the March 2016 issue is February 15th. Send all articles, calendar items and other information to: [mycenanews@mssf.org](mailto:mycenanews@mssf.org)

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