

Spore Print



The Edmonton Mycological Society Newsletter

August, 2003 Edition

President's Message



You will remember that I am new to the EMS, as well as being new in this position. I am just beginning to learn about the diversity of our backgrounds and the variety of interests we pursue other than mycology. I am also being exposed to a multitude of challenges that we may choose to undertake in furthering the club objectives. I know many of you want to be able to collect larger amounts and more varieties of edibles. Our monthly programs and forays go a long way in meeting those desires. I hope you are all as satisfied as I with the programs this year. They expanded my knowledge of what mycology includes, and gave me significant insight into why we find different mushrooms in various habitats.

I am reminded, and we must all bear in mind, that the EMS is the only public voice for mycology in Alberta. If anyone is needed to speak up for the value of mushrooms in our wild areas, **WE** need to be there. We have the collective knowledge and experience to provide informed opinions on mycology and its importance in the lives of Albertans.

During the year, I hope to encourage discussion and involvement in a number of issues and ideas, which have been recently brought up by your Directors. Most of them overlap into other interest areas, including use of and access to public lands, ecology, photography, forestry practices, etd. We need to explore how we can contribute our knowledge of mycology to the various discussions presently underway, or in the future.

In closing, I hope to hear your ideas, concerns, questions, or comments on any concern related to our Society's operations, priorities or activities. You can catch me at meetings / forays, use e-mail, snail mail, or telephone. I know that any of your directors would also welcome such discussions.

Peter Arabchuk

Your Executive

PRESIDENT: [pres@woldmushrooms.ws]	Peter Arabchuk (780) 479-6630
PAST PRESIDENT: [derworiz@wildmushrooms.ws]	David Derworiz (780) 489-6632
1 st VICE-PRESIDENT: [mjschulz@wildmushrooms.ws]	Mike Schulz (780) 930-2102
2 nd VICE-PRESIDENT, WEBSITE MANAGER: [ghamilton@wildmushrooms.ws]	George Hamilton (780) 486-2576
TREASURER / MEMBERSHIP: [lgalick@wildmushrooms.ws]	Louis Galick (780) 430-8412
SECRETARY: [sat1@wildmushrooms.ws]	Julie Topolnisky (780) 487-0122
FORAY COORDINATOR: [emsforays@wildmushrooms.ws]	Bill Richards (780) 998-3507
PROGRAM DIRECTOR: [bengtan@wildmushrooms.ws]	Ming Chen (780) 438-6863
NEWSLETTER EDITOR, POISON LIAISON: [sporeprinted@wildmushrooms.ws]	Melanie Fjoser (780) 987-4412
NEWSLETTER ASSISTANT: [sporeprint1@wildmushrooms.ws]	Diane Murray (780) 998-3507
COMMUNICATIONS: [waffolder@wildmushrooms.ws]	Wally Affolder (780) 454-4187
DIRECTOR-AT-LARGE: [mosis@wildmushrooms.ws]	Martin Osis (780) 987-4412

OUR NEW MAILING ADDRESS IS;

EDMONTON MYCOLOGICAL SOCIETY
47 Rehwinkel Road,
Edmonton, AB T6R 1Y4

CHECK OUT OUR WEBSITE !!!

www.wildmushrooms.ws

Welcome NEW MEMBERS !!!

Christine Cheung	Fort McMurray
Christina Doktor	Edmonton
Ernie & Nancy Ewanchuk	Ardrossan
Luke & Ruby Golding	Edmonton
Debbie Graham	Edmonton
Patricia Madu	Thorsby
Jennifer Myers	Edmonton
Violet Nowak	Edmonton
Tom Stahov	Edmonton
Aki & Ichiko Tsuneda	Edmonton
Ernst & Sonia Zellwege	Thorhild

RE-CAPPING PAST PROGRAMS

April 26: Mike Schulz put on a course “**Mastering the Mysteries of Mushroom Microscopy**”. Those of us who took part in this course now have the ability to utilize the EMS microscope thanks to this interesting hands-on workshop that took place at the U of A. Mike recently achieved his MSc, is an instructor of mushroom courses at the Devonian Botanic Garden, and is an EMS executive.

April 29: Dr Markus Thormann presented “**Mycorrhizas – Getting to the root of Vascular Plant Diversity**”. If you missed this meeting, you can find a summary of this interesting talk elsewhere in Spore Print. Markus is an Ecology and Environmental Biology Visiting Fellow, National Resource Canada, Canadian Forest Service, and a long time member of EMS.

May 28: Dr. Akihiko Tsuneda provided a captivating lecture, “**Hidden Lives of Wood-Inhabiting Mushrooms**”. Attendees enjoyed this presentation very much! Dr. Tsuneda is a visiting scientist from Japan, Dept. of Biological Science, U of A and Northern Forestry Centre, Canadian Forest Service, and is a new member of EMS.

June 25: Martin Osis gave us an insider’s look at “**Ascomycetes**”. Martin always lends his passion for fungi to his robust talks!

(Martin stepped in for Otto Holzbauer of MONA Mushrooms, who was unable to appear due to illness. We hope to reschedule Otto’s talk for another time)

July 23: Martin Osis gave a colourful slide presentation on “**Boletes of Alberta**”. Now we know the difference between Suillus, Boletus, and Leccinum. Martin is one of foremost mushroom field identification aces in Alberta. Always a dynamic speaker, he was one of the founding members of the EMS, and has served as an Executive member for many years.

UPCOMING SPEAKERS

August 27: Dr. Akir Suzuki will be speaking on “**Ammonia Fungi: their Ecology and Physiology**”. We welcome Dr. Suzuki from Chiba University, Japan!

