The Most Dangerous Mushroom
By Cat Adams

Monthly Speaker for April
Jackie Shay (See page 10)

NEED EMERGENCY MUSHROOM POISONING ID?
After seeking medical attention, contact Darvin DeShazer for identification at (707) 829-0596. Email photos to: muscaria@pacbell.net and be sure to photograph all sides, cap and of the mushroom. Please do not send photos taken with older cell phones – the resolution is simply too poor to allow accurate identification.
Many people who are poisoned claim the mushroom was the most delicious they’ve ever eaten. The death cap mushroom likely kills and poisons more people every year than any other mushroom. Now there finally appears to be an effective treatment—but few doctors know about it.

When someone eats *Amanita phalloides*, she typically won’t experience symptoms for at least six and sometimes as many as 24 hours. Eventually she’ll suffer from abdominal cramps, vomiting, and severely dehydrating diarrhea. This delay means her symptoms might not be associated with mushrooms, and she may be diagnosed with a more benign illness like stomach flu.

To make matters worse, if the patient is somewhat hydrated, her symptoms may lessen and she will enter the so-called honeymoon phase. Meanwhile, the poison stealthily destroys her liver. It binds to and disables an enzyme responsible for making new

**The Most Dangerous Mushroom**

The death cap is spreading. It looks, smells, and tastes delicious.

By Cat Adams
proteins. Without this enzyme, cells can’t function, and liver failure results. Without proper, prompt treatment, the victim can experience rapid organ failure, coma, and death.

A few mouthfuls of death cap mushroom can kill. Many people who are poisoned claim the mushroom was the most delicious they’ve ever eaten. Extremely adventurous mushroom connoisseurs have supposedly removed toxins from slightly poisonous mushrooms such as the fly agaric, Amanita muscaria—the archetypal red and white polka-dotted mushroom beloved by Nintendo video game enthusiasts and nature artists. A complicated boiling process is said to allow the nutty-tasting mushroom to be enjoyed with no harm.

Despite folklore to the contrary, the death cap’s deadliest toxins, called amatoxins, cannot be removed this way. Amatoxins cannot be destroyed by any conventional cooking method, including boiling or baking. Freezing or drying the mushrooms also fails to remove any amount of amatoxin, instead preserving it to wreak havoc later.

The death cap doesn’t taste remotely like death—many people who are poisoned claim the mushroom was the most delicious they’ve ever eaten. Its appearance doesn’t scream deadly, either: In its early “button” stage, it closely resembles immature edible white species, including the common field mushroom Agaricus campestris. Full-size death cap is reminiscent of other innocuous mushrooms. In California, a number of immigrants have confused it with the edible paddy straw mushroom Volvariella volvacea, which is harvested in Asia. Upon ingestion of death cap, about 60 percent of the absorbed amatoxins travel directly to the liver. Both poisoned and healthy liver cells spit out amatoxins into bile, which is then concentrated in the gall bladder. After each meal, the gall bladder releases bile into the gut, and the amatoxins travel with salts in the bile. At the end of the small intestine, most the bile gets reabsorbed back into the liver. Amatoxins re-enter the liver via the same receptors as the bile salts, and the poisoning cycle repeats.

The other 40 percent of absorbed amatoxins initially make a beeline to the kidneys, which serve as the blood-waste treatment center of the body. Healthy kidneys can extract amatoxins from the blood and send them to the bladder—an ability that is rare for liver poisons. Until the kidneys kick out every last bit of poison, amatoxins continue damaging the liver. The kidneys can continue to function only if the victim stays sufficiently hydrated. Without aggressive hydration, amatoxins poison the kidneys as well. After the kidneys fail, rapid organ failure is not far behind. But if the patient still has liver and kidney function, and enough fluid to urinate regularly, she can essentially pass the still-intact amatoxins out in urine, like the smallest, deadliest kidney stone. Every patient who still had intact kidney function and was started on the drug within 96 hours has lived.

