Spore Print

2005 No. 4 Quarterly Newsletter of the Edmonton Mycological Society

Hericium ramosum - comb's tooth fungi

Hericium ramosum is a delicately flavoured fungi that is easily recognized and has medicinal properties as well. Photo courtesy: Loretta Puckrin.

This year we have been featuring the finalists of the "Pick a Wild Mushroom, Alberta!" project. Although the winner was the *Leccinum boreale* all the finalists are excellent edibles which show the variety of mushroom shapes common in Alberta. If all you learned were these three finalists and the ever popular morel you would have a useable harvest every year. The taste and medicinal qualities of each is very different so you not only have variety in shape and location but in taste and value as well. If you learn about various edible species and hunt for harvest you will become a mycophagist. Although you won't need four years of university to get this designation, you will find that over the lifetime of learning about and harvesting mushroom you will put in more time than the average university student and probably enjoy it much more.

Although often shy and hard to find, this delicious fungus family is a favourite of new mushroom pickers as all the 'look alikes' are edible as well. With their white fruiting bodies against the dark trunks of trees, this fungus is easily spotted and often produces moments of rapt viewing before the picking begins. People knowledgeable in the medicinal

(The Hericium ...continued on page 3)

President's Message

Markus Thormann, president of the Edmonton Mycological Society

Another mushroom season is closing slowly, and it is time to formulate some final thoughts about our past year's activities. The EMS elected a new executive in April and began to develop a program for 2005 shortly thereafter. It has been an excellent mushrooming year, which is very evident in the species lists published in this year's newsletters. We went on 11 forays in the foothills, southern boreal forest, urban centres, and the aspen parkland and found a myriad of different basidiomycetes, ascomycetes, jelly fungi, and slime molds. Many of these fungi were edible and have ended up in various dishes throughout the year or were dried, frozen, or pickled for later enjoyment.

Our regular monthly meetings were highlighted by a number of excellent presentations on digital photography, common and obscure edible mushrooms, and how to go about identifying all those fungi that grow throughout the growing season. The EMS web site and the *Spore Print* were redesigned in 2005, and both look stellar! A true testament that the EMS is maturing and progressing in the right direction. So far, our new web site has been visited well over 1,350 times since its mid-July launch date. Our annual "*City of Champignons*" Mushroom Exposition in early August once again was a huge success. Recently, I received a phone call from a Devonian Botanic Garden staff member, thanking us for organizing this event and holding it on their grounds. It is tremendously popular with the visitors to the Botanic Garden, I was informed. In early September, our first ever *Alberta Foray* near Rocky Mountain House yielded an astounding richness of fungi. The data have not all been tallied yet, but in two short days, we collected about 500 different species of fungi (!!!). Many of them have not been identified to either genus or species yet and await further processing in the near future. This has been an event that was very well received by all in attendance. I look forward to the next Alberta Foray!

I am sure that 2006 will be an equally, if not more successful year. We can look forward to finishing (hopefully) our "*Pick a Wild Mushroom, Alberta*" campaign, the North American Mycological Association foray will take place near Hinton in August, we'll continue to expand our digital fungus image collection, and perhaps take the first small steps towards a database of fungi in Alberta. I am very excited about these projects.

I want to thank each member of the EMS executive and various internal committees for their help, advice, and countless hours of volunteer time throughout the first year of my tenure as president. Last but not least, without our members from across Alberta, the EMS would not be what it is today. I thank all of you for making the Edmonton Mycological Society one of the best natural history clubs in Alberta. My hat goes off to all of you!

I wish you all a festive upcoming holiday season filled with lots of mushroom dinners.

Cheers and all the best for 2006.
See you all next year.

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The Hericium

(continued from page 1)

uses of mushrooms claim that this family enhances the immune system and helps to prevent cancers of the stomach, esophagus and skin.

The genus *Hericium* has three edible species commonly called the Conifer Coral *(Hericium abietis)*, the Comb and the Lion's mane (or Old Man's Beard)(*Hericium erinaceus)*. The major differences between these species is the number of branches and the length of the spines or 'teeth' on the specimen. They are all white in colour but differ as to what type of trees and the amount of decay required for them to grow and fruit. The Conifer Coral, as the name suggests, grow primarily on fir and Douglas-fir trees which have died. The specimens are most common in the Pacific Northwest and should not be expected to be sighted in Alberta. Large specimens can weigh over 100 kg. So you might want to consider a trip out west during its growing season.