September 24: Bill Richards will give a presentation on “**Tree Identification**”. This will definitely help us in our attempts to identify mushrooms too, because of the close relationship between trees and fungi. Bill has served on our Executive for many years and is currently our inimitable Foray Coordinator. He really knows his stuff!

October 22: Dr. Steven Aung will speak to us about “**Mushrooms for Medicinal Use**”. Dr. Aung is a geriatric and family physician and a traditional Chinese medical (TCM) practitioner and a teacher. He seeks to blend Eastern, Western and natural medicine in his medical clinic in Edmonton, Alberta, Canada. Dr. Aung has such a distinguished and varied c.v., that I am unable to publish it in its entirety but please visit www.aung.com to read further about Edmonton’s own Dr. Aung.

Details of meeting dates and times may be found in Calendar of Events, further in this issue of Spore Print.

NEWS RELEASE:

Gary Lincoff to be at SOMA Winter Mushroom Camp 2004

Snowy state mushroomers – here’s a chance to escape the winter! The Sonoma County Mycological Association (SOMA) invites you to northern California for mid-winter mushrooming at the 7th annual SOMA Winter Mushroom Camp. The Camp will be held on Martin Luther King weekend, January 17 – 19, 2004.

The Camp, a benefit for SOMA, is full of mushroom forays, specimen tables, slide shows, speakers, classes & workshops on mushroom dyeing, paper-making, cooking, medicine making, cultivation, and more, and of course, great wild mushroom cuisine and camaraderie. This year, SOMA is very pleased to have **Gary Lincoff**, well-known author of the *Audubon Field Guide to North American Mushrooms* with us as our keynote presenter for the three day weekend.

Final pricing is yet to be determined, but will be in the \$175 - \$200 (U.S.) range. The fee will include lodging and meals, and all the above mentioned activities. For registration or information, please contact Linda Morris, the Camp registrar at: lamorr@pacbell.net. You may also view photos and info from past SOMA Camps at the SOMA website: <http://SOMAmushrooms.org>

Come enjoy some wild mushroom hunting, California-style!

FORAY FINDINGS

Our Annual Winter Polypore Foray this past February took place at a small portion of Poplar Creek Natural Area (NW14 Twp 48 Rge 5 W5). It appeared that the snow and cold may have resulted in the small turnout, only seven hardy souls showed. If I can speak for any I can speak for all: It was a wonderful day. Showshoes were a great help as the snow depth varied greatly from ankle to thigh depth for most (chest deep for Keiton Fjoser). The snow depth was an impediment when it came to finding polypores on the ground but we still achieved a relatively diverse collection, as follows:

Fomes fomentarius on birch
 Fomitopsis cajanderi on spruce
 Fomitopsis pinicola on spruce
 Fomitopsis pinicola on birch
 Ganoderma applanatum on aspen
 Hypoxylon mammatum on aspen
 Irpex lacteus on birch
 Peniophora polygonia "pink scale" on willow
 Phellinus pini on larch
 Phellinus pini on willow
 Phellinus pini on spruce
 Phellinus pini cf. on birch
 Phellinus tremulae on aspen
 Piptoporus betulinus on birch
 Trametes hirsuta on spruce bark
 Trametes pubescens on birch stick on the ground
 Trichaptum biforme

Submitted by Bill Richards, Foray Coordinator

The Annual Morel Foray

The foray on May 10, 2003, at the Bellis Natural Area was not a bust, nor was it a boon, as only one of the morels showed its head. The ground temperature was still too cold for a flush. The average soil temperature of the 9 readings I recorded was 44.7 deg. F. I often record the soil early in the season unless the morels are already popped. If they have flushed, I get too focused on trying to find time to remember to take the soil temperatures!

Submitted by Bill Richards, Foray Coordinator
 (Editor's note: Later in May, Martin and I picked many, many morels, enough to fill very large jars of dried morels)



Poplar Creek Oyster Foray

The foray was conducted, as scheduled, on June 14. Led by Pieter van der Schoot, seven intrepid forayer followed him up and down, across logs, and through creeks. The foray took about 4 hours in total, including at least ½ hour waiting out a thunderstorm. One notable sighting was a fawn at rest.

After such a satisfying, but tiring, day, we did not inventory the collected mushrooms – lacking an official classifier. However, we can confirm the presence of the following:

Morcella esculenta Pleurotus ostreatus
 Gyromitra esculenta (a very large specimen)
 Ganoderma applanatum Fomes fomentarius
 Piptoporus betulinus "Little brown mushrooms"
 Submitted by Peter Arabchuk, President

Ashland Dam Foray

. For the small group that attended on July 19, this was one of the best and most memorable forays of the year. Talisman Energy Inc. graciously allowed us the use of their private group campsite at no charge. It was a beautiful site, complete even with barbecues! There was an abundance of a wide variety of mushrooms everywhere! Unfortunately, Martin's computer was stolen with the foray list on it, before he had time to pass it on, and the original list was lost. We hope that we are able to visit this site again next year!

Devonian Botanic Garden

I had my summer mushroom course yesterday at the Garden – and what a success! Our foray yielded the yummy *Agaricus haemorrhoidarius* (Bleeding Agaricus), *A. campestris* (Field mushroom), *A. silvicola* (Wood agaricus), *Suillus brevipes* (Short-stemmed bolete), *Leccinum insigne* (Aspen roughstem), *L. boreale* Northern roughstem), *Pluteus cervinus* (Deer mushroom), *Pleurotus ostreatus* (Oyster mushroom), and *Clavicornia pyxidata* (Crowned coral). Other interesting finds included *Laccaria laccata*, *Marasmius pallidocephalus*, *Melanoleuca decora* (Queen's coat), *Russula (alutacea?)0*, *Russula emetica* (some of these questionable because of lack of spore print), and some humungous specimens of *Helvella aceabulum* (Brown ribbed elfin cup) up to 12 cm in diameter! *Russula*, *Cortinarius*, *Agaricus*, and *Leccinum* were in abundance, although most of the former two were not identifiable past genus in the field.