To keep the amatoxins from causing damage, a drug would have to protect the liver while the kidneys eliminated the poison. A nationwide clinical trial is testing a new treatment for amatoxin poisoning: silibinin, a drug derived from the plant milk thistle, Silybum marianum. When administered intravenously, the compound sits on and blocks the receptors that bring amatoxin into the liver, thus corralling the amatoxins into the blood stream so the kidneys can expel them faster. S. Todd Mitchell of Dominican Hospital in Santa Cruz, Calif., and his team have treated more than 60 patients suffering from amatoxin poisonings. Every patient who still had intact kidney function and was started on the drug with- in 96 hours has lived.
SOMA OFFICERS

PRESIDENT
Jim Wheeler
SOMA president@SOMAmushrooms.org

VICE PRESIDENT
Rachel Zierdt
SOMA vice president@SOMAmushrooms.org

SECRETARY
Gene Zierdt
SOMA secretary@SOMAmushrooms.org

TREASURER
Judith Tye-Angell
SOMA treasurer@SOMAmushrooms.org

COMMITTEES & BOARDS

EPICUREAN GROUP
Chris Murray
SOMA culinary@SOMAmushrooms.org

FORAYS
Patrick Hamilton
mycochef@sbcglobal.net

MEMBERSHIP
George Riner
SOMA membership@SOMAmushrooms.org

MUSHROOM DYE COORDINATOR
Dorothy Beebee
SOMA mushroom dyes@SOMAmushrooms.org

SCHOLARSHIPS
Rachel Zierdt
scholarships@SOMAmushrooms.org

SCIENTIFIC ADVISORS
Darvin DeShazer
(707) 829-0596
muscaria@pacbell.net

Chris Kjeldsen, Ph.D.
(707) 544-3091
chris.kjeldsen@sonoma.edu

SOMA CAMP REGISTRAR
Chris Murray
SOMA registrar@SOMAmushrooms.org

SOMA NEWS EDITOR
Charles W. Thurston

SOMA NEWSLETTER DESIGNER
Eduardo Astudillo
SOMA newsletter designer@SOMAmushrooms.org

SOMA WEB MASTER
Martin Beebee
SOMA info@SOMAmushrooms.org

VOLUNTEER COORDINATOR
OPEN POSITION
Volunteer@SOMAmushrooms.org

SOMA is an all-volunteer organization, to which many individuals offer their time and energy for the greater good. As we grow as a club, and seek to expand the information and impact we have on the public, we have need for more help from more individuals with special skills. Eduardo is one who has recently answered the call. We welcome him, and appreciate his efforts, wholeheartedly.

--Chaz

Introducing Eduardo Astudillo

Eduardo Astudillo
SOMA Newsletter Designer
eduardoastudillo.com

One day—when walking in the Ferry Building in S.F., I came across a small mushroom shop where they had all sorts of edible mushrooms and mushroom growing kits. I was immediately fascinated by them. That evening I bought my dinner there and a mushroom growing kit.

Ever since that day I have been intrigued by the vast world of mushrooms. While trying to research mushrooms in the Bay Area I came across SOMA and soon joined.

I am a Visual Designer with a focus on UI/UX Design. This is my last semester at the Academy of Art University in S.F. and will be graduating with a BFA in Web Design & New Media in May 2016.

I learned about the volunteer position through the newsletter and I more than happy to dedicate time to a cause that I believe in. I look forward in working with all of you and will work hard to modernize all media for SOMA. Thank you for the opportunity.

Eduardo Astudillo
eduardoastudillo.com
ent to FDA, it will be a slam dunk for approval,” Mitchell says. “The drug has virtually no side effects, it’s very well tolerated, and if used correctly it’s awesomely effective.” After ingesting amatoxins, “patients go into early renal failure for two reasons,” Mitchell explains. “One, they just present so late that their kidneys have already shut down. Or two, more commonly, they’re just not aggressively hydrated enough by the treating physicians.”

Medical treatment often goes awry in the early stages of amatoxin poisoning. Poison control centers generally recommend three main treatments, none of which is effective. First, activated charcoal is recommended to prevent poisons from being absorbed by the gastrointestinal tract and causing liver damage. This works well for most poisonings, but by the time a patient usually seeks medical assistance for amatoxins, the poison has traveled well past the GI tract. Similarly, centers often recommend pumping the patient’s stomach, which is hard on the body and does nothing to remove the amatoxins damaging the liver. Third, acetylcysteine is often prescribed. It is very effective at preventing liver damage in acetaminophen poisoning. But in amatoxin poisonings, it is completely ineffective, thins the blood unnecessarily, and gives misleading liver-function test results. These recommendations make the patient sicker while diverting attention from the most effective weapon against amatoxins: aggressive hydration.

