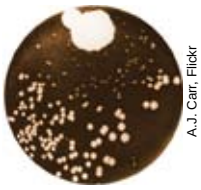
SPORE PRINTS

BULLETIN OF THE PUGET SOUND MYCOLOGICAL SOCIETY
Number 478 January 2012

FLEMING'S FUNGUS STILL SURPRISING SCIENTISTS

Sam Wong
Imperial College London, Nov. 21, 2011

From the moment that a spore of fungus fell onto Alexander Fleming's culture plate in 1928 and killed the bacteria around it, that fungus was destined to become one of the most studied organisms on the planet. But despite eight decades of lavish attention from scientists, it seems there may have been a case of mistaken identity.


A.J. Carr, Flickr

Fleming's original penicillium fungus.

The fungus that contaminated Fleming's bacterial culture in his messy laboratory in St. Mary's Medical School (which became part of Imperial College London in 1988) was later ascribed to the species *Penicillium chrysogenum*. Now scientists at Imperial have subjected preserved specimens of Fleming's fungus to modern genetic analysis, and discovered that it's actually a closely related species which has yet to be named.

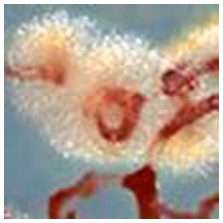
Dr. Matthew Fisher and Dr. Daniel Henk from the School of Public Health, who led the research, also asked volunteers around the world to collect fungal spores from the air by leaving out pieces of sticky tape overnight. They compared genetic data from Fleming's fungus with the samples posted back by their international collaborators to see what modern science would reveal about the natural history of the celebrated mold. They found that there may be four different species lurking under the label of *P. chrysogenum*, at least two of which are found all over the world.

"Our study highlights the amazing biodiversity of these airborne fungi," Henk said. "Fleming and everyone else since really had no idea what they were dealing with. With the genetic techniques we've brought to bear we suddenly can see all these biological differences because we can put the isolates in the right groups. Some may ultimately lead to new useful compounds."

A BACTERIAL PLATOON WITH FUNGAL ENGINEERS

Ritchie S. King
The New York Times, Nov. 28, 2011

Bacteria and fungi—microbiology's classic enemies—constantly fight over the rhizosphere, the enriched underground environment created by nutrients leaching from the roots of plants into the surrounding soil. But a new study reveals how a particular bacterium-and-fungus pair may be cooperating.


Colin Ingham & Eshel Ben Jacob

Fuzzy-looking fungal spores growing out of a bacterial scrum.

The bacterium, *Paenibacillus vortex*, is capable of moving by spinning its flagellum, and big groups of bacteria will link flagella together like rugby players in a scrum to move en masse, covering inches in a couple of hours.

The fungus, *Aspergillus fumigatus*, is immobile, so it can grow only where its spores happen to land; in the wind, they travel far, but their range is limited underground.

It turns out that when a swarm of the bacteria migrates from a depleted sector of the rhizosphere to a richer one, it carries some Aspergillus spores with it, potentially providing the fungus passage to fresh soil.

But sometimes en route, the caravan comes up against a pocket of underground water or air.

"They can move really fast, but it's a bit like a train," said Colin J. Ingham, a microbiologist in the Netherlands and an author of the study, which appeared in *Proceedings of the National Academy of Sciences*. "They can't fly; they need some way of getting across obstacles."

That's where the fungus comes in. The spores grow outward into branches called mycelia that bridge the gaps between the soil, allowing the scrum of bacteria and other spores to advance.

PRESIDENT'S MESSAGE

Marian Maxwell

By now you will have received an e-mail directing you to posted proposed changes to the Puget Sound Mycological Society's current bylaws. We have sent snail-mail copies to those of you without an e-mail address. At the link given in your e-mail or in your mailed copies, you will find a copy of the current bylaws as well as a copy of the proposed bylaws (yellow highlighting) and an explanation of the proposed changes (red highlighting). Please review the changes proposed in the documents.

We will have a special bylaws discussion prior to the general membership meeting on January 10, 2012, to answer any questions and to explain the proposed changes. This meeting will be held from 6:00–7:00 pm in the same hall as our general meeting which is at 7:30 pm that same day. The vote on whether to incorporate these changes into our existing bylaws will be held after the general meeting has been called to order.

You do not need to log into the member's section of the website to view the proposed changes, but you will need to retain the link that was sent to you to access the page.

If you cannot find the e-mail, it is possible that your e-mail address in our roster is not valid or that the message ended up in your junk mail folder. If you would like to update your profile in our database by adding or correcting your e-mail address, you may do so by logging in to the members-only portion of the website at www.psms.org. If you do not know your user name or password, you can use your e-mail address as your user name, and then reset your password through the steps provided to you.