Happy mushrooming!

Submitted by Mike Schulz

“City of Champignons”
Mushroom Exposition 2003
An EMS Signature Event

The day before this special event, we entreated all of our members to go forth to their most secret and favourite spots and find as much fungi as is possible, along with habitat features, such as moss, bark, logs, grass, pine cones, etc. I must say, we outdid ourselves on August 10! Each year, our Exposition is finer, under the capable supervision of Martin Osis. For those of you who were unable to attend, let me give you an overview of how it was....

We were housed in the Pine Pavilion at the Devonian Botanic Garden, far from the main gate. The Pine Pavilion is a wooden structure with canvas walls, and electricity. Volunteers set up the function in this way:

- We had most of our startling array of mushrooms on several tables arranged in a large U shape, (on wonderful trays built by Pieter van der Schoot) complete with habitat features, and labelled with Latin, and sometimes with common names.
- The Scientific Table featured Mike Schulz with a microscope looking at the spores of various fungi, and samples of spore prints taken in the field.
- The Medicinal Mushroom display was attended by Robert Rogers (see his article further in this issue), who held court to many groups of visitors throughout the day.
- The Poisonous Mushroom Table held a display of various levels of toxic mushrooms, along with descriptions of how the toxins affect humans.
- The Edible Mushroom display hosted a variety of preservation methods, including a dehydrator complete with drying leccinum. Cookbooks too.
- Mushroom soup for sale by the bowl, hosted by Otto Holzbauer of MONA Mushrooms. This was a huge hit – he sold out after about 2 hours!
- Two slide shows were run by Hans and Inge Weissenborn during the day, drawing many folks close to see Fall Mushrooms and to hear the accompanying tape.
- Two Mushroom Walks were taken through the Garden by Martin Osis and Bill Richards as guides. This was also a great success!
- BYOF: Bring your own fungi – to be identified. Our more experienced identifiers joined forces to give needed advice to innocent pickers!
- Posters and our own Photographs were displayed to show some of the fungi not in season now.
- Mushroom Gallery, featuring original paintings by our own Life Member, Leni Schalkwyk. These were donated to the EMS, and we just had to show them off. We were so fortunate that Leni was able to attend our Expo, and take the time to sign some of her books: *“Mushrooms of Western Canada”* and *“Some Edible and Poisonous Mushrooms in and around Edmonton”*

August, 2003 Edition

- Lieutenant Gerver Lois Hole told me she was delighted to attend our function. She indulged in the soup and spent much time at each and every display. We were very gratified that she attended.
- Our Membership Table was well attended to by Louis Galick, with membership and book sales abounding, and Bev Derworiz and Helen Galick looking after door prize sales.

Even though we were located far from the main gate, that didn't deter visitors from finding us. For the most part, we had such a volume of people that the slide show could barely be heard. Here's what our guests had to say about our Mushroom Exposition 2003:

“Great symposium” “Very interesting” “Informative” “Whoo hoo!” “Neat!” “Most colourful” “Great” “The mushroom show was fantastic; as was the advice” “Excellent” “I like it” “Just super; very impressive” “Very cool!!” “Most enjoyable” “Very nice!” “I'm hungry” “Enlightening” “Thank you – excellent display” “I didn't know there were so many here!” “Fascinating display” “Much more than I expected” “Beautifully displayed. So many knowledgeable people!” “Now I will cook fairy ring soup” “Wonderful variety of fungi” “Could be longer—over a couple of days with workshops” “Very educational” “Amazing! Well preserved specimens” “Good to see types of habitat” “Pickled mushrooms were superb!” “Loved it”

The Edmonton Mycological Society would like to thank our many volunteers who made our Exposition such a huge success, with special mention to:

Martin Osis & Melanie Fjoser	Pieter van der Schoot
Bill Richards & Diane Murray	Wally & Edna Affolder
Mike Schulz	Hans & Inge Weissenborn
David & Bev Derworiz	Louis & Helen Galick
Robert Rogers	George & Anne Litvin
Leni Schalkwyk	Peter Arab

There were many others who were involved, especially in the picking on Saturday. Thank you all very much, you can see that the public enjoyed all of your efforts when you look at the appreciative comments they made.

‘SHROOMER HUMOUR

PERSONAL AD: A middle-aged man, triple widower seeks a girlfriend. Hobbies – mushroom hunting and making mushroom meals.

If you like potato chips with mushroom taste,
Put them in a moist and shadowy place!

Submitted by Bill Richards (who else?)

AMANITA MUSCARIA (FLY AGARIC) A. PANTHERINA (THE PANTHER)

In a few minutes the caterpillar took the hookah out of its mouth, and got down off the mushroom (*Amanita muscaria*), and crawled away into the grass, merely remarking as it went " the top will make you grow taller, and the stalk will make you grow shorter."

"The top of what? The stalk of what?" thought Alice.

" Of the mushroom," said the caterpillar, just as if she had asked it aloud and in another moment was out of sight.

Alice's Adventures in Wonderland by Lewis Carroll

Muscaria is from the Latin **MUSCI** for fly. Mucarine is another obvious derivation.