Part of the challenge of recognizing the symptoms of amatoxin poisoning and properly treating it is that mushroom poisonings are relatively rare. The first time a physician treats a patient for amatoxin poisoning, Mitchell explains, is likely to be her last. Doctors may be encountering more cases in the near future, however.

The death cap mushroom is an invasive species from Europe, now present on every continent except Antarctica. It became such a world traveler because humans spread the mushroom’s spores around like glitter at a kids’ glitter party. Fungi such as the death cap are ectomycorrhizal, meaning that they live symbiotically on the roots of trees. The fungus extends from the roots to form a network in the soil, called a mycelium, which is much finer than tree roots. The mycelium can more easily reach nutrients like nitrogen and phosphorous than the tree can, and it trades these nutrients with the tree in exchange for sugars, which the tree makes using photosynthesis.

A mushroom is the lovechild of two sexually compatible mycelia. Mushrooms in turn make tiny spores that easily disperse and can grow into new mycelia. A shift from partnering with a deciduous oak to a coniferous pine tree is a very large step for a fungus.

In the 19th century, people tried introducing their favorite trees to new continents. continued
Anne Pringle became interested in the death cap as a postdoctoral fellow studying fungi at the University of California–Berkeley. (Disclosure: She later became my graduate adviser.) She was learning the local mushrooms by collecting them in the small canyon behind her house. She brought one sample to an adviser, Tom Bruns, who identified it as Amanita phalloides. He then hinted about an enticing rumor among the amateur mycological community that the death cap wasn’t actually native to California.

Pringle quickly learned that scientists in the early 20th century had been using descriptions to identify death cap that encompassed several other species. By sequencing the DNA of old, dried specimens in collections across the country, she found that all specimens labeled before 1938 were actually different species of Amanita. While other North American mushrooms had long records in herbaria, the death cap seeds were planted but quickly died. Nothing seemed to help until someone had the bright idea to bring seedlings in pots with their native soil. The soil worked like a charm. The trees grew smashingy, but people didn’t know they had spread fungal spores and other soil microbes along with the trees.

A few researchers in the mid-20th century did notice that some mushrooms seemed to have appeared in new areas, but because they lacked a historical baseline for fungal diversity, nothing could be proved. Most scientists simply assumed the death cap was native to both Europe and the United States.

Anne Pringle became interested in the death cap as a postdoctoral fellow studying fungi at the University of California–Berkeley. (Disclosure: She later became my graduate adviser.) She was learning the local mushrooms by collecting them in the small canyon behind her house. She brought one sample to an adviser, Tom Bruns, who identified it as Amanita phalloides. He then hinted about an enticing rumor among the amateur mycological community that the death cap wasn’t actually native to California.

Pringle quickly learned that scientists in the early 20th century had been using descriptions to identify death cap that were so broad they encompassed several other species. By sequencing the DNA of old, dried specimens in collections across the country, she found that all specimens labeled before 1938 were actually different species of Amanita. While other North American mushrooms had long records in herbaria, the death cap
made a sudden appearance in 1938 and became increasingly common after that year. Pringle also sequenced the DNA of wild *A. phalloides* mushrooms picked in the United States and Europe. She found much less genetic variation in U.S. mushrooms. That indicated that the species had started in Europe and that the U.S. mushrooms had undergone a “population bottleneck” in which a mere handful of individuals had colonized the continent.

Why were most scientists wrong about the death cap? Prior to Pringle’s discovery, known invasive fungi fell exclusively into the category of plant or animal diseases, such as the one that wiped out the American chestnut. These fungi were ones we can usually see on the host, and they cause obvious symptoms. The death cap can’t live without its tree host. In order to become invasive, *A. phalloides* underwent something incredibly rare: a host shift. The fungus somehow switched from being able to grow only on European oak roots to growing on a completely different oak species, the California live oak. Not only was it able to colonize a new species of oak, but in the United States it has also been found to grow on native pines. A shift from partnering with a deciduous oak to canoodling with a coniferous pine tree is a very large step for a fungus. Pringle’s discovery shook up scientists’ ideas of what it means to be a symbiont.

I joined the Pringle lab. I am currently conducting a literature review of research on *Amanita phalloides* and hope to eventually uncover the cellular mechanism by which the death cap was able to switch hosts.