If you e-mail me at president@psms.org, I will send you the link to the webpage by e-mail again. Please contact me via e-mail or phone (425-235-8557) if you have any concerns or questions.

Spore Prints

is published monthly, September through June by the

PUGET SOUND MYCOLOGICAL SOCIETY
Center for Urban Horticulture, Box 354115
University of Washington, Seattle, Washington 98195
(206) 522-6031 http://www.psms.org

OFFICERS: Marian Maxwell, President[2010–2012]
president@psms.org (425) 235-8557
Milton Tam, Vice President[2011–2013]
miltontan@aol.com (206) 525-9556
John Goldman, Treasurer[2010–2012]
treasurer@psms.org (206) 933-0838
Denise Banaszewski, Secretary[2011–2013]

TRUSTEES: 2011–2013:
Teddy Basladynski, Linda Haba, Randy Richardson, Andrea Rose, Reba Tam
2010–2012:
Louise Asif, Jim Hughes, Pacita Roberts, Ed Sakai, Tony Tschanz
Patrice Benson (Immed. Past Pres.)

ALTERNATES: Debra Lehrberger, Lisa Page Ramey

SCI. ADVISOR: Dr. Joseph F. Ammirati

EDITOR: Agnes A. Sieger, 271 Harmony Lane, Port Angeles, WA 98362
sieger@att.net

CALENDAR

Jan. 10	Membership Meeting, 7:30 pm, CUH
Jan. 16	Board Meeting, 7:30 pm, CUH Board Room
Jan. 24	*Spore Prints* deadline

NOVEMBER BOARD NEWS **Denise Banaszewski**

We have posted the proposed bylaws on the PSMS website and will be voting on them in January. Teddy Basladynski and Patrice Benson will be on the nominating committee for the election, and Marian Maxwell will ask a few people who are not on the board to also be on the committee. For the elections, we will allow one vote per member, up to 2 votes per family membership, and we will enable online voting if it is possible. Teddy is checking on an Android/iPhone App for our website and will let us know if he thinks that it is worth getting. We are planning on having eight field trips this spring, along with a foray to Cispus, which we will call the Joy Spurr Memorial Foray. Milton Tam has a P-Patch spot, and he has procured a $500 grant earmarked for a display mushroom garden.

When he found that the fungus was killin'
The germs, Alex Fleming was willin'
To examine the mold
Found on bread; we are told
That's the way that he found penicillin.

—SheilaB, OEDLIF

MEMBERSHIP MEETING

Tuesday, January 10, 2012 at 7:30 pm at the Center for Urban Horticulture, 3501 NE 41st Street, Seattle.


Duane Sept

We begin the New Year with Duane Sept as our speaker. His presentation is titled *A Pictorial Introduction to Mushrooms of the Northwest*. Duane is an award-winning natural history photographer, biologist, and freelance writer. His photographs have been published internationally in displays, books, magazines, and other publications. His clients include BBC Wildlife, Parks Canada, Nature Canada, the National Wildlife Federation, and the World Wildlife Fund. Duane teaches photography courses on nature, close-up, and wildlife photography as well as leads nature photography tours.

His work as a biologist and as a park naturalist has included research on various wildlife species. He has written a several books on the Pacific Northwest, including *Common Mushrooms of the Northwest, Wild Berries of the Northwest,* and his latest, *Trees of the Northwest*. His mushroom book was the result of many years of photographing and cataloguing species of mushrooms from Alaska to Oregon. Duane has found that mushrooms make excellent photographic subjects; they simply don't run away or wave in the wind, like most of his other subjects. Come prepared to ask questions about improving your mushroom photos, or to just enjoy his amazing photography. His website where you can view many of his images is www.septphoto.com.

Will people with last names beginning with the letters L–Z please bring a plate of goodies to share after the meeting.

POWDERCAP STRANGLER: RARE FUNGUS FOUND IN UK GARDEN **Brett Westwood**

BBC Natural History Unit, Dec. 6, 2011

A north Worcestershire garden is playing host to a very rare fungus—the bizarre powdercap strangler (*Squamanita paradoxa*).

The fungus is confined to a handful of sites in the UK, and is equally rare in continental Europe.

Nine of the strange mushrooms were discovered by Worcestershire mycologist John Bingham on a mossy garden lawn in November 2011.

In the few places where it has been seen, it doesn't produce its toadstool-shaped fruiting bodies every year. And it is so rare that it is unknown even to many experienced mycologists.

It is called the powdercap strangler because it is a parasitic fungus. It is actually an outgrowth, or gall, on another fungus—the earthy powdercap (*Cystoderma amiathinum*). This common orange mushroom grows on old grassland.

Just how the strangler infects its host is not clear, but it appears to induce a parasitic gall which body-snatches the powdercap and uses its stem to support itself.