Another name is Fly Agaric; many cultures crushed it in water and honey and set it on window sills to attract and kill flies. The German name, **FLIEGENPILZ**, or Fly Mushroom, may also derive from the ancient association of flies with madness. Beelzebub, later known as the Devil, was known originally as Lord of the Flies.

Pantherina is from the Latin, meaning to resemble a panther.

The compound that attracts flies is called 1,3-diolein. After they have dined on the juices of the mushroom, the main isoxazole toxin, ibotenic acid, stuns or kills them.

Amanita will, after being picked and set on a table, move its cap upright, with gills facing downward, in less than half an hour.

Agaricum was a name originally given to the larch polypores (fomes) native to a region of Sarmatia known as Agraria.

Fly Agaric is frequent to the birch and poplar forests of the northern prairie. It cannot be mistaken for another mushroom with its brilliant orange-red head and white flecks.

This orange red coloring has been used as a red dye. Some authors believe that yellow coloured mushrooms are the weakest in psychoactivity, and red the strongest.

The Panther is found more frequently in boreal forests or into the Rocky Mountains, having a symbiotic relationship with conifers, including Douglas Fir.

The Cree, and other native people made an eyewash of *Amanita*, to fight infection, but I can find no record of their use of the fungi for spiritual quest. The Algonquin, around the Great Lakes, were familiar with its use (see below). The Jesuit priest, Charles l'Allemant wrote back to France in 1626, that the natives believed that " after death they go to heaven where they eat mushrooms and have intercourse with each other".

It has been used for centuries as part of secret, religious ceremony; and is thought by many scholars to be the *SOMA* of the Rig Veda. In this work, over 120 hymns are devoted to praising this plant.

A recent book, by Clark Heinrich, called *Magic Mushrooms in Religion and Alchemy*, is a fascinating exploration of the historical use of Fly Agaric, in both written and painting form.

He traces mushrooms use through the Vedic verses, as well as the Bible, the Holy Grail and Alchemy with scholarly examination; making much sense of the hidden meanings in various cultures. It is a superb contribution to the use of this fascinating fungi!

In magical use, the mushroom was placed on altars or in the bedroom for fertility purposes.

Laplanders make use of the reindeer's fondness for the dried agaric; sprinkling it on the snow to help in herding.

It is not unusual that some people in France and Italy eat the mushroom when boiled frequently. And yet in many areas the species is considered very poisonous.

In Finland, the red membrane of the cap is diluted in vodka, and used externally for painful bruises, or in small amounts for stomach or headaches.

In Hungary, the mushroom is called **BOLOND GOMBA**, or mad mushroom, and in Japan, **AKA-HAETORI**, meaning Red Fly Catcher.

In parts of Finland and Siberia, the fungus was gathered in August, by young girls only, and dried.

The shaman of Siberia and parts of Scandinavia used a drink from **MUKHUMOR** to induce visions, communicate with the supernatural, divine the future, diagnose illness, and general festive occasions like weddings.

The Shaman were believed to control harmful beings, called **NIMVITS**, and communication could only take place at night with the mushroom's aid.

The Chukchee believed the mushrooms another tribe, and that the visions personified the mushroom, and the "mushroom men".

These beings accompanied a person on a voyage through their world, and to visit places where the dead reside.

The Yurk Samoyed reported man-like creatures who appeared before them in a dream. They would run down a path which the

sun follows in the evening, and the intoxicated person would follow.

On the journey, the fly agaric spirits tell them what he wants to know, and when he returns to the light, he found a pole with seven holes and cords.

He tied up the spirits, and awoke. Then he sat down, and took a symbol of the pillar of the world, a four sided staff with seven slanting crosses cut into each side, and sang about what he had seen.

The Ostyaks filled their huts with smoke from tree resins, and the shaman took 3-7 dried caps, after fasting all day.

Many shaman wore traditional costume with antlers on the head and fur covering the body, in deference to the reindeer.

Often a brew of dried amanita, fireweed, and cow's parsnip was made into a fermented ale; or the dried mushrooms were soaked in fireweed must. Some authors mention it works synergistically with unripe bog blueberry (*V. uliginosum*) juice.

It became well-known that drinking the urine of those who ingested the drink resulted not only in stronger effect, but also removed the toxic effects. This could be repeated up to five times, before the drug began to lose its potency.

This knowledge may have come about from observations of reindeer being attracted to human urine. When these animals eat lichens they acquire a special craving for the urine of human beings, and will frequent the dwellings to drink this special urine.

Every Koryak man carries a sealskin vessel, suspended from his belt, to collect urine. The reindeer will be attracted from far pastures to eat the yellow snow.

One common name in the Kamchatka peninsula is Woodpecker of Mars, due to its increase in strength and stamina. In that part of the world, the mushroom is so highly regarded that the words for trance, daze, and drunkenness are derived from the noun meaning "fungus, fly agaric".

Christopher Hobbs suggests that perhaps it was an original "electric kool-aid".

Tom Robbins wrote about his experiences with the mushroom. "I have eaten the fly agaric three times...Euphoric energy was mine aplenty, but at both the onset and the termination of the intoxication I fell fitfully asleep... if not actually the godhead, is holistic awareness of the godhead. But it does not do this gently.

Instead of slipping one into the cosmic fabric like a silver needle, it drives one in like a wooden stake. And of course, a stake is blunted in the driving. It was not mere psychedelic fickleness that prompted both the olden Greeks and the Mexicans to drop Amanita muscaria cold when they discovered that the innocuous looking little Psilocybe made up in grace what lacked in flamboyance."

Certainly, we cannot be sure that Lewis Carroll knew about the various reports out of Siberian regarding distortion of senses, but the scarlet and white spotted Amanita muscaria illustrated in Alice's Adventures in Wonderland make me think so.