The death cap is now widely distributed in the United States. Based on the weather patterns within its native range, it appears to have spread as far as tolerable conditions allow on the East Coast. But there are still areas in the Pacific Northwest and Canada that it should be able to live in but where it hasn’t yet been recorded. The mushroom is spreading in Ohio, and marching south into Mexico.

With this long history of confusion about whether or not the death cap is native, combined with the fact that it’s still spreading, it’s not surprising that people accidentally harvest and eat it. Similarly, it’s no wonder that people intentionally eat it: It’s large and meaty, it’s often plentiful, and it smells delicious.

One thing that makes this mushroom especially dangerous is that it commonly grows among *Agaricus campestris*, the meadow mushroom, which it closely resembles to the untrained eye. Even very experienced mushroom hunters aware of both the historical confusion and the death cap’s resemblance to edible fungi have been poisoned by *Amanita phalloides*. Because the mushroom is so deadly and can grow side by side with edible species, one wrong mushroom picked in the failing light can invite disaster. If you ever suspect you may be suffering from mushroom poisoning, ask your doctor to call Mitchell in Santa Cruz and request to be enrolled in the milk thistle treatment study. He will ship silibinin to anyone, anywhere in the world.

And remember to stay hydrated if you want to live.

**Death cap is still moving**
The Most Dangerous Mushroom
Catharine Adams

SOMA Volunteer Board
Open Positions

Monthly Speaker:
Adventures in Madagascar
Jakie Shay

City of Gold
Lee McCarthy-Smith

Recipe of the Month
Avocado-stuffed Portobello Mushrooms

Foragers Report
Patrick Hamilton

Between Phaleolus and Fritillaria
Dorthy Beebee

Image of the Month

SOMA Announcements

Community Composting
James Johnson

Healdsburg School Science Fair
Rachel Zierdt

Directions and Map

Myco Art of the Month
OPEN POSITIONS

SOMA Website Manager

SOMA’s new website is being completed by an outside builder and the delivery date is not far away. We need someone with a bit of experience managing a website, including very basic HTML. Hopefully, the new site will be far more user friendly than the old one. Responsibilities would be to post new announcements, notices, photos, stories, etc., and coordinate with the Board for any membership tasks.

Please contact Jim Wheeler at SOMApresident@SOMAmushrooms.org.

SOMA News Editor

We are seeking a new editor of the monthly newsletter to assist in all phases of material gathering and editing, layout and distribution. The position can be fulfilled from your home office, using your computer and phone, and our software, and would require approximately one day per month. The primary software is Word for documents, and In Design for layout. We currently use Excel and Mail Chimp for distribution, but are open to other methods/software. The website is currently being rebuilt, and hopefully will incorporate more automation for the newsletter production and distribution in the near future.

The position would also be to contribute new ideas in coverage and/or channel distribution that will help spread our readership and drive new members for SOMA, wherever they may be located.

If you are interested, please send an email to me, Chaz Thurston, at chazwt@gmail.com stating your situation and any skills that would ease your learning curve.

SOMA Director of Communications

We are also seeking candidates for a new position, director of communications, to work closely with the director of public relations and the board to enhance contact and information flow between club members, members of the board, prospective members, event participants, other clubs and the mycological world at large. The position requires someone comfortable with speaking to anyone or any group about almost anything, and the ability to electronically communicate through various channels.

The position will likely be incorporated into the board composition, sooner or later, and would require about one day per month, apart from monthly board meetings.

If you are interested, please send an email to Patrick Hamilton at mycochef@sbcglobal.net, describing your experience, skills and ability to donate time.
“Adventures in Madagascar: A Hunt for Marasmius” I have spent the last four years under the tutelage of Dr. Dennis Desjardin of San Francisco State University’s Department of Biology. During that time, I have had the great fortune of being introduced to the wonderful world of fungi, and it has led me on a series of adventures that have inspired and motivated me to understand the evolution and ecology of fungi worldwide. For my Master’s thesis, I started a Kickstarter campaign to raise awareness and funds to explore the exquisite tropical paradise of the island of Madagascar. In 2014, I spent the better part of January and February on my hands and knees looking for the smallest of mushrooms responsible for decomposing plant litter: Marasmius. These beautiful little fungi are essential in the health and maintenance of rain forest ecosystems, but little is known about their diversity and evolution from this part of the world. This is my mission, and I am excited to share these findings with you! Join me, as I take you to Madagascar and back, while diving into the taxonomy and phylogenetics of this lovely genus of Basidiomycota.

