Fungifama

May, 1998 The newsletter of the **South Vancouver Island Mycological Society** Volume 5.5

Dues: $15.00 per year per household. Please make checks payable to SVIMS or bring cash to meetings.

Meetings: First Thursday of every month (except December, January, July, and August) 7:00 p.m. Sharp at the Pacific Forestry Centre, 506 West Burnside Rd., Victoria. Lots of free parking. The meeting room is near the door. Non-members are welcome.

DUES NOTICE

A red mushroom on the envelope and the newsletter also means that you owe dues for this year. Please send your dues to Hannah! DO IT NOW!

MONTHLY MEETING Thursday, June 4th

Folks, you've been waiting for this one for two years! Rob Countess, a master's student at UVIC and our SVIMS vice-president, will talk about his research in the infamous "Chronosequence Project"! Many volunteer days were spent by SVIMS members helping Rob search for mushrooms in several steeply sloping forest plots that had their trees removed at different times in the past. This is your chance to find out what Rob did with the results of your hard labour and his own. Rumour has it that he will entertain us with song if all else fails. So don't miss it!

Don't forget your mugs, and keep the home-made goodies coming!

Remember that meetings start at 7 p.m. Sharp.

RECAP

We had a surprisingly good Mushroom Mania during the May meeting! Against all dry odds, we coaxed enough fungi from our parched environment to keep about 30 members busy learning or teaching to identify species. Included in tlre finds were a nice batch of *Agrocybe dura*, with a dry yellowish cap that cracks, a ring on the stem, brown spores, and the habit of growing in cultivated or disturbed ground.

Two-week-old refrigerated but recognizable deer mushrooms, *Pluteus cervinus*, showed up with white gills on younger specimens and tell-tale pink gills on older ones, with brown Caps and whitish stems without rings. They grew on wood chips.

A variety of cup fungi came from Ingeborg Woodsworth's forest in the Lake Cowichan area, including the uncommon *Neournula pouchetii*, a medium-sized goblet-like cup with the inner surface pinkish-brown and outer surface pale, with a short white stalk. Her property also turned up sorne deer truffles, *Elaphomyces muricatus*,that just barely poke through the surface ofthe soil and have a granular skin that looks marbled when sectioned.

Ingeborg's place also turned up some *Clitocybe dedlbata*, a dry white poisonous mushroom that usually grows in fall and winter! Ingeborg had found other winter mushrooms there only two weeks earlier. Mushrooms don't read the field guides, I guess!

TEMPORARY TREASURER / MEMBERSHIP SECRETARY NEEDED.

Hannah Nadel will be gone from July through September, so we need sotneone to take over her duties for that time. Fortunately, SVIMS is inactive in July and August (except for Richard Winder's BBQ), so there's really not that much to do. The wonderful volunteer will collect dues from new members (only a trickle at that time of year), write receipts, and notify our editor of new members' addresses so they receive their newsletters. Please phone Hannah as soon as possible (4'79-9438) to volunteer.

FORAY LEADERS STILL NEEDED

Anyone can lead a foray, not just experts. you simply need to have a place in rnind that you know, or that you want to explore. and to ensure that your foray companions are not

left behind in the woods.

Please phone the foray hotline at Jocelyn Lalonde's (250-384-3289) to offer your services. A pleasure shared is a pleasure multiplied.

DANCES WITH CHANTERELLES

Chanterelle aficionados take note. Last fall, while you were out collecting them, someone else was reorganizing them. Scott Redhead, Lorelei Norvell, and Eric Danell have written an interesting article for *Mycotaxon* (Vol. LXV, pp. 285-322) entitled "*Cantharellus formosus* and the pacific golden chanterelle harvest in Western North America." There are many interesting details in this article, but the one that everyone should be aware of (update your field guides!) is the revised taxonomy for species in the Pacific Northwest. You should consult the article for fult details, but an abbreviated version of the field key appearing in the article appears below.