The concentrations of alkaloids in the Panther are the most powerful in the Genus, and often preferred by students and participants of hallucinogenic mushrooms. The ibotenic and muscinol content is much stronger and requires considerable adjustment of dosage.

The so-called pantherine syndrome has been used to describe the symptoms of this mushroom poisonings. The toxins responsible are isoxazole derivatives, that work their magic by interfering with neurotransmission in the brain.

There is one record of death from the fresh mushroom in the United States. Count Vecchi, a member of the Italian diplomatic corps, reportedly ate two dozen fresh mushrooms for breakfast and died the next day. Although this happened in 1893, the legend has endured.

MEDICINAL

CONSTITUENTS- Ibotenic acid, which converts to muscimol or pantherine; muscarine; muscazone, stizolobic and tricholomic acid, 1,3-diolein. Also contain amavadine, and (-)-4-hydroxypyrrrolidone.

Betalains and muscaflavins pigments are found in the cap skin.

A. pantherina- above, as well as stizolobic and stizolobinic acids, as well as several unidentified alkaloids.

Muscimol is a CNS hallucinogen; muscarine a highly toxic hallucinogen. Ironically, they are physiological "opposites" - one is food for the spiritual body and the other poison to the physical. The kidneys detoxify muscarine, but allow muscimole to pass through largely intact. This can be repeated four to five times. Only 30-35% of muscimol is excreted unchanged, unlike most of ibotenic acid, which is cleared from the body in ninety minutes.

Muscarine is only found in the fresh mushroom at very low concentrations of 0.0003%. Much larger amounts are found in many species of Inocybe and Clitocybe mushrooms (see Sundew Vol. 3)

Both muscimol and ibotenic acid cross the blood brain barrier more readily than glutamic acid or GABA. Ibotenic excites or stimulates neurons, while muscimol is inhibitory. GABA is an inhibitory neurotransmitter which is active at 40% of brain synapses, and appears to function, in part, by opening channels in the neuronal membrane specific for chloride ions.

An enzyme involved in the metabolism of betalain pigments was discovered in Switzerland in 1991.

Much of the recorded medical effect with Amanita muscaria comes from Germany. Dr. Reinhard used it successfully in cases of paralysis, epilepsy and chronic catarrh conditions. A M. Paulet used external applications of the plant for cancerous and other ulcerous conditions of the skin.

Professor Scudder suggested that a tincture of Amanita muscaria is best for "involuntary twitching of the muscles of the face, forehead, and even the eyes. Objects are not seen well because they seem to move."

He also suggested its use for "pressing pain in the occiput and an inclination to fall backwards."

Felter and Lloyd say that " the principal use that has been made of this fungus is to control...night sweats from debilitating diseases and profuse sweating during the daytime."

Dr. Culbreth, another Eclectic physician says that Amanita " reduces force and frequency of pulse, contracts muscles of intestine and bladder, increases abdominal secretions, that lead to paralysis and death". Obviously, great care must be taken with this remedy.

Ethanol extracts of the fruiting bodies significantly inhibited growth of sarcoma 180 , in a 1994 Japanese study.

It is worth noting that some Parkinson's patients experience symptomatic relief from the homeopathic preparation below. It is interesting that in 1991, a research team at the University of Lausanne, Switzerland, isolated DOPA, 4,5-dioxygenase from amanita muscaria.

Muscimol, obtained from the decarboxylation of ibotenic acid, more potently activates GABA receptors as a selective GABA-A agonist than GABA.

Although a valuable medicine, it can be toxic when fresh. As little as 2-4 dried mushrooms can alter awareness ; twenty can be neurotoxic. Muscarine stimulates postganglionic cholinergic neuroeffector junctions. The isoxazole constituents are psychoactive.

Muscimol appears to pass the blood-brain barrier, with up to 27% of muscimol injected into lab mice recovered from urine.

Muscimol is a GABA agonist, with effect at very low dosage. Different parts of the brain, from the cerebral cortex, to hippocampus and cerebellum, appear to possess different sensitivities to muscimol. It does induce long term depression in the CA1 region of the hippocampus at concentrations of only 10 microM.

Ibotenic acid is related structurally to glutamate, the main excitatory neurotransmitter, and activates NMDA receptors.

It is also a potent agonist at group I and group II metabotropic glutamate receptors, and similar to glutamate, it stimulates the production of inositol triphosphates through a G-protein mediated mechanism. It also stimulates phosphorylation of protein kinase C substrates and increases phospholipase D activity, as well as increasing the release of glutamate.

Ibotenate creates neurotoxic and phosphoinositide effect through distinct receptors, which are prevented by MK-801 and enhanced by glycine, further implying NMDA involvement.

Although they differ in mechanism of action, both ibotenic acid and muscimol produce similar subjective and behavioural states. Muscimol is five times as potent as ibotenic acid, however.

Work by Moldavan et al, Int J of Med Mushrooms, 1999,1:4 found Amanita extracts 2-4 times more exciting to brain tissue than L-glutamic acid, with the neuron frequency of spike discharge twice as high in *A. pantherina*, as *A. muscaria*.

Amavadine is a vanadyl compound, which accounts for the unusually high vanadium content in the fungus ash.

Ibotenic acid was patented as a flavour enhancer in 1969, but has never reached grocery shelves. The closely related MSG, however, is found in many products, and is a neurotoxin with similar activity.

This is Part 1 of an article that Robert Rogers produced for [Spore Print](#). The second portion of the article will appear in the next issue of [Spore Print](#). Thank you Robert, we've all seen lots of Amanita muscarias this year!