The result is a two-part toadstool; a fungus body comprising two colors in which the grayish cap of the strangler is clothed below by the orange "stockings" of the powdercap.

This sort of parasitism is rare in the fungal world; only about 30 European species are known to be parasitic.

Researchers working on the relationship between the powdercap and its strangler suggest that they may be closely related and that the relationship could even be symbiotic—with the two fungi interacting, rather than the strangler acting as a parasite.

About a dozen or so sites are known for *Squamanita,* from Cornwall to Scotland, though several records have come from Wales and the Welsh Marches.

The Worcestershire finding is particularly unusual and exciting for scientists. The stranglers here are growing in a garden lawn which has not been fertilized for 50 years and now supports more than 70 species of fungi.

This includes 14 species of waxcaps—colorful fungi that are indicators of the quality of species-rich turf.

Two-part toadstool: The greyish strangler is clothed by the orange "stockings"" of the earthy powdercap.

A BOUNTIFUL YEAR FOR THE DEATH CAP

Katharine Mieszkowski

The Bay Citizen, Dec. 3, 2011

You don't have to wander very far off the road this time of year before stumbling upon *Amanita phalloides,* the deadliest mushroom in California.

On a recent foray in Roy's Redwoods Open Space Preserve in Marin County, David Campbell, who has been hunting mushrooms in the county for 40 years, immediately spotted specimens of that toxic fungus, more commonly known as the Death Cap, growing near an entrance to the preserve.

The Death Cap, which is native to Europe, was introduced in California, according to Dr. Anne Pringle, associate professor of organismic and evolutionary biology at Harvard University.

The earliest confirmed collection on the West Coast was in Monterey County in the 1930s on the grounds of what was then the Del Monte Hotel, a venue famous for its gardens full of exotic species. In 1945, the mushroom was gathered on the campus of the University of California, Berkeley, as well.

Since then, it has been found as far north as Washington and British Columbia. It particularly thrives in the oak woodlands and mixed evergreen forests around San Francisco Bay and San Pablo Bay and flourishes in the Bay Area in a symbiotic relationship with local oak trees.

The Death Caps found in California are much larger than the same species back in Europe. "They're massive," Pringle said. "In California, they're also found more abundantly than in Europe," she added.

This year, after the fall rains, the mushrooms are "out in large numbers, and early," said J. R. Blair, a lecturer in the biology department at San Francisco State University. "In many places where I go looking for mushrooms this time of year," says William Freedman, chairman of the toxicology committee for the Mycology Society of San Francisco, "they are the most common to be found."

According to Campbell, "The chance of us having an incident any day now is very high, because people who wouldn't normally notice mushrooms are seeing them."

From 2009 to 2010, 271 people in the Bay Area required treatment at a health care facility after ingesting a mushroom, according to the California Poison Control System. Among them were 136 children age 5 or younger. Statewide, two people died and 10 others suffered a major health problem, like kidney or liver failure, after eating wild mushrooms from 2009 to 2010, according to the most recent data.

The most serious illnesses occur when fungus enthusiasts pick and eat Death Cap or other poisonous mushrooms. "We've never had a case of serious poisoning from an accidental mushroom poisoning where a child ate something in the backyard," said Dr. Kent Olson, medical director of the San Francisco division of the California Poison Control System. "It's really people preparing the mushroom thinking that it was edible."

The deaths and the most serious illnesses have been linked to *Amanita phalloides* and its cousin *Amanita ocreata*, better known as the Destroying Angel. Both cause liver damage. While the two species are equally deadly, *Amanita phalloides* is more frequently collected and eaten, experts say.

The Death Cap is often a dull green color, but it can be tinged with brown or gray, or even be white. It is also reputed to be delicious. "One guy that died said it was the best mushroom he'd ever eaten," Dr. Olson said.

State health officials advise against picking and eating wild mushrooms unless a mushroom expert evaluates the spoils first.

"It is very difficult to distinguish which mushrooms are dangerous and which are safe to eat," Dr. Ron Chapman, director of the California Department of Public Health, said in a recent statement warning about the hazards of consuming the wrong fungus.

Amanita phalloides.

Don't eat amanitas — you'll quiver.
You'll fall to your knees, and you'll shiver.
Poison mushrooms, that's why,
And you'll probably die.
If you don't, then you'll need a new liver.

—Meg Beagle, OEDLIF

BE PREPARED

Maggie Iadanza

MushRumors, Ore. Myco. Soc., Nov./Dec. 2011

More than just a Boy Scout motto, "Be Prepared" should be the mantra for anyone who heads out to hunt mushrooms. On the member website, OMS has guidelines for field trip participants and leaders that include a long list of gear and procedures to help us stay safe.