The Lion's Mane variety is so dense with branches and teeth that you can't see the branches until you cut into your sample. This has the longest spines of the three varieties and prefers the wounds of living hardwood trees for its growth.

The *Hericium ramosum* is a more delicate variety with evident branches and fine shorter 'icicles' or 'teeth' decending from the branches. The teeth are fairly evenly distributed along the branches and normally vary from 3-10 mm in length. This variety prefers growing on older felled logs and stumps in solitary clumps rather than in groups. When the white mushroom starts to turn yellow it should be left for another year as it is too old to eat. Of all the *Hericium* this is the most common variety in North America and can be found almost anywhere in this continent.

Regardless of what it is called, by classification or common name, it is a delicious edible.

The season for *Hericium ramosum* is late summer through fall but it is very fussy about climatic conditions and can skip several years before appearing. Once a spot is found keep visiting it every year as this species is likely to re-fruit in the same area, if not on the same tree.

This species of mushroom has a very light delicate flavour and should be cooked with other foods that have mild tastes. When cooked with strongly flavoured foods, *Hericium ramosum* ends up contributing more fibre than taste. Some EMS members prefer using *Hericium ramosum* with scrambled eggs as a morning dish to maximize the flavour and fry it with minimal seasoning which otherwise might mask the mushroom taste. Other members use this mushroom with rice as both the flavours are light.

The names of mushrooms are always changing as scientists learn more about the various species. *Hericium* was once classified as *Hydnum coralloides* and placed in the same family as the Hedgehog mushroom due to the spines found on both species. The word 'hericium' means hedgehog in latin. Now *Hericium* is a genus unto itself but this may change with the DNA typing of specimens which often suggests other commonalities that looks alone don't show.

The Hericium family contains a number of species. The Hericium ramosum is one that can be found in our area. Photo courtesy: John Thompson.

Loretta Puckrin

From the pen of our Membership Coordinator

I'm still shaking my head. Just a year ago I joined the EMS *(Edmonton Mycological Society)* knowing nothing about wild mushrooms nor the EMS. Now here I am your Membership Coordinator and enjoying the experience of meeting so many wonderful like-minded people. We are a diverse group of dedicated individuals who want to expand our knowledge of all aspects of wild mushrooms. Some people have joined for scientific purposes, some to learn about their medicinal values and the rest of us just want to learn how to identify and enjoy the multitude of edible varieties.

The Edmonton Mycological Society presently consists of more than 140 members in good standing, made up of family groups (2 or more), individual members and students.

Most EMS members already know the benefits of being part of the Club. However I will rehash some of them. Also in the event Non-Members read this article I will take this opportunity to encourage them to become new members.

Well now, what are the benefits of joining our club?

There are many, but a few of the key ones are:

- four high quality newsletters *(Spore Print)* per year containing information on specific mushrooms, club events, meetings and general mushroom picking data are produced.
- information on when and where various mushrooms start appearing – we have some very active members who seem to have the uncanny knack of finding the first of a variety for the season.
- monthly meetings during the season with guest speakers on mushroom related topics.
- access to our mushroom identification database that is presently under construction.
- mushroom picking guided walks / forays – throughout the mushrooming season – location and timings are only available to members.
- information on mushroom identification, books, keys, on-site field identification, information etc.
- access to other clubs throughout North America.
- access to local mycologists.
- information about international mushroom picking forays.

Alan Fleming

Take the time NOW to renew your membership for 2006

Membership Registration Form

Name: .....

Address: .....

City: ..... Prov: ..... Postal Code: .....

Email: .....

Phone: ( ) .....

❑ Individual Membership ... $25.00 per year ❑ Student Membership ... $15.00 per year

❑ Family Membership ...$35.00 per year

Disclaimer

Membership information is for the sole use of the *Edmonton Mycological Society*
If you do not wish this information to be available to members please check the box below:

❑ Please do not make my membership information available to other members.

Lambert Creek Foray

August 26-28, 2005

This year's weather for the August Lambert Creek Foray was one of the warmest weekends we experienced this summer. The biting insects were also bountiful. Three parties arrived on Friday evening to camp overnight and fifteen members in total went on Saturday morning to find gypsy, hedgehog and man on horseback specimens. As usual many other specimens were collected.

We found three pine mushrooms, which I understand are highly prized and called Matsutake in Japan. There were some large tamarack boletes, a good number of hedgehog and gypsy mushrooms and the not so common Northern Pestle mushroom. The group dispersed in the afternoon, with some members having to return home.

Bill Richards, with help from some of the group, again diligently identified the various specimens and eventually fried up samples to taste. This tasting and sampling is certainly one of the favorite activities at the foray outings.