The Author: Robert Rogers, B.Sc. AHG herbalist

Vice President and Chairman, Research & Development, Alberta New Crops Network

Dean, Prairie Deva College of Aromatherapy, Phytotherapy and Soul Tending, Edmonton

Member of EMS

Website: www.planet.eon.net/~scents.



Mycorrhizas – getting to the root of vascular plant diversity

“Mycorrhiza” is Latin and literally means “fungus root” and was first used by the German forest pathologist Frank in 1885. Mycorrhizas are defined as “mostly mutualistic associations between fungi and the roots of higher plants, in which the fungus forms consistently recognizable and physically distinct structures without causing any perceivable negative effect”. This close association between plants and mycorrhizal fungi began over 460 million years ago and it is crucial for the establishment and health of most plants. Research suggests that up to 95% of all land plants are mycorrhizal. Both partners benefit in this association. The fungus primarily obtains carbon in the form of sugars from the plant for growth, while the plant receives nutrients, water, and increased protection from other soil microbes from the mycorrhizal fungus in return. It has been shown that mycorrhizal fungi significantly increase the absorptive surface for nutrients in the soil by means of their extensive hyphal networks emanating from the colonized roots. In some trees, hyphae of ectomycorrhizal fungi constitute up to 80% of the entire absorptive surface area, underlining their importance.

There are three major types of mycorrhizal associations (see Table): (1) ectomycorrhizas, (2) endomycorrhizas, and (3) ectendomycorrhizas. Basidiomycetes represent by far the largest group of fungi involved in mycorrhizal associations, being the dominant ectomycorrhizal and the sole arbutoid, monotropoid, and orchid mycorrhizal fungi. More often than not, you can see their fruiting bodies in forests; some of these fungi are edible (e.g., *Suillus brevipes*, the Slippery Jacks, growing under pine and larch), while others are not (e.g., *Amanita muscaria*, the Fly Amanita, growing under poplar and spruce). There is no set rule. Zygomycetes are the only group of fungi that form arbuscular mycorrhizal associations. These associations are by far the most widespread of any, with nearly 90% of all land plants having their roots colonized by these fungi. This dominance may be explained by the fact that zygomycetes are much older than ascomycetes and basidiomycetes from an evolutionary perspective. Hence, they had more time to develop their associations with vascular plants. An interesting mycorrhizal association exists between species of *Armillaria* (Honey Mushroom) and orchids. While the fungus is a significant tree pathogen in Canada’s boreal forest, it is absolutely essential for the survival of some orchid species. Lastly, many members of the Ericaceae grow in nutrient-poor and often acidic ecosystems (peatlands). Here, ericoid mycorrhizal fungi provide them with the nutrients and protection necessary to allow them to flourish under these harsh conditions.

There are a number of intriguing relationships between mycorrhizal fungi and plants. Mycorrhizal fungi are often connected via their mycelium to several trees of the same species, to trees of different species, and even to plants that belong to different families altogether. These connections are likely important in the survival of seedlings, sapling, or otherwise stressed individuals in a tree stand. The fungus can shuttle nutrients through its mycelium to neighboring plants, thereby enhancing their nutrition and relieve the stress, such as shading, competition with other plants, or diseases.

Non-mycorrhizal plants have evolved special morphological adaptations to acquire nutrients. For example, some plants are insectivorous, while others form long lateral roots or root clusters. In addition, roots of some plants are associated with nitrogen-fixing bacteria. In all cases, these plants are able to access nutrients otherwise unavailable to them. In addition, many wetland plants are non-mycorrhizal. The roots of these plants are colonized by other fungi, which may function similarly to mycorrhizal fungi. Lastly, plants growing in heavily fertilized or otherwise nutrient-rich habitats tend to be non-mycorrhizal as well. Under these conditions, the ample supply of nutrients does not necessitate the presence of mycorrhizal fungi in their roots.

So, next time you go for a walk, have a look around. Almost all plants you see have mycorrhizal fungi growing on and in their roots. Who knows, without these fungi, our green earth may not be as green as it is today...

Markus N. Thormann, June 04, 2003 (summary of the April 29, 2003 seminar of the same title).

See Page 9 for Table: [Characteristics of Mycorrhizal Associations](#)

Part 2 of: Mycorrhizas - getting to the root of vascular plant diversity

**Table: Characteristics of Mycorrhizal Associations
by Markus Thormann**

Mycorrhizal Types	Mycorrhizal Fungi	Characteristics	Plants
Ectomycorrhizas	mostly basidiomycetes some ascomycetes (5000 - 6000 spp.)	mantle enveloping roots, Hartig net around root cortical cells	most trees & shrubs (willow, birch, spruce, fir, pine, maple etc.)
Endomycorrhizas Arbucular mycorrhizas	only zygomycetes (approx. 150 spp.)	arbuscules and sometimes vesicles	most herbs & some trees and shrubs
Ericaceous mycorrhizas Ericoid mycorrhizas	few genera in the ascomycetes	tight hyphal coils in root cortical cells, loose whelft of hyphae covering roots	most members of the Ericaceae, Pyrolaceae (Labrador tea, blueberry, etc.)
Arbutoid mycorrhizas	only basidiomycetes	loose mantle, Hartig net, & intracellular penetration of root cells.	few members of the Ericaceae, Pyrolaceae (bearberry, wintergreen, etc.)
Monotropoid mycorrhizas	only basidiomycetes	loose mantle, Hartig net, & intracellular penetration of root cells.	members of the Monotropaceae (pine sap, Indian pipe)
Orchid mycorrhizas	only basidiomycetes	loose hyphal coils in root cortical cells	all orchids (lady's slipper, coralroot, calypso orchid, etc.)
Ectendomycorrhizas	1 ascomycete genus (Wilcoxina spp.)	loose mantle, Hartig net, and intracellular penetration of root cells	common in conifer nursery seedlings (pine, fir, spruce, etc)

The article and table above was submitted to Spore Print by:

Dr. Markus N. Thormann, Research Scientist, Mycology and Forest Pathology
Northern Forestry Centre, Natural Resources Canada, Edmonton, Alberta

Webpage: <http://www.ualberta.ca/~mthorman>

Markus is a long-time member of the Edmonton Mycological Society

OPPORTUNITY !