Cantharellus subgenus *Cantharellus* in BC:

1. Fruiting body whitish (pallid, ivory, or buff; slowly staining yellowish where touched.....*C. albidus*

1. Fruiting bodies distinctly coloured shades of yellow or orange.....2

2. Cuticle giving slightly greyish tinge to yellow-orange or orange-yellow cap, cap edge sometimes pinkish to nearly white, hymenium normally a paler orangish to orangish-yellow with a pinkish tinge, all portions staining yellow and later ochre, associated with hemlock, pines, possibly other conifers.....*C. formosus*

2. Cap bright orange-yellow, covered by thin pinkish or yellowish-pink hoary coating, without scales or gray tinges, hyrnenium rich orangish yellow,usually without pinkish tones, as yellow as cap or more intense, stipe light to dark orangish, not staining yellow or ochre, associated with coastal conifers.....*C. cibarius* var. *roseocanus*

-RSW

CHEMAINUS FORAY

About 2 dozen SVIMS and 2 ostensible truffle hounds gathered on a sunny April 19 for an enjoyable hunt for morels and oyster mushrooms about l0 miles west of the Chemainus area. Optimism knew no bounds, but neither did the morels. They had all wandered off somewhere else.

Nevertheless, Bruce Norris fearlessly led us into some interesting areas where we found mushrooms usually associated with snowbanks. The interesting finds of the day included a specimen of *Gyromitra gigas*, edible according to David Aurora's Mushrooms Demystified guide. Unfortunately, this specimen was slightly past the edible stage, so the SVIMS president accepted it as for possible culturing. Other snowbank-associated mushrooms collected included a beautiful little black cup fungus, probably a *Plectania* sp., and another discomycete, *Discina perlatum*. As for morels- better luck next time! -RSW

ANSWER OF THE MONTH

Question: What tasty edible fungus has damaged expensive machinery by exploding?

Answer: Smut fungi (genus *Ustilago*) sporulating on crops have occasionally, during harvesting, formed clouds of spores that have been triggered by sparks and exploded, ruining expensive harvesting machinery.

CROSSWORD

The answers to Hans Bauer's fungal crossword puzzle are given in this issue. Did anyone complete this unique puzzle? Hannah got all but one of the clues.

DO TREES FEED ONE ANOTHER?

An article in the scientific journal Nature (August 1997) has a picture looking up into a tree and across it in large type, the words: "The wood-wide web". The article being highlighted is that by Simard et al. which is titled “Net transfer of carbon between ectomycorrhizal tree species in the field" which appeared in Nature vol. 388, pp. 579-582. The authors used '...reciprocal isotope labelling in the field to demonstrate bidirectional carbon transfer between ectomycorrhizal tree species Betula papyrifera [birch] and Pseudotsuga menziesii [Douglas fir]. Most ectomycorrhizal fungi, the *raison d'etre* of forays and the growing concern of conservationists, are broad spectrum in their range of host species, with the result that spruce, and possibly hemlock or other roots of trees like birch or Douglas fir can be colonized by many species of fungi which extend hyphae and rhizomorphs from tree to tree. Consequently, in an undisturbed forest ecosystem, most of the trees of whatever species are interconnected by diverse populations of mycelia. In these associations of tree and fungal species - 'functional guilds' - increase of hyphae depends on a supply of photosynthetically fixed carbon from the plant, whose roots, in return, receive essential minerals (particularly, nitrogen and phosphorus) extracted by the fungus from the impoverished soil.