Bill Richards, the foray leader, shows everyone an excellent specimen of a Rozites caperata or gypsy mushroom.

One member couple participated in their very first foray and was awed by the diversity of mushrooms. They shared a wonderful mushroom dip which was consumed as all congregated around a large crackling fire in the evening.

Since we had been made aware of a bear being sighted in the vicinity, precautions were taken not to leave anything edible out overnight. Fortunately the critter never showed up.

Sunday arrived as a nice warm day again. Some of the overnight campers broke camp to foray in another area while some stayed to foray at Lambert Creek and left for home around noon.

A good time was had by all and most of us learned to identify yet another mushroom.

My husband and I joined the society one year ago, enjoyed the company of likeminded people, had fun being outdoors and learned a lot about mushrooms by participating in the forays this year.

Some of our members having fun sorting and identifying an assortment of mushrooms that were picked on the foray.

Story and photos by Gerlinde and Claus Cegielny

Lambert Creek Foray List

Albatrellus ovinus
Boletus sp.
Cantharellus tubaeformis
cf. *Bankera violascens*
Chroogomphus vinicolor
Clavariadelphus borealis
Clavariadelphus sachalinensis
Clitocybe odora
Coprinus comatus
Cortinarius alboviolacius
Cystoderma amianthinum
Fomitopsis cajanderi
Fomitopsis pinicola
Fuscoboletinus ochraceoroseus
Fuscoboletinus spectabilis
Gloeophyllum sepiarium
Gloeophyllum trabeum
Gomphidius glutinosus
Gomphus clavatus
Helvella crispa
Hydnellum peckii
Hydnellum pineticola
Hydnemum Repandum
Hygrocybe conica
Hygrophorus chrysodon
Hygrophorus eburneus
Hygrophorus erubescens
Hygrophorus saxatilis
Laccaria bicolor
Laccaria laccata
Lactarius aspideoides
Lactarius deliciosus
Lactarius repraesentaneus
Lactarius resimus
Lactarius rufus
Lactarius scrobiculatus
Lactarius subtorminosus
Lactarius uvidus
Leccinum insigne
Leccinum snellii
Lycogala epidendrum
Lycoperdon perlatum
Otidea onotica
Phellinus pini
Phellinus tremulae
Pholiota squarrosa
Pleurotus ostreatus
Ramaria sp.
Rozites caperata
Russula nigricans
Russula subfoetens
Sarcodon imbricatus
Spathularia spathulalia
Stropharia aeruginosa
Suillus brevipes
Suillus cavipes
Suillus granulatus
Suillus tomentosus
Suillus umbonatus
Trametes pubescens
Trichaptum biforme
Tricholoma flavovirens
Tricholoma magnivelare
Tricholoma zelleri

'shrooming in Alberta

It has been a good season for fall mushrooms in Alberta.

During the Labour Day weekend, we were fortunate enough to participate with members of the Edmonton Mycological Society in their 1st Alberta Foray – a 3 day event. It was held at the Crimson Lake Hall near Rocky Mountain House, 2 hours north-west of Calgary

Many camped in the area; others stayed in local bed and breakfasts or motels/hotels. Forays were held each morning and afternoon and all meals (which included of a diversity of mushroom dishes) were prepared by volunteers in a rented community hall.

The 30 participatants found approximately 500 different mushrooms, including a couple which may be new finds for Alberta – and even for North America. We found 150 *Cortinarius* specimens alone! Experts from the club, including several mycologists using a large number of references and microscopes, spent long hours identifying the specimens. A database will be formed documenting the finds. Leonard Hutchison (a former member of the club), now a mycologist in the Forestry Dept. at Lakehead University, attended and assisted with identification.

This was the first time that the club had found chanterelles during a foray in Alberta and they were plentiful, supplying food for a number of meals.

We received a warm welcome; learned a lot; met some great people; and generally had a fun time. We look forward to participating again next year, when the NAMA foray will be hosted by the society.

Ethel Luhtanen

Some of the individuals that came to Crimson Lake for our first Alberta Foray.(top) Thanks to everyone who helped get meals ready and the cleanup went like clockwork (left).

Hmmmm, these are sure going to taste great! (bottom).