Do you have an interest in fungi?

Do you have a computer, and e-mail capability?

You could be our Newsletter Editor for *Spore Print*

Those interested, please contact:

Melanie Fjoser, Editor: at 987-4412 or
sporeprinted@wildmushrooms.ws

THANK YOU LENI SCHWALKWYK !!!

For those of you who attended the EMS Mushroom Exposition 2003, we know you experienced a thrill at visiting our "Mushroom Gallery". There you would have viewed the original oil paintings of EMS Life Member Helene Schalkwyk (author of "Mushrooms of Western Canada" and "Mushrooms of Northwest North America". These paintings formed the basis for the illustrations of the aforementioned books, and most were painted of mushrooms found at Sandy Lake, Alberta. Not only did Leni find and identify each and every mushroom in her books, she also found the time to do sketches, then paintings!

What you may not know is that Leni has generously donated these paintings to the Edmonton Mycological Society. This is an outstanding gift for us to receive, and we are truly thankful. We hope to be able to display this collection at various functions in the future. The EMS thanks you Leni for this amazing gift !

COLLECTION NO.	SPECIES		COLLECTION NO.	SPECIES
5	<i>Cortinarius sanguineus</i>		293	<i>Agaricus arvensis</i>
11	<i>Lycoperdon umbrinum</i>		305	<i>Mycena sp.</i>
41	<i>Collybia dryophila</i>		318	<i>Leucopaxillus piceinus</i>
44	<i>Simocybe serrulatus</i>		408	<i>Daedaleopsis confragosa</i>
53	<i>Hydnellum sp.</i>		415	<i>Agrocybe acericola</i>
58	<i>Clavicornia pyxidata</i>		431	<i>Peziza repanda</i>
60	<i>Scutellinia vulgare</i>		462	<i>Rhodotus palmatus</i>
62	<i>Pholiota albicola</i>		511	<i>Mycena algeriensis</i>
72	<i>Auricularia auricula</i>		556	<i>Thelephora caryophyllea</i>
73	<i>Hericium racemosa</i>		581	<i>Leccinum holopus</i>
85	<i>Cortinarius trivialis</i>		584	<i>Pluteus atriavellanceus</i> (<i>Pluteus atricapillus?</i>)
90	<i>Clitocybe adora</i>		602	<i>Bjerkandera adusta</i>
92	<i>Vascellum pratense</i>		606	<i>Stereum ocheaceoflavum</i>
99	<i>Collybia exsculpta</i>		719	<i>Agaricus silvicola</i>
123	<i>Polyporus varius</i>		1053	<i>Heliocybe sulcata</i>
130	<i>Ramaria stricta</i>		1133	<i>Lycoperdon pyriforme</i>
146	<i>Gyromitra infula</i>		1588	<i>Pluteus patricius</i>
151	<i>Leccinum nigrescens</i>		1620	<i>Gyromitra infula</i>
160	<i>Clitocybe cyathiformis</i>		147b	<i>Hebeloma crustuliniforme</i>
175	<i>Cryptocalta rufa?</i>		15a	<i>Fomes fomentarius</i>
184	<i>Bjerkandera adusta</i>		15c	<i>Fomes fomentarius</i>
201	<i>Calvatia elata</i>		1618b	<i>Peziza repanda</i>
219	<i>Cortinarius montanus</i>		206a	<i>Microstoma protracta</i>
228	<i>Pluteus tomentosulus</i>		216b	<i>Pholiota squarrosa</i>
231	<i>Lenzites betulina</i>		227b	<i>Hohenbuehelia petaloides</i>
240	<i>Cortinarius castaneus</i>		241a	<i>Calocybe gambosa</i>
243	<i>Coprinus comatus</i>		326a	<i>Psathyrella uliginicola</i>
261	<i>Calvatia cyathiformis</i>		490b	<i>Auriscalpium vulgare</i>
277	<i>Psathyrella conopilea</i>		54a	<i>Polyporus brumalis</i>
282	<i>Herschroporus parfamenus?</i>		77b	<i>Scutellinia Pennsylvania?</i>
287	<i>Chlorociboria aeruginascens</i>		79a	<i>Scutellinia Pennsylvania?</i>

EMS Calendar of Events 2003 Please Join Us!		
DATE / TIME	LOCATION	DETAILS
Wed. Aug 27 7:00 PM	Edmonton Public Library 460 Riverbend Square Rabbit Hill Rd. & Terwillegar	MEETING TOPIC: Ammonia Fungi: Ecology & Physiology SPEAKER: Dr. Akira Suzuki of Japan See page 2 for more info on speakers
Sat. Sept. 13 11:00 AM	Lambert Creek Prov. Rec. Area Map is attached with info	DAY FORAY Honey and hedgehog mushrooms
Wed. Sept. 24 7:00 PM	Edmonton Public Library 460 Riverbend Square Rabbit Hill Rd. & Terwillegar	MEETING TOPIC: Tree Identification SPEAKER: Bill Richards See page 2 for more info on speakers
Wed. Oct. 22 7:00 PM	Edmonton Public Library 460 Riverbend Square Rabbit Hill Rd. & Terwillegar	MEETING TOPIC: Mushrooms for Medicinal Use SPEAKER: Dr. Steven Aung See page 2 for more info on speakers
Wed. Oct 29 6:00 PM	NAIT Dining Room See Below	PRESIDENT'S DINNER <i>Special Event!</i>