Most investigations of this complex system have used pot-grown plants or excised roots to study the relationship between the symbiotic partners. Simard et al.,however,

grew young trees close together in the forest and fed them radiocarbon-labelled CO_2 and were able, for the first time, to show a net transfer of carbon from birch to fir, both of which shared up to ten mutually compatible mycobionts (transfer did not extend to endomycorrhizal cedar). Further, they showed that if the fir were in the shade there was a marked elevation of the carbon it received from the birch; such a sharing could certainly benefit seedlings growing in the dense shade of mature plants. This new information provides quantitative support for Clements's 1918 concept of the community as a service 'superorganism' and indicates that the mycorrhizal wood- and wide web can potentially effect an increase in biodiversity by promoting coexistence while reducing the dominance of aggressive species. A major contribution of this study should be to advance a shift in ecological thinking from an emphasis on competition between plants to focusing more on the role of distribution of resources within the plant community.

More information on mycorrhiza can be found on the British Mycological Society's internet site:

http://www.ulst.ac.uk/faculty/science/bms/BMSurls#MR

-R.T. Moore

NEW MYCOLOGICAL MAGAZINE ON THE WEB

May we suggest that all those of you with computers and connection to the Internet take a look at the new E-zine *Mycoinfo* which can be found at

http://www.mycoinfo.com

It is a treasure trove of all things to do with fungi, and the content changes regularly (though there is an archive of past material). We recommend it heartily...

WASTEWATER TREATMENT WITH FUNGI

A few years ago, a new method for using fungi to clean wastewater contaminated with heavy metals such as mercury or lead was developed at the Institute of Technology in Haifa, Israel. While the use of fungi or bacteria to clean wastewater is not new, this method shows substantial improvements.

The fungus used is spent brewer's yeast that is normally thrown away and is a waste problem in itself. Secondly, with other methods high concentrations of heavy metals can be toxic and kill the organisms involved, but with this method the yeast is killed before use.

So how do dead yeast cells remove heavy metals from water? Briefly, they are partially dried, and then under pressure, the cytoplasm (cell content) is removed so that only the cell wall remains. The wastewater is then run through a column of cell walls. Researchers say that they can then separate the heavy metals to be recycled and can also use the cell walls over again.

From *Discover*, July 1994

FUNGI AS PESTICIDES

Small blobs of fungal tissue that help fungi survive in soil could be the cornerstones of new environmentally friendly insecticides. US Department of Agriculture's Research (USDA-ARS) microbiologist Donald T. Wicklow and entomologist Patrick F. Dowd, with University of Iowa chemist Jarnes B. Gloer, found in small bodies of fungal tissue called "sclerotia" at least 85 natural compounds that are toxic to insects. Some could end up as new biological insecticides.

The sclerotia look like tiny specks of black pepper on plants or insects attacked by these fungi. They help fungi survive bad weather, such as drought or freezing temperatures, and even help the fungi cope with the absence of a suitable plant or insect host.

These scientists have screened extracts from about 200 fungi for new insecticidal compounds. They have isolated over 125 that tested positive as potential insecticides and selected 85 for testing. About 60 are new to science.

"Several even belong to new families of chemicals previously unknown," says Gloer, whose research group at Iowa City identified the compounds.

"Some of the compounds from sclerotia are comparable to rnalathion in their toxicity to insects," says Dowd. Malathion is a commercial insecticide that acts as a stomach poison to many insects. He fed the sclerotia compounds to crop-damaging insects like corn earworm caterpillars and sap beetles in various studies.

One of the newer compounds is Shearinine B, isolated from the fungus *Eupenicillium shearii*. In laboratory tests, Dowd applied the compound to plant leaves and placed fall armyworms on them. Eighty percent of the caterpillars died within 24 hours.

According to Wicklow, fungal sclerotia of certain plant pathogens have survived burial in agricultural fields for up to l0 years. As sclerotia germinate, they form spores that are spread from soil to plants by wind, splattering raindrops, or insects.

The researchers believe the sclerotia might be mass-produced by slightly modifying processes already used in the fermentation industry and in corn wet-milling.

USDA-ARS has received several patents on the fungal compounds. The studies were also supported by the National Science Foundation and a biotech research firm.

From *Chemical Week*, Jan 1995, by Linda Cooke

Fungi

By Hans Bauer