In addition, we all need to take a fresh look at some of the choices we may have made when mushroom hunting in the past that put us at risk...heading out down one last trail in fading daylight...leaving

cont. on page 7

RESUPINATE FUNGUS OF THE MONTH:
The Genus *Leucogyrophana* © Brian Luther

The genus *Leucogyrophana* is characterized by rather thin, fragile, loosely attached, cottony fruiting bodies, often with a distinctly merulioid hymenophore (fertile spore-bearing region consisting of fold-like ridges) which is often a yellow, orange, or brownish color, and a monomitic hyphal system. Some species have cordons (distinct rope-like strands or bundles of parallel hyphae). The spores are ellipsoid, thick-walled, cyanophilous (stain blue in Cotton Blue), and may or may not be dextrinoid (become warm brown in Melzer's Regent), depending on the species.

All species are brown-rot fungi (Nilsson & Ginns, 1979), which means they are incapable of decomposing the lignin component of wood and therefore test negative for extracellular, polyphenol oxidase enzymes.

I only infrequently find these fungi while collecting resupinates. They're not rare, but they're also not common.

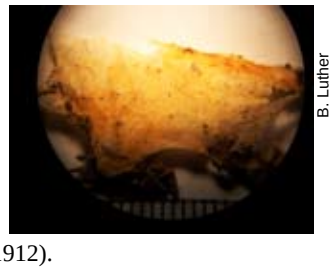
Description of Collection

Leucogyrophana mollusca, *sororia* complex
Brian S. Luther coll. #2011-930-1
On the underside of a dead, fallen conifer log. Soda Springs Campground, Bumping Lake Road, Yakima Co., WA. Elev. 3,200 ft. Collected Sept. 30, 2011.


B. Luther

Leucogyrophana sp. *Brian S. Luther coll. #2011-930-1.*

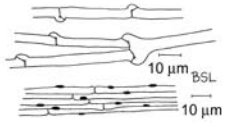
***Basidiocarp*:** Resupinate, spreading up to 2–3 cm sq., *hymenophore* merulioid when fresh, light brownish-yellow or yellow-orange as "Pale Orange Yellow," "Maize Yellow" to "Buff Yellow,"* very loosely attached to the substrate and easily removed, up to 2 mm thick and very soft, fragile, and cottony when fresh, drying athelioid (hymenium forming a thin pellicular membrane), ultra thin, fragile, and subtransparent in places with some areas remaining very glassy, compact, and becoming difficult to revive after drying, former (fresh) merulioid ridges or folds only visible as slightly darkened, finely raised lines over the hymenial surface, but not retaining any distinctive merulioid appearance dried; *margin* loosely cottony, bright white to whitish, up to 5 mm wide, with the extreme outer margin distinctly arachnoid (finely cobwebby) when viewed under a dissecting microscope. (Refer to color habitat photo in the on-line version of *Spore Prints*.)


B. Luther

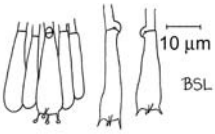
BSL coll. #2011-930-1. View under dissecting microscope after drying, showing super thin basidiocarp with no merulioid appearance.

*Colors in quotes are from Ridgway (1912).

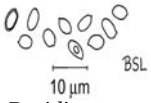
***Microstructures*:** *Hyphal system* monomitic; *hyphae* 3–5 (6) µm wide, thin to thick walled, hyaline, smooth to somewhat to abundantly crystal incrusted, clamp connections are common on many septa and branching is common; *cordons* present, composed of fairly uniform, parallel, infrequently branched hyphae, with or without clamps on the septa, often with some light to very heavy crystalline incrustation; *Cystidia* none. *Basidia* 23–41 x 7–9 µm, clavate, thin-walled, hyaline, with a basal clamp, four sterigmate. *Basidiospores* 5–6 x 3.5–4 µm, ellipsoid, thick walled, very lightly colored, appearing even in lateral view but sometimes slightly wider on the proximal (apicular) end in face view, smooth, cyanophilous, spore wall not staining in NH_4OH and Congo Red, non-dextrinoid, sometimes with a small central guttule. Refer to photomicrographs and line drawings.



Hyphae and a small section of a cordon with some incrustation.



Hymenial view with mature and immature basidia.



Basidiospores.


B. Luther

Cyanophilous basidiospores, 1000 X.

Discussion

The collection described here resembles both *Leucogyrophana mollusca* and *L. sororia*, in that it possesses some characteristics of each. Macroscopically, the two appear very similar. The spore size overall fits better with *L. mollusca*, as does the presence of cordons; however, the lack of any dextrinoid reaction in the spores favors *L. sororia*, along with the way the fruiting body dries. The opposing characteristics are somewhat equally balanced but leaning toward *L. mollusca*. Because of this, my collection appears to be transitional between the two species. I discuss all of these points in detail below.