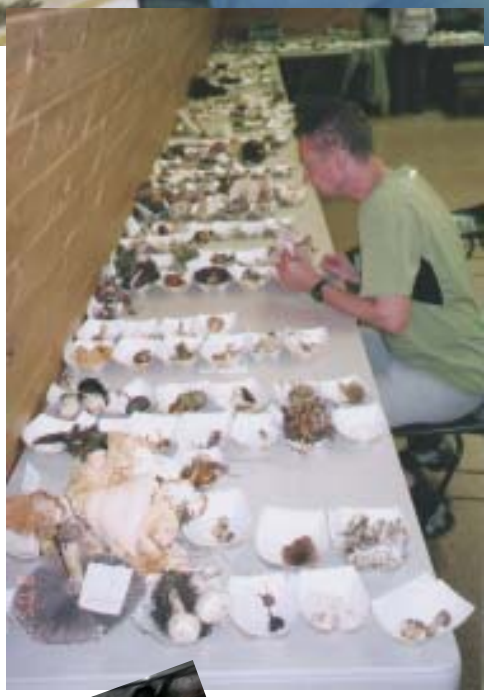
Species List

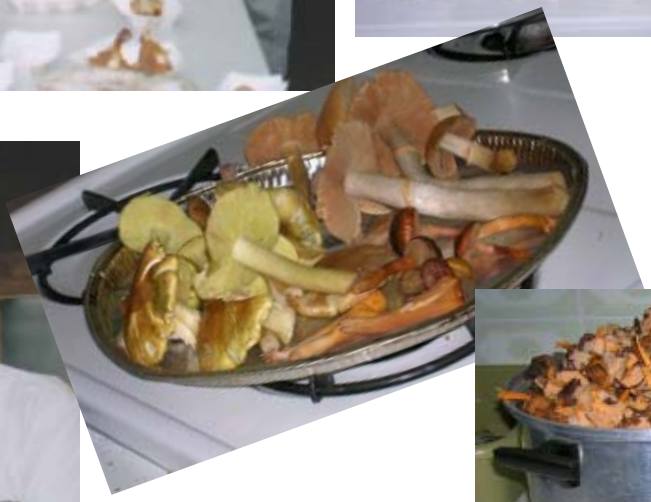
The Edmonton Mycological Society had a collecting permit for the collection of specimens within Crimson Lake Provincial Park and we also collected in several other sites on adjacent land, including the proposed Rocky Mountain House Natural Area. There were about 500 specimens collected. Of those 200 were identified to species. 120 *Cortinarius*, 25 *Russula*, 11 *Lactarius*, 10 *Hobeloma*, 5 *Inocybe*, and 5 *Tricholoma* were identified to genera and the rest are to be worked on to determine their species and genera.

It is possible that we found a new species for North American and several new species for Alberta, but much work is needed to both verify and complete the collection list.

Bill Richards

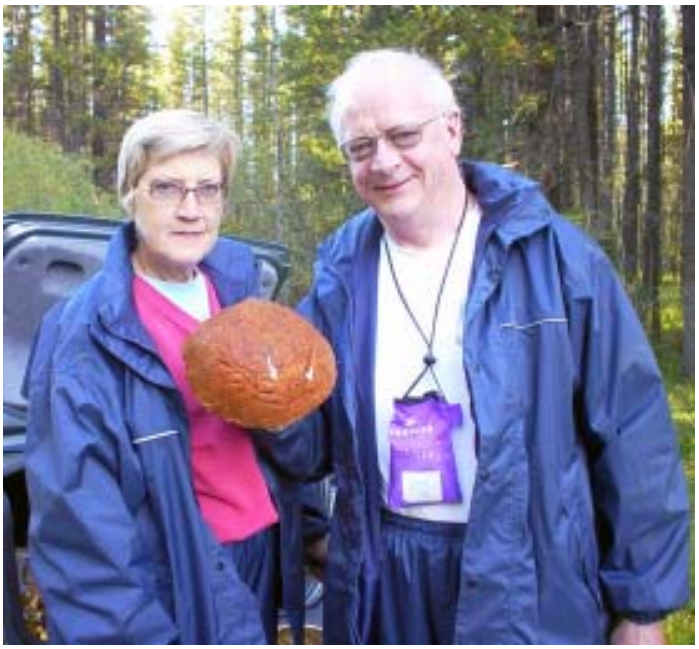
Bill, Markus, Mike, Martin and Leonard spent a major amount of their time identifying the huge assortment of fungi that everyone enthusiastically picked.
Ethel Luhtanen and Leonard Hutchison (bottom left) discussing, what else, mushrooms.
(Bottom right) A sampling of the mushrooms that were found





Photos courtesy of George and Anne Litven, Alan Fleming and Rosalind Quail.