Anyone wishing to submit stories, notices, photos, drawings or other content is welcome, and should address them to Editor Chaz Thurston at chazwt@gmail.com. We print all the news and then some. Please direct any comments to the Editor.
If you have a chance to see the movie “City of Gold”, a Sundance Film festival movie, I highly recommend it. The movie is about Pulitzer Prize Winner, LA food critic Jonathan Gold. It does an excellent job conveying how, in a world where there are so many dividers, so many “us versus them” segregators, that food is a beautiful commonality. Food after all is what makes us all the same; we are human, we all need to eat in order to live. The movie went on to talk about different types of restaurants and cultures and how food bridges the cultural divides between us.

What does this have to do with mushrooms? Mushrooms as a food is the same; different cultures value different mushrooms and use them in their cuisine differently. Trying different mushrooms, prepared in different ways can be fun and exciting, it can also be a great way to connect with different people and learn more about them and their culture.

At SOMA’s last foray, for example, we met a family from Russia that talked about how to pickle the short-stalked white Russula; Russula brevipes (in Russian called “sukhoy gruzhd”). They talked about how this mushroom is choice there, where they are from. Before meeting them, I didn’t know anyone ate Russula brevipes and definitely never thought anyone would think they were “choice”. Apparently they can taste pretty good pickled. After talking to them, I not only now want to try eating pickled Russulas, I found myself wanting to be invited over to their house to learn how to pickle them.

With spring upon us, the mushroom season in Sonoma County is waning. We have just one more SOMA foray this month, the final one for the season. Not only am I looking forward to seeing what mushrooms we find, I look forward to the potluck afterwards. To the amazing cuisine that a diverse group of people who are interested in mushrooms will bring. Hope to see you there!
Avocado-stuffed Portobello Mushrooms

INGREDIENTS | Serves 4
---
8 small or 4 large portobello mushrooms
2 tbsp butter
2 leeks, sliced
1 garlic clove, pressed
2 large California avocados, peeled and chopped
1 tsp chopped fresh or dried rosemary
1 tbsp lime juice
¼ tsp salt
4 oz goat cheese
3 tbsp chopped walnuts
2 tbsp olive oil
garnish: fresh rosemary sprigs

DIRECTIONS
Remove brown gills from the undersides of mushrooms using a spoon; discard gills.
Remove stems, if necessary, and reserve for another use, if desired.
Melt butter in a large skillet over medium heat; add leek and garlic, and sauté until tender.
Remove from heat, and cool.
Stir together avocado and next 3 ingredients in a medium bowl; stir in leek mixture.
Press goat cheese evenly into mushroom caps; top evenly with avocado mixture.
Sprinkle with walnuts, and drizzle with olive oil.
Place on rack in a broiler pan.
Bake at 400 °F for 5 minutes; cover loosely with aluminum foil, and bake 5 more minutes.
Serve immediately.

Recipe and Photo: http://recipes.wikia.com/wiki/Avocado-stuffed_Portobello_Mushrooms
“Nice and Nicer (Or The Other Way Around?)”

By Patrick Hamilton

Lately a whole lot of Princes have been found and/or lately a whole lot of Princesses have been found. I’ve lost track of the way to tell the differences, apparently—or I don’t really care. Reading the literature you see real similarities and having them in hand you do too. But rarely do you get to have them both in your possession at the same time. I think.

But recently up and down the coast folks have been finding them (one or the other) more this year than in my ever experience. I get emails asking me to help i.d. them from pics but unless you smell them and maybe rub them too they are hard to discern. For me. But they both taste real good.

Another oddity so far this long mushroom season is Dimitar’s Yellow-Frocked Amanita (a.k.a. augusta) that hasn’t yet stopped fruiting. It’s been seen up at SPSP since the first fungi came up and it continues. Very cool.

Still a very bad black trumpet year. Same as for yellowfoot and belly button hedgehogs. Maybe the four year drought strangled some mycelium? Sweet tooth have been sweetly arriving (and oh so very tasty).