Small cordons are clearly evident and common in my collection, but are not noted for *L. sororia* by Ginns (1978), Hansen & Knudsen (1997), or Bernicchia & Gorjón (2010). Eriksson & Ryvarden (1976, p. 823) mention "subicular hyphae forming strings" for *L. pseudomollusca*, Ginns (1978) documents "strands" for several species, and Hansen & Knudsen (1997) say "subicular hyphae forming thin strands" for *L. mollusca*.

In my collection all spores are inamyloid (neither amyloid nor dextrinoid) when mounted in Melzer's Reagent (or other iodine-based stains), which is typical of *L. sororia*. The total lack of any dextrinoid reaction in the spores appears to be diagnostic for *L. sororia*, but refer to comments by Ginns (1978). In comparison, the variability of the dextrinoidity of the spores in *L. mollusca* is mentioned by Eriksson & Ryvarden (1976, as *L. pseudomollusca*), by Ginns (1978), and by Breitenbach & Kranzlin (1986, as *L. pseudomollusca*). Gilbertson (1974) says the spores are "strongly dextrinoid" in *L. mollusca*. Neither Christiansen (1960, as *Merulius molluscus*) nor Hansen & Knudsen (1997) mention the dextrinoidity in their descriptions for *L. mollusca*, but Bernicchia & Gorjón (2010) state that *L. mollusca* spores are "dextrinoid."

The distinctly merulioid fruiting body of *L. sororia* when fresh, contrasts with the dried condition, where only slight, sparse, raised lines of darker tissue (from the more highly colored yellowish-orange fold-like ridges) remain visible. Both Eriksson & Ryvarden (1976, as *L. sp.* Hjortst.) and Ginns (1978) provide photos of the dried basidiocarps showing this feature, which is in complete

agreement with the dried characteristics of my collection. Some species of *Leucogyrophana* can be difficult to revive after drying, forming a super thin, hard, brittle, and glassy basidiocarp; this is mentioned by Eriksson & Ryvarden (1976) and by Ginns (1978). The fungus reported on here also shares this characteristic with *L. sororia*.

The former European species *Leucogyrophana pseudomollusca* is similar in many characteristics, except that it has slightly longer and wider spores, which may or may not be dextrinoid. Breitenbach & Kranzlin (1986, pp. 210–211) provide an excellent description, illustrations, and a color plate of that species. However, Ginns (1978), Hansen & Knudsen (1997), and Bernicchia & Gorjón (2010) consider *L. pseudomollusca* to be a synonym of *L. mollusca* and therefore have a broader concept of *L. mollusca*. Gilbertson (1974) says the spores of this species are "strongly dextrinoid" as just mentioned. We now know it is conspecific with (the same species as) *L. mollusca.*

Treatments on the genus for Europe are given by Eriksson & Ryvarden (1976), Julich & Stalpers (1980), Hansen & Knudsen (1997), and Bernicchia & Gorjón (2010). Unfortunately the last reference does not provide complete descriptions of all species keyed out. Bourdot & Galzin (1927) and Christiansen (1960) cover some of the species currently in this genus, but under different genera.

Burt (1917) covers some species of *Leucogyrophana*, but under the genus *Merulius*. The best monograph that focuses on our North American flora of *Leucogyrophana* is by Ginns (1978), although it is now somewhat dated. The genus is small, with only eight species recorded from North America according to Ginns & Lefebvre (1993) and Ginns (1998). However, three of the species Ginns (1978) covers in his key from 34 years ago are now placed in different genera: *L. montana* and *L. pinastri* are now in the genus *Hydnomerulius*, and *L. pulverulenta* is currently in the genus *Serpula* (Berniccia & Gorjón, 2010, and the Cortbase website http://andromeda.botany.gu.se). According to Ginns & Lefebvre (1993) only three species have been recorded from Washington State: *L. mollusca*, *L. pinastri* (= *Hydnomerulius pinastri*), and *L. sororia*.

Species Comparison Chart
(***** measurements from Ginns, 1978)

Species	***Spore size***	***Sp. Dextrinoid?***	***Cordons***
L. sororia	3.8–4.6 (–5.6) x 2.4–3.2 µm*****	–	none
L. mollusca	6–7 x 4–4.5 µm	+	common
BSL coll. # 2011-930-1	5–6 x 3.5–4 µm	–	common

Quick Key to North American Species of *Leucogyrophana*
(some data from Ginns, 1978)

1a. Basidiospores with germ pores; hymenium merulioid ..... *Leucogyrophana arizonica*

1b. Basidiospores lacking germ pores; hymenium smooth, tuberculose, or merulioid 2