What a Difference a Year Makes



Rae and Alan Fleming with the king of boletes -- Boletus edulis.
Photo courtesy: Loretta Puckrin

We became aware of the EMS during the media campaign for the PAWMA *(Pick a Wild Mushroom Alberta).* As a result of this past year's exposure to the fungi kingdom the evening stroll is forever changed. Several weeks ago we were walking through a small neighborhood park that has been on our regular route for many a year. Suddenly we became aware of a *Suillus* that had to be collected and studied. After reviewing all the distinguishing characteristics of the mushroom and pouring over our rapidly expanding mushroom library, the species was verified and the pan was readied. As novices to the process a successful conclusion may not always be achieved; however, there is no greater excitement than completing our first independent identification.

Our first foray took us to Lambert Creek mid September 2004. We learned that under certain conditions a great variety of mushrooms do "grow in the snow" and in great abundance. The 2005 season began on a delightful spring like day in March in the Poplar Creek area on a Polypore Foray. The medicinal properties of the polypores merit greater attention, and we have come to know several people who are enthusiastic about sharing information on how to take advantage of these attributes. In May the morels and verpas were quite elusive (at least to our inexperienced eyes). Perhaps it was the glorious display of vivid blue and buttercup yellow spring flowers that distracted the eyes. A wet weekend in June did not dampen our enthusiasm as we joined club members that congregated at the Poplar Creek area in search of oyster mushrooms. We spent a wonderful evening trading stories with our fellow 'shroomers, as we shared some wild mushroom soups, spit roasted pork and an assortment of other mushroom dishes. For us the highlight of the Ashland Dam Foray was the opportunity to practice using the identification key that Martin had developed. The First Alberta Foray in September was an incredible experience with the collection of about 500 species of mushrooms, a few of which may be recorded for the first time in Alberta, and copious quantities of *Cantharellus tubaeformis* to feast on. These are just a few of the highlights from this past year.

Underlying all of this have been the terrific people we have become acquainted with that have contributed immensely to our enjoyment of these activities in the past year. Club members alert us when mushrooms are making their appearance for the season, assist in the process of recognizing likely environments, developing identification skills and provide information on harvesting, processing and storage of these treasures. We can soak oysters in a pan of salty water or smoke the wee beasties out before your family know they have been there.

Our fellow amateur mycologists are a cross section of private industry, the public sector, retirees and moms caring for the next generation of shroomers. This eclectic group has wide ranging interests and expertise in many areas of our ecosystem, e.g. Rub the bark of an aspen and apply to your face to benefit from its sun block properties. Stop a moment and enjoy the wild Alberta orchid that Pieter has pointed out. Did that pair of overflying Sandhill Cranes nest in the area or are they on their way south? Provide relief for your tired aching feet by placing alder leaves in the bottom of your footwear. Troubled by gout, gather and steep some wild Sassafras roots.

As we review our participation at the end of year one it occurs to us that we have been fortunate to stumble onto an organization that will afford us with many an opportunity for continued learning. It has been a fascinating introduction to the field of Mycology and we are looking toward to many years of expanding on this basic knowledge with this diverse group of individuals that comprise the EMS.

Rae Fleming

NAMA Foray and Conference

As some of you may have already heard, the North American Mycological Association (NAMA) is planning on holding their annual 2006 foray in Hinton, August 17-20 (Thursday to Sunday) . This is an international gathering of both professional and amateur mycologists. This is exciting for several reasons. The main reason is that we get to mingle and learn from some of the best experts in the world. Remember that NAMA is an organization dedicated to, and to some extent run by, amateurs. This means that they are mostly interested in looking at the larger macro fungi, especially the fruiting bodies or mushrooms. This of course is what interests most of us.

Secondly, NAMA leaves no mushroom unidentified. We will get the opportunity to see and record the names of mushrooms that we have never been able to identify before. NAMA foray collections are all preserved and put into herbaria, giving another great boost to our club's goal of assembling a database of all Alberta fungi.

A third reason is that we hope to record much of the conference / lecture portion of the foray as well as record some of the forays in the woods. This would become a major component of our education program both for in-club use and as education material for other Albertans.

To make this foray a success, both as a learning experience and financially, we will need to ask our members to come forward in their various areas of expertise and help us organize the event. We will require help with:

- People who are familiar with coordinating transportation and entertainment.
- People who are familiar with Audio visual equipment and recording devices. As well as people who can help edit and put together Discs and DVDs.
- People who could collect door prizes and other sponsorship items. Others who can help in the running of an on-site market selling books, DVDs, discs, drinks, poster and such.
- Coordinate printing and assembly of Foray programs and handouts.
- People to help man registration and information/ help desks.
- People to help coordinate & lead forays making sure that no one is left out in the woods.