But it’s just about time to look east: “Go East young man!” was a famous statement made here near Cotati some years ago by a famous morel merry maker. I heard it myself.

So let’s focus on the mountains, check the soil temperatures, look for indicator fungi, dogwoods blooming, elderberry too, and report back here next month.

For good looks at the prince and princess see Mykoweb:
http://www.mykoweb.com/CAF/species/Agaricus_perobscurus.html

- - p.s.: I capitalized “Prince” and “Princess” in the first sentence just because I wanted to, for emphasis. I’ve never seen the true rule about such for names of mushrooms--seen the every which way--so I sometimes do and sometimes don’t.
This is the time of year when I’m again torn again in two different botanical directions – between *Phaeolus* and *Fritillaria*…… Julie brought in a prime specimen of the former from the recent SOMA Foray at Salt Point, and the latter are sprouting their little pointy leaves just down my road. A solitary walk in February 2003 in overcast Armstrong Woods looking for “*Trillium*” and “*Calypso orchids*”, revealed only one blooming “Redwood Sorrel “ next to a brilliant red waxy mushroom, *Hygrophorus punicicea*… Wait a minute! Is this article for the California Native Plant Society or for the Sonoma Mycological Association? You can see the dilemma…

And then, as if to further complicate my impending schizophrenia, I picked a small bucket full of little cinnamon colored orange-gilled *Dermocybe* growing in grass under Monterey Pine down at Patrick’s rancho in Cotati, to dry and save for SOMA Camp next year! Usually there are lots of these little guys up in time to use for the dye baths at SOMA Camp, but NOT this year – no, nary a one… This is a “population” that I’ve been picking and studying for 6 years now. Darvin and I think that those orange-gilled *Dermocybe* actually may be 2 different species – *D. cinnamomea* and *D. malicoria*. But until a few weeks ago, I had never had a chance to make any kind of detailed color drawings of them. One group has bright orange gills when young – the other has yellow/gold gills, so picking a few really young ones with their brilliantly colored gills, preferably with the cortina intact, is requisite for ID purposes.

At first I thought that the yellow-gold gilled specimens were just immature stages of the orange-gilled ones – but now every February over the last 6 years. I have collected enough young ones to note that they do have distinctly differently colored gills. The dyes over these years from both the yellow/gold-gilled ones and the orange-gilled mushrooms are consistent and similar, year after year – a sort of “warm peachy-beige” using both alum and iron mordants. BUT, if ones adds a dollop of white vinegar to “acidify” (changing the pH of the dye-bath from “normal” 7pH down to pH4), the colors turn toward brilliant, almost “neon orange” in hue. My understanding is that adding the acid strips the glucose from the pigment mol-ecules, which in turn release a more brilliant color. I’m sure a dye chemist could/would correct our elucidate this in more complete chemical terms…

But you know what? No matter what “They” call a mushroom, the dyes don’t lie! They either contain a certain pigment(s) – (which reacts to a certain mordant) or not, and that is what counts! To heck with the “names”!!! A dye mushroom is a dye mushroom, no matter by what name we mortals call it…….
IMAGE OF THE MONTH

Prince *Agaricus augustus*
Red Barn Show

“Secrets of the Forrest - Portraits of Wild Mushrooms”

Paintings by Lucy Martin
April 4 - June 29, 2016
Red Barn
Point Reyes National Seashore

Artist Reception
Saturday April 9, 11am-4pm

Red Barn
Point Reyes National Seashore

One Bear Valley Road
Olema, CA
In the Red Barn at the Entrance of the National Park Headquaters

Gallery Open by Appointment
Call (415) 464-5125 for more information

ANNOUNCEMENTS
The Ground Rules: A Manual to Reconnect Soil and Soul

There are four case studies from 4 Chicago neighborhoods. The manual would have benefited from one final proofreading, but that will not distract most users.

Because public policy on community composting varies so much across the country, the authors wisely did not try to include comprehensive information on local policy. There is a useful chapter on working with the EPA from a community perspective.

The Ground Rules: A Manual to Reconnect Soil and Soul

By: Nance Klehm with Jacob Blecher, Brett Bloom, Martin Brown, Evon Izquierdo, Erik Newman, and Victoria Thurmond.