2a. Hymenium smooth to finely tuberculose, golden yellow with an olivasceous cast; margin grayish to olivaceous; spores variable in dextrinoid reaction, many non-dextrinoid or mixed, 4.8–6 x 3.6–4.4 µm ..... *L. olivascens*

2b. Hymenium normally distinctly merulioid when mature 3

3a. Spores non-dextrinoid 4

3b. Spores mostly dextrinoid, infrequently non-dextrinoid 5

4a. Basidiocarp without cordons ..... *L. sororia*

4b. Basidiocarp with abundant cordons ..... BSL coll. #2011-930-1

5a. Spores 5.5–7.5 x 4–5 µm; mature basidiocarp with orange or yellow-brown colors ..... *L. mollusca*

5b. Spores 4.5–6 x 3.2–4.5 µm; basidiocarp yellow ..... *L. romellii*

DNA studies have been done, and the precise taxonomy and placement of some of the species in *Leucogyrophana* (and other genera) are somewhat in flux. Please refer to Larsson (2007) and Bernicchia & Gorjón (2010, p. 411) for a discussion of this topic and further references.

You might be interested to know that *Leucogyrophana mollusca* is actually closely related genetically to our common false chanterelle *Hygrophoropsis aurantiaca*, which also has similar colors and dextrinoid spores.

Classification Hierarchy

Kingdom Mycota
Division Basidiomycota
Subdivision Agaricomycotina
Class Agaricomycetes
Subclass Agaricomycetidae
Order Boletales
Family Hygrophoropsidaceae
Genus *Leucogyrophana*
Species *mollusca sororia*

References

Bernicchia, A. & S. P. Gorjón. 2010. *Fungi Europaei*. Vol. 12. *Corticiaceae s.l.* Edizione Candusso, Alassio. 1008 pp.

Bourdot, H. & A. Galzin. 1927. *Hymenomycetes de France*. Soc. Mycol. de France. 764 pp.

Breitenbach, J. & F. Kranzlin. 1986. *Fungi of Switzerland.* Vol. 2. *Non-Gilled Fungi*. Verlag Mykologia, Lucerne. 412 pp.

Burt, Edward Angus. 1917. *Merulius* in North America. *Ann. Missouri Bot. Gard. 4*: 302–362.

Christiansen, M. P. 1960. Danish Resupinate Fungi. Part II. Homobasidiomycetes. *Dansk Botanisk Arkiv 19*(2): 59–388.

Eriksson, John & Leif Ryvarden. 1976. *The Corticiaceae of North Europe*. Vol. 4. *Hyphodermella—Mycoacia*. Fungiflora, Oslo. pp. 549–886.

Gilbertson, R. L. 1974. *Fungi that Decay Ponderosa Pine*. The Univ. of Arizona Press, Tucson. 197 pp.

Ginns, J. 1976. *Merulius* s.s. and s.l., taxonomic disposition and identification of species. *Can. J. Bot. 54:* 100–167.

Ginns, J. 1978. *Leucogyrophana* (Aphyllophorales): identification of species. *Can. J. Bot. 56(16):* 1953–1973.

cont. on page 6

Resupinate of the Month, *cont. from page 5*

Ginns, J. 1998. Genera of the North American Corticiaceae sensu lato. *Mycologia 90*(1): 1–35.

Ginns, J. & M. N. L. Lefebvre. 1993. Lignicolous corticioid fungi (Basidiomycota) of North America. *Mycologia Memoir No. 19*. 247 pp.

Hansen, Lise & H. Knudsen, eds. 1997. *Nordic Macromycetes*. Vol. 3. *Heterobasidioid, Aphyllophoroid and Gastromycetoid Basidiomycetes.* Nordsvamp, Copenhagen. 444 pp.

Julich, W. & J. A. Stalpers. 1980. The resupinate non-poroid Aphyllophorales of the temperate northern hemisphere. *Verh. Kon. Ned. Akad. Wetensch. Afd. Natuurk. Tweede Sect. 74*: 1–335.

Larsson, Karl-Henrik. 2007. Re-thinking the classification of corticioid fungi. *Mycol. Res. 111*: 1040–1063.

Nilsson, T. & J. Ginns. 1979. Cellulolytic activity and the taxonomic position of selected brown-rot fungi. *Mycologia 71*: 170–177

Ridgway, Robert. 1912. *Color Standards and Color Nomenclature*. Privately published by the author. Wash. DC.

HEALTH DEPARTMENT DESCENDS ON MUSHROOM HUNTER'S BISTRO **Samantha Brix**

Riverhead News-Review, Dec. 6, 2011

Thinking of tasting the wild oyster mushrooms Arie Pavlou picked while mushroom hunting in the woods two weeks ago? You won't find them at Comtesse Thérèse Bistro, where Pavlou is executive chef.

B. Koch

Chef Arie Pavlou and Sommelier Dianne Delaney with a portion of the 105 pounds of found wild oyster mushroom.