The best way to get the most out of any event is to volunteer and plan on attending the entire weekend. We need your commitment now to be a part of this unique opportunity.

Please contact Martin at mosis@wildmushrooms.ws or phone 780 987-4412 with any questions, comment and suggestions on how you can help.

Sorrentino's Mushroom Walk & Dinner

On September 10, forty mushroom enthusiasts met at Sorrentino's West to partake in a mushroom walk and dinner sponsored by Sorrentino's and led by Martin Osis, our Program Director. Most of the forayers were not members of the Edmonton Mycological Society, but had an interest in mushrooms from a culinary perspective. This walk was part of the restaurant chains' annual Mushroom Harvest event, which spans the month of September and is now in its 11th year.

We set off along Wolf Willow Road, picking fairy ring mushrooms here and diverse agarics there, all the while Martin explaining what these mushrooms were and what their roles are in the grand scheme of things. We turned into Westridge Park and continued our mini-foray. After about an hour and a half foraying the lawns and bushes along the multipurpose trail, we had collected over 150 mushrooms, which represented 19 different species, including many edible species.

We then made our way back to Sorrentino's West for the subsequent 3-course mushroom pasta dinner, especially prepared for this event. Martin made the rounds to every table and spoke with our fellow mushroom hunters about mushrooms, mycology, mushroom books, and the Edmonton Mycological Society, which resulted in a few new memberships. I thank Martin for leading the mini-foray and Arleigh Stockwell, Marketing & Promotions Coordinator for Sorrentino's, to work with our Society and establish a mutually beneficial relationship. This was the first such event, and we hope to continue to further our relationship with Sorrentino's in the years to come.

Species list

Agaricus sp.
Armillaria mellea group
Calocera sp.
Clavicorona pyxidata
Coprinus comatus
cf. *Hebeloma* sp.
Hydnum repandum
Hygrophorus sp.
Lactarius deliciosus
Lactarius spp.
Leucoagaricus naucinus
Lycoperdon sp.
Marasmius oreades
Marasmius sp.
Paxillus involutus
Polyporus cf. *varius*
Russula cf. *olivacea*
Russals sp.
Suillus grevellii

Markus Thormann

EMS Bylaw Vote

At the last regular meeting on September 28, 2005, the membership in attendance voted unanimously in favour to hold the Annual General Meeting (AGM) in February of each year. This change of date for the AGM from October to February has been made in the Bylaws of the Edmonton Mycological Society and is effective immediately. Consequently, our next AGM will be held in February 2006. The membership of the Edmonton Mycological Society will be notified of the exact date and agenda in due time.

Markus Thormann
President, Edmonton Mycological Society

Need a ride? Found some mushrooms and would like to let everyone know that they are out? Have some information that you would like to share with the rest of the club?

There is an easy way.

Just email your questions or information to:
members@wildmushrooms.ws
This is the general site for all the members who have emails. The list is never given out. This protects the members but allows anyone to access the group.

Markus Thormann will be giving a talk to the general public on November 22, 2005 at 7:00 pm at Riverbend Library.

The Edmonton Mycological Society is looking for a Communications Co-ordinator. If you are interested or need more information about the position, please email Markus Thormann, EMS president at

mthorman@nrcan.gc.ca

There will not be another Calendar of Events published until after the Annual General Meeting. Please check your emails for information on the Polypore Foray that is being planned, probably for February of 2006.

Recipe

Mushroom Pate

Ingredients:
150 grams of dried mushrooms *(can be mixed)*
3 medium spanish or white onions
3 dried kaiser buns with crust removed
3 tbsp chopped hazelnuts *(you may wish to use more for the coating)*
1/2 lb. butter
5 eggs *(separate)*
1 cup sour cream
Salt & Pepper to taste

1. Wash mushrooms, cover with hot water and let sit overnight.
2. Save the liquid from the mushrooms and soak the dried buns in this liquid. Chop onions. Melt all but 1 tbsp of butter in pan. Fry onions and mushrooms. Add buns *(squeeze out the water)*. Cook the mushrooms, onions and buns for a few more minutes stirring constantly.
3. Transfer the mixture to a bowl and add 2 tbsp of hazelnuts, S&P, egg yolks, and sour cream. Mix well. Beat egg whites and then mix with the other ingredients in the bowl.
4. Grease a tureen with the reserved butter. Place the rest of the chopped hazelnuts in the pan. Put the ingredients from the bowl on top of the hazelnuts. Cover with aluminum foil and bake at 180°C for one hour.