Purchase at: http://socialecologies.net/tgrmanual/

$13.68 for 1-4 copies
Less for bulk orders.
Social Ecologies

Written for any urban grower or inhabitant, The Ground Rules: A Manual to Connect Soil and Soul is both a document of The Ground Rules process and a guide to community composting and DIY soil remediation. As a practical guide the manual is full of detailed information on how to research a garden site, how to test your soil for toxins, and how to heal the soil through phyto- and mycoremediation. But it reaches beyond the how-to's as well, to talk about the whys, with essays on restorative justice and deep mapping, and histories of the Chicago neighborhoods in which we work. Encouraging learning through observation, the manual asks at every juncture, “How is your body connected to that which is underneath your feet and supporting every step?

Excerpted by James Johnson

The Ground Rules: A Manual to Reconnect Soil and Soul is a newly published manual on community composting. Based on the pioneering work of Nance (pronounced Nancy) Klehm and many others, the 72-page magazine-style manual is:

-- ecologically produced (newsprint)
-- well-organized
-- filled with the information that any neighborhood or community can follow to soil- and community-building success
-- visually attractive, well-designed with many photographs and line-drawings of plants, inspiring and practical language.
By Rachel Zierdt

A blustery evening in early March found SOMA scholarship judges Jim Wheeler, Lee McCarthy Smith and Rachel Zierdt in the quaint town of Healdsburg to judge projects at the town’s science fair. Unlike the Sonoma County Fair which takes projects from 7-12 grade, Healdsburg tries to encourage every student to participate whether they are in Kindergarten or in any other grade up through 12th.

Using our own scoring tools (at the county where they wanted us to use theirs) we walked through the hall which contained only Natural Sciences. (There is an additional hall that contains projects dealing with the Physical Sciences.) Many of the projects were similar...... How to best sprout seeds?, What is the best liquid to water plants?, How does music affect learning? They were well done, physically appealing and based in sound scientific practices.

Amid these projects we found a few with very unique ideas. One that we chose to recognize was created by two 8th grade boys from Healdsburg School, Rik Van Hoorn and Josephy Headley. Their project was named Ants Vs. Cucumbers. They had done some research and discovered that certain products repelled ants...cinnamon, lemon juice, peppermint, borax. Cucumber was perhaps a new arrival on that list. What we appreciated was when they created the experiment and found that the assumption was false, they didn't stop there. They continued on investigating and trying permutations of cucumber and other products listed above.... that demonstrated additional curiosity and use of problem solving techniques.

We also singled out two other projects that related to studies of yeast. Jack Dippel, a 7th grader at Healdsburg School tested different yeast powders and Ted Tomerlin a 10th grader at Healdsburg High studied factors that might affect rates of fermentation. For these two young men, we decided, in lieu of a cash award, to offer an opportunity to attend a day at SOMA’s mushroom camp in January.

The SOMA’s Board also decided to offer $250 to the Healdsburg Science Fair Foundation to help continue their efforts in sponsoring science fairs.

The upcoming job of the scholarship committee will be reading and evaluating graduate level research. Those applications are due at the end of May. Thank you camp attendees for helping fund all of these awards. You help SOMA make a difference in the study of science.
Your membership in the Sonoma County Mycological Association, or SOMA, is a great way to meet and interact with other mushroom enthusiasts. Head to http://somamushrooms.org/membership and sign up; the season is just beginning!

SOMA Monthly Meeting Directions & Map

SOMA usually meets on the third Thursday of the month throughout the year (September through May), at the Sonoma County Farm Bureau, 970 Piner Road, Santa Rosa, California, 94931. Fungi are displayed at 7 PM, and speakers begin around 7:30 PM. Bring in your baffling fungi to be identified!

Directions to the Sonoma County Farm Bureau

From the south:
- Go north on Hwy 101
- Pass the Steel Lane exit then take the Bicentennial Way exit
- Go over Hwy 101 (heading west) and then right on Range Ave
- Turn left on Piner Rd. and go about 1/4 mile
- Turn left into Farm Bureau parking lot at 970 Piner Road

From the north:
- Go south on Hwy 101
- Take the first Santa Rosa exit for Hopper Ave/Mendocino Ave
- Stay left on the frontage road (it becomes Cleveland Ave)
- Turn right on Piner Rd. and go about 1/4 mile
- Turn left into Farm Bureau parking lot at 970 Piner Rd.