Inspectors from the Suffolk County, New York, Department of Health Services stopped by the bistro on Friday and searched for—but did not find—wild oyster mushrooms, which are illegal to sell when gathered from the woods.

"They said [a department] supervisor put the newspaper on the inspectors' desk and told them to check this place out," Pavlou said. "They were looking everywhere for the mushrooms, but they were all cooked up."

Pavlou was quick to admit he served many dishes with wild oyster mushrooms before the investigators paid him a visit.

He said officials told him during a July inspection that he could sell wild mushrooms. "It's a very cloudy spot," Pavlou said. "A lot of them aren't very familiar with that because a lot of chefs don't forage their own mushrooms."

Harvested mushrooms served in restaurants must be grown, harvested, and processed in an operation regulated by a food regulatory agency, according to Article 13 of the sanitary code. Wild mushrooms can also be sold if they were packaged at a regulated food processing plant.

Pavlou's mushrooms—a whopping 105 pounds of them—were plucked from wooded areas in Riverhead and Cutchogue.

Pavlou has been hunting for mushrooms since he was 5 years old and has harvested and cooked up found fungi all his life. He confirmed that the mushrooms were edible with members of the Long Island Mycological Club shortly after he found them.

"We haven't had any funeral announcements in the paper yet, so everybody survived the mushrooms," Pavlou said. "I made sure it was edible, I made sure it was good so I wouldn't lose any customers."

Ms. Kelly-McGovern said the Department of Health Services has not heard any reports of health issues associated with the mushrooms.

The law applies only to food establishments, she said. "If someone goes out and picks a mushroom and uses it in a dish, that in itself is not illegal," she clarified. "It only applies to restaurants."

Pavlou plans to continue hunting for mushrooms, only he'll now cook them in the kitchen in his own home and not at the bistro.

"I don't have any hard feelings," he said. "I understand it's a public health reason and that's fine. It's nice to know the health department is doing their job and paying attention."

VICTIMS OF QUORN POISONING APPEAL TO FDA COMMISSIONER

Center for Science in the Public Interest, Dec. 13, 2011

A spokesperson for the Food and Drug Administration recently told the *Wall Street Journal* that the agency had heard from just seven consumers who had adverse reactions to Quorn, the line of meat substitutes made from vat-grown soil mold *Fusarium venenatum*. That small number was puzzling to the Center for Science in the Public Interest, since the food safety watchdog group had forwarded hundreds of such adverse reaction reports to the FDA over the years—reports that typically included some combination of nausea, vomiting, diarrhea, hives, or difficulty breathing.

To make sure that the FDA realizes the scope of the problem with Quorn, CSPI executive director Michael F. Jacobson asked consumers who became ill after eating the fungus-based faux meat to write directly to Margaret Hamburg, the commissioner of the FDA. The accounts provided by the consumers are harrowing—and include blackouts, ruined clothing, burst blood vessels, explosive diarrhea, and missed days of work. Many expressed their disappointment that the FDA hasn't removed Quorn from the market or required prominent warning notices.

Some Quorn eaters described symptoms more characteristic of anaphylactic shock, including hives and difficulty breathing.

Jacobson says the FDA erred in 2001 by allowing Quorn to be sold in the U.S. even after the agency had seen company studies showing that the meat substitute made some people ill. CSPI first called on the FDA to take Quorn off the market in 2002.

"Quorn was a brand new food, never eaten by humans until fairly recently, so it was striking that the FDA was not more cautious about it at the time," said Jacobson. "Now we know that Quorn causes great inconvenience and misery—and life-threatening reactions—to those people who are allergic to this particular fungus."

Quorn executive David Wilson told *The Wall Street Journal* that one person in between 100,000 and 200,000 might have a "sensitivity" to Quorn. But a CSPI-commissioned telephone survey found that nearly 5 percent of consumers in Great Britain, where

Quorn has longer been available, reported being allergic to the fungus-based meat.

"I remain angry and mystified that it is still for sale," retired nurse Sue Zerangue of Astoria, Oregon, wrote in an e-mail to the FDA. "I fully support efforts to remove this dangerous product from the food supply."

Be Prepared, *cont. from page 3*

rain gear, food, space blanket, cell phone or maps in the car or at home, when they should be in our daypacks...relying solely on a GPS when a compass is also needed ...neglecting to tell family or friends where we are going. Most of us have at least one "dumb choice" story to tell.

This summer I read a book that is the ultimate tale of recklessly heading out into the boondocks without adequate preparation. *Into the Wild*, by Jon Krakauer, tells the story of Christopher McCandless, who hitchhiked to Alaska and walked alone into the wilderness north of Mt. McKinley. Four months later, his decomposed body was found by moose hunters. McCandless was a woefully unprepared and irresponsible young man. He packed his idealism and sense of adventure but neglected to bring maps, adequate food, and suitable clothing. But in the end, seemingly minor blunders, naive mistakes as well as a fungus led to his tragic death.