Recipe courtesy of Judy Lasinski

Annual General Meeting

February, 2006.

Watch for details in your email messages.

Medicinal Mushrooms

The meadow mushrooms are in kind the best,
It is ill trusting any of the rest.
- Horace

Agaricus may derive from agrarius meaning growing in the fields, or from the Greek **AGARIKON.** Agaric is used to describe all mushrooms with gills, and comes from the name of a pre-Scythian people, the Agari, who were skilled in the use of medicinal plants, including mushrooms. They used a fungus called Agaricum, which was probably a *Fomes* polypore. Bitorquis means having two rings, for the double annulus that distinguishes it from its close relatives.

Agaricus campestris *(field mushroom, meadow mushroom, ghost ears)*
Agaricus arvensis *(horse mushroom)*
Agaricus brunnescens
Agaricus bisporus
Agaricus hortensis *(wild button mushroom, cultivated mushroom, portabella, crimini)*
Agaricus bitorquis *(spring agaricus*
Agaricus placomyces
Agaricus praeclaresquamosus *(flat top)*

Button is related to the size and shape. The term button mushroom is an English slang term for small male genitalia.

There is some controversy which of these is the relative of the familiar supermarket mushroom. According to Dr. Malloch, *A. brunnescens* (formerly *A. bisporus*) is the winner. Others believe a pure white field mushroom, discovered by a farmer in 1926, is the original parent of today's supermarket mushrooms.

In 1998, over 860 million pounds of this mushroom were sold on the American market. Few are grown organically, and in fact, the industry heavily uses pesticides.

The Field mushroom contains many valuable trace vitamins such as B1, C, P, K. etc, and taken regularly prevents many problems such as beriberi, debility, loss of appetite, indigestion, and insufficient breast milk secretion. It also prevents the rupturing of capillaries, gum and abdominal bleeding, and pellagra.

Vitamin K, a hemaglutinin, can be extracted from *A. campestris*. It contains campestrin that is effective against both gram positive and negative bacteria; and used traditionally for treating tuberculosis and sinusitis.

Inhibition rate against sarcoma 180 and Ehrlich carcinoma is 80%, due in part to the Retine, or alpha-keto aldehyde content.

A. campestris also has been reported to possess significant anti-viral potential in work by Cochran, in 1978, and also contains (S)-agaridoxin, and indigo.

Culpepper said that garden mushrooms (*A. campestri*s) were used medicinally. (They are) "Roasted and applied in a poultice, or boiled with white lily roots and linseed, in milk, they ripen boils and abscesses better than any preparation that can be made". In Norfolk, the mushroom was stewed in milk to soothe throat cancer.

Modern research by Gray and Flatt found that administration of A. campestris to lab mice in drinking water, countered the hyperglycemia of diabetic bred mice. The insulin releasing activity is greatest in the polar fractions, and leads to as many questions as answers.

The fungi was called Ghost Ears by the Mohawk and used as a food and flavouring agent by this and other native tribes. The neighbouring Onondaga called it **ANANAU'TRA**, meaning hat or cap.

Wild *Agaricus* species tend to be more pliable, less "chalky" and softer, with a nutty earthy flavour when cooked.

In parts of India and Afghanistan, it is known as **KALLULAC-DIV**, meaning "fairy's cap".

Field Mushroom releases all of its 16 billion spores in a single 24 hour period.

Horse Mushroom is resistant to both gram positive and negative bacteria. Its inhibition rate against sarcoma 180 and Ehrlich carcinoma is up to 100%.

It is somewhat larger than the field, and can be further identified by having an anise/almond odour.

In Traditional Chinese Medicine, the dried mushroom is used as part of the Tendon Easing powder, for curing lumbago, and pain in the legs, numbed limbs and discomfort in the tendons and veins.

Horse Mushroom has one of the highest contents (8.7% dry wt) of phosphatdylserine found in fungi; and could be of interest to formulators for brain and nerve function.

Button Mushroom has been used traditionally in both China and Korea by breast-feeding mothers to help increase milk production.

It is known in the former country as **MO GU**, as well as **JI**

(Medicinal Mushrooms...continued on page 12)

Agaricus

(continued from page 11)

ZU MO GU, chicken foot mushroom, **MO GU XUN**, mushroom gill fungus, and **ROU XUN**, meat gill mushroom.