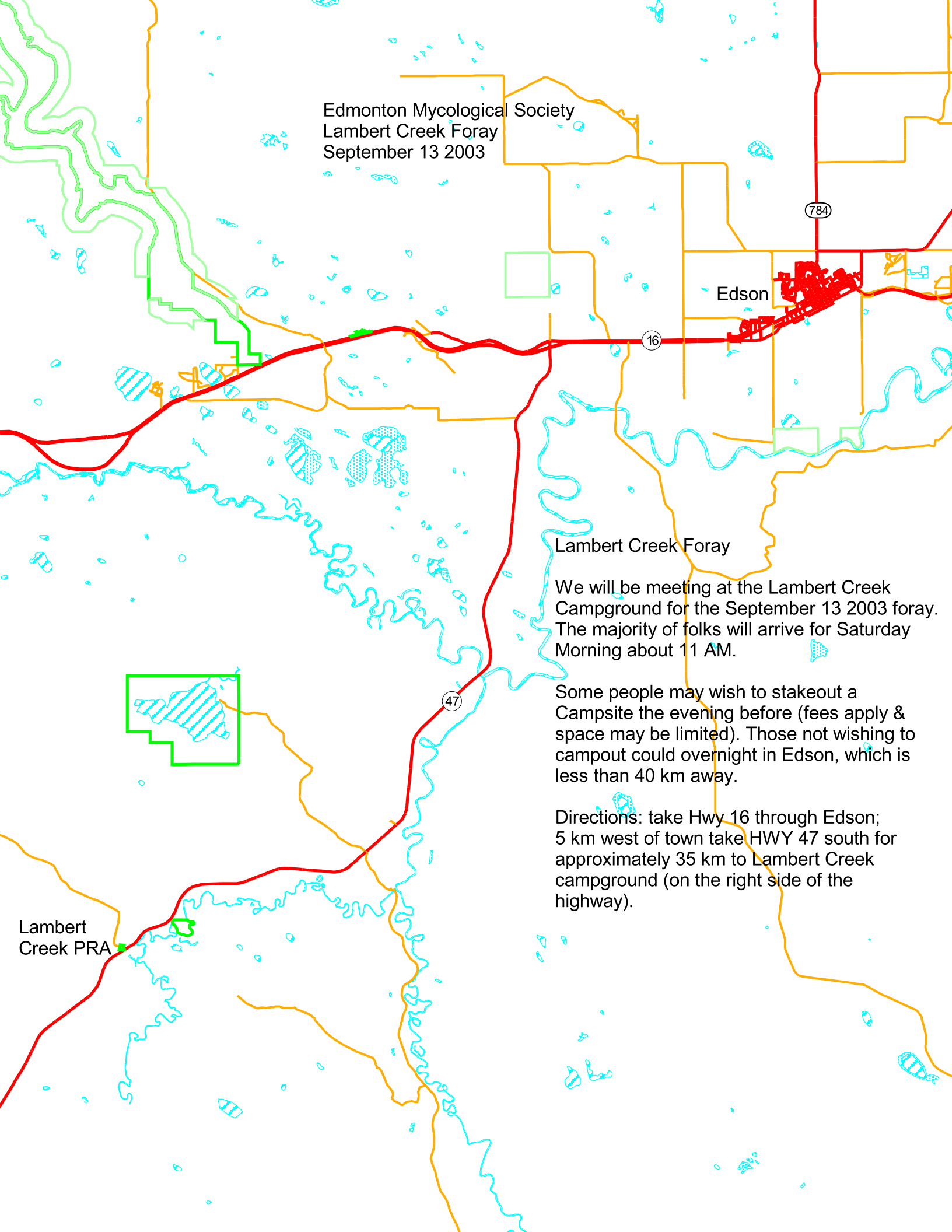
PRESIDENT'S DINNER Wednesday, October 29 (6:00 pm)

October signifies a great meal and a great get-together for EMS members as we look forward to our PRESIDENT'S DINNER. Our President, Peter Arabchuk, is hoping to hold this event at the **NAIT Dining Room**. As anyone who has eaten there can attest, this will be a gourmet dining adventure, complete with mushroom-featured cuisine. Details have not been finalized yet, but the cost will be **\$40.00, subject to final adjustments**. Members are advised that we would appreciate pre-registration, with payment as soon as possible, to **EMS, c/o 47 Rehwinkel Road, Edmonton, AB. T6R 1Y4**. If members would kindly pre-register, Peter will have more negotiating power with respect to the menu selections. For more information, please contact:

Peter Arabchuk,, phone: 479-6630 or e-mail: pres@wildmushrooms.ws

Hope to see you there!

Edmonton Mycological Society
Lambert Creek Foray
September 13 2003



Edson

784

16

Lambert Creek Foray

We will be meeting at the Lambert Creek Campground for the September 13 2003 foray. The majority of folks will arrive for Saturday Morning about 11 AM.

Some people may wish to stakeout a Campsite the evening before (fees apply & space may be limited). Those not wishing to campout could overnight in Edson, which is less than 40 km away.

Directions: take Hwy 16 through Edson; 5 km west of town take HWY 47 south for approximately 35 km to Lambert Creek campground (on the right side of the highway).

47

Lambert Creek PRA