Initially, the author thought that McCandless was poisoned by the toxic sweet pea, *Hedysarum mackenzii*, which he mistook for the edible wild potato, *Hedysarum alpinum*. Then the author surmised that McCandless, who in fact dug and ate wild potatoes without ill effect, started eating the peapod-like seeds of the wild potato plant when the roots became too tough to eat. While it is not uncommon for a plant with edible roots to have poisonous seeds, this turned out not to be the case with the wild potato.

Krakauer eventually came across an article about a fungus, *Rhizoctonia leguminicola*, which grows on many species of legumes during the summer months in soggy climates. *R. leguminicola* is a type of mold that produces swainsonine, a toxic alkaloid. Krakauer concluded that McCandless starved to death as a result of swainsonine poisoning which inhibited an enzyme essential to glycoprotein metabolism and prevented his body from producing usable energy from the sizeable quantity of food that he ate.

BOOK REVIEW

Brian Luther

Fungi Europaei, Vol. 13**. *Strophariaceae s.l.***
By Machiel E. Noordeloos
Edizioni Candusso, Alassio, Italy
Publication date May 30, 2011.
Hardbound.
648 pp. + 115 color plates
(with two photos per plate).

ISBN 978-88-905310-0-2

Approximately $120 (US)

After being informed by the publisher several months ago that the book was now available and placing my order immediately, I anxiously awaited its arrival. I was not disappointed. This book is exactly what we've always come to expect from Massimo Candusso's publications: a useful monograph of superior quality, with gorgeous color plates.

The entire volume, including keys and descriptions of species, is repeated in two languages: Italian and English. The book starts out with a general table of contents, followed by eight chapters.

Chapter 1. Introduction

Chapter 2. History of the classification of the *Strophariaceae*

Chapter 3. The impact of molecular phylogenies

Chapter 4. A practical approach in this monograph

Chapter 5. Biology and biogeography of *Strophariaceae*

Chapter 6. Secotioid and gasteroid *Strophariaceae*

Chapter 7. Strophariaceae in society: about food and drugs

Chapter 8. Characters used for the delimitation of species

Acknowledgments

Twelve genera are treated, in the following order: *Stropharia, Leratiomyces, Hemistropharia, Hypholoma, Deconica, Psilocybe, Pholiota, Flammula, Hemipholiota, Kuehneromyces, Meottomyces,* and *Phaeonematoloma.*

Because many of these European species are also found in North America, I thought I'd briefly inform you of changes to just a few of our commonly encountered species. Many of the little coprophilous (dung inhabiting) species formerly in *Psilocybe* are now placed under the genus *Deconica*; *D. merdaria, D. moelleri,* and *D. coprophila* are fairly common fungi in our flora. What we used to call *Stropharia aurantiaca, S. squamosa, and S. thrausta* are now in the genus *Leratiomyces*. *Stropharia albocrenulata* is relegated to the genus *Hemistropharia*. The very large, heavy, and meaty *Pholiota destruens* that we find growing on Cottonwood, is now in the genus *Hemipholiota*, as *H. populnea.* The old *Pholiota myosotis*, a species of Sphagnum bogs, is put in the genus *Phaeonematoloma*.

Not all of the species covered have color plates. It also would have been helpful if the plates had been arranged alphabetically for ease of access, instead of as they appear in the text.

As with Vol. 12 of this series (which I reviewed in March (*Spore Prints, 470*, p. 3), this book is printed on high quality paper, with excellent binding. This publication is a valuable contribution and should be consulted by all serious students of the gilled mushrooms.

BEWARE! YOUR PHOTOS MAY BE GEOTAGGED

Dennis Aita

N.Y. Myco. Soc. *Newsletter*
via *NJMA News*, New Jersey Myco. Assn., July 29, 2011

If you are taking photos with your iPhone or some other smartphone and posting them on Facebook or some other social network, you photos may have been geotagged (geographical coordinates embedded in the metadata) without your knowledge.

A morel hunter recently found out the hard way how our new technology works! You definitely should turn off the geotagging feature on your phone unless you really want others to know where your choice mushroom spots are located!

J. Goldman

J. Goldman

B. Luther

B. Luther

PSMS Cookie Bash

J. Goldman

B. Luther

J. Goldman

B. Luther

2011

Puget Sound Mycological Society
Center for Urban Horticulture
Box 354115, University of Washington
Seattle, Washington 98195

RETURN SERVICE REQUESTED

Non-Profit Org.
U.S. POSTAGE
PAID
SEATTLE, WA
PERMIT NO. 6545