The button mushroom is cooked in soups to ease indigestion and increase appetite. It is often simmered with Reishi mushroom (*Ganoderma lucidum*) for treating chronic hepatitis, two weeks on and three days off.

The Button mushroom has been found to contain a polysaccharide PA3DE, which shows inhibitory effect against the

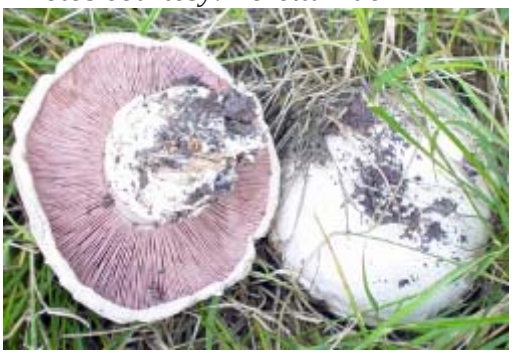
Helicobacter pylori bacterium, responsible for a high number of stomach ulcers, gastritis, and gastric carcinomas. Archives of Pharmacal Research, 1996 19:6.

The Button mushroom (*A. bisporus*) is resistant to both gram-positive and gram-negative bacteria. Agaratine is weakly mutagenic to Salmonella typhimurium.

Agaratine is also the most notable carcinogenic hydrazine, which is quite heat stable.

Button Mushrooms also contain aromatase inhibitors, similar to those found nettle root, and possessing anti-cancer activity, especially against hormone sensitive cells from the breast and prostate. J Nut 2001,131; Recent Progress in Hormone Res 2002,57; Tox Appl Pharm 2002,179:1; J Endocrin 2002, 172:1.

Photos courtesy: Loretta Puckrin



In a study by Swanston-Flatt et al at the University of Surrey in 1989, button mushrooms were found to be anti-diabetic. This mushroom countered the initial reduction in plasma insulin, the reduction in pancreatic insulin concentration and improved the hypoglycemic effect of exogenous insulin.

The purple coloured observed on some cultivated and washed mushrooms is due to the oxidization of L-Dopa by tyrosinase to indol,-5,6-quinone, to melanochrome to melanin.

Button mushrooms (*A. bisporus*) also contain phenolic and quinoid derivatives with anti-bacterial activity (Vogel et al., 1974).

The inclusion of dried button mushrooms at the 5% and 10% level in diets of rats resulted in the accumulation of lipids in the liver with a simultaneous decrease in the circulatory lipids, except healthy phospholipids, in blood plasma. It also contains a hydrazide, agaritine. It is worthy of note that mice fed uncooked *Agaricus bisporus*, the common edible mushroom in supermarkets, developed cancer tumours, supposedly from the phenylhydrazine derivative, agaritine. The compound is often accompanied by the analogue agaritinal, previously found only in *A. campestris*.

Mice studies do not always transfer to humans, but nonetheless, Button mushrooms should probably be cooked; and yet 80% of this species are consumed raw in the United States and Canada. Recent studies have failed to confirm these previous observations, but the data is too limited to be certain one way or the other.

Conventional wisdom held for years that hydrazines were destroyed in cooking.

Some authors believe that aromatase, anti-oxidants and anti-cancer polysaccharides neutralize the effect, but the jury is still out.

There is a definite need for the development of agaritine free strains. In 1998, the Button Mushroom accounted for 98% of the market with 861 million pounds sold. In 1970, the button mushroom accounted for over70% of the total global mushroom production, but by the new century, it accounts for only 30%, even though production has more than doubled in those years.

Of more concern, is the heavy use of malathion and other pesticides used in commercial mushroom cultivation. *Organic production is on the way!*

Studies by Gruter et al., (1990) indicate that ethanol extracts from Button mushrooms contain anti-mutagenic substances that are heat stable.

Work by Yu-LuGang et al., published in the 1999 Journal of Biological Chemistry, 1999,274;8, found a lectin with potent anti-proliferative effect, but no apparent cytotoxicity. This Ga1 beta1-NAcalpha lectin effect appears due to a consequence of lectin trafficking to the nuclear periphery; where it block NLS dependent protein uptake into the nucleus.

Decoctions of the dried fruiting bodies have been used in diabetes.

Champex, a patented field

(This article on Medicinal Mushrooms will continue in our first issue of the new year. Provided through the courtesy of Robert Rogers, author of Medicinal Mushrooms of the Prairies. Robert teaches plant medicine and can be reached through Earth Medicine Consulting at scents@telusplanet.net)