Spore Print

2006 No. 4 Quarterly Newsletter of the Edmonton Mycological Society

Rozites caperata

or as it is commonly known - the Gypsy Mushroom

Throughout all the literature that has come across my desk, every author has questioned the reasoning for naming this particular fungus "gypsy". To date no definitive answer has been given. So the common label remains a mystery. *Rozites caperata* has also been labelled as the "powdered sugar mushroom" because of the white fibrils that can be seen on the caps of young fungi. The caps appear to have a sheen or bloom or pasted Kleenex effect. These are not, by any means, the only questionable areas about this mushroom – so maybe the name has arisen because they are so mysterious – like the gypsy tribes.

The classification for Rozites caperata is:

Order: *Agaricales*
Family: *Cortinariaceae*
Genus: *Rozites* (named after Ernst Roze, a European mycologist)
Species: *caperata* (wrinkled)

Originally this fungi was labelled: *Pholiota caperata* (wrinkled *pholiota*). A specific genus for this species was created once it was studied in detail. The presence of a volva-like structure at the base of the stem and the spores were different in colour and shape.

An interesting article by Michael Kuo states that recent DNA studies have determined that this mushroom is actually a *Cortinarius* and the gypsy mushroom has been renamed and is now *Cortinarius caperatus*.

Rozites caperata or the gypsy mushroom as it may be found in the forest, but usually they have appeared one here and another a bit of a hike away. Photo courtesy: Helen Engel

Similar mushrooms include:

Agrocybe praecox – does not have a wrinkled cap and is usually found in cultivated areas.

Phaeolepiota aurea – has a more powdery-granulose cap and stem.

Cortinarius species – do not have a membranous veil.

Because there are similar look-alikes in the forest, it is best to become very familiar with all the

(Rozites ...continued on page 3)

President's Message

Markus Thormann, president of the Edmonton Mycological Society

Wow…what a foray last month!!! The North American Mycological Society and The Edmonton Mycological Society co-hosted **THE** foray of the century in Alberta out of the Forestry Training Centre in Hinton. About 140 professional and amateur mycologists converged on Hinton to scour the surrounding foothills for fungi. In all, we identified and accessioned almost 300 different species of fungi and identified an additional 200 or so to genus or not at all. The accessioned specimens will go to the Field Museum in Chicago and serve as permanent records of our efforts here in Alberta. While only a snapshot in time, this foray was unique in that it provides us with an immense view of the fungal species richness and some of the roles of these organisms in our foothill forests. We will now prepare a report about the foray for the Foothills Model Forest, who provided us with a grant of $7,500.00 towards producing a set of educational DVDs. These will be available to you for a small cost within a couple of months. A huge thank-you goes out to all of you who spent countless hours over the past year organizing this event and then making it all happen in those four days in mid-August. We all should be very proud of our accomplishment!!! Special recognition goes out to the NAMA Foray Committee (in no particular order): Martin Osis, Melanie Fjoser, Alan Fleming, Loretta Puckrin, Bill Richards, and Jerry Fochler. You all did a superb job! I will post some images from the foray on our web site in the near future…stay tuned.

Let's not forget about the "*City of Champignons*" Mushroom Exposition at the Devonian Botanic Garden on July 30. Despite some below average weather (cool and rainy all day – thank you, George, for your jacket), we attracted about 300 visitors to our exposition. Our many volunteers answered many questions about edible, poisonous, and medicinal mushrooms, entertained them with mushroom slide shows, sold memberships, mushrooms products, books, and other educational materials, and cooked diverse mushroom dishes. *A propos* mushroom dishes, a very special thank-you goes out to Judy and her mushroom kitchen staff! Once again, you provided us with a diverse selection of delicious mushrooms delicacies. The soup was superb, as were the sautéed mushrooms on buns. You have run the Exposition kitchen for many, many years, spent a lot of your time, effort, and money preparing mushroom dishes in advance, doing the final preparations at the Exposition, and finally serving these delectable dishes to our guests and volunteers. Thank you Judy et al., we truly appreciate your contribution to the EMS!!!

Another mushroom season is beginning to wind down. We have but one more month to go before fall is upon us and another successful year comes to an end. The last official event of the year will be the *President's Dinner* in early November. I am beginning to think about this event and will provide you with more details in the weeks to come. Last year's dinner took place at Sorrentino's South and was a lot of fun. Since attendance will be limited again, make sure to register as soon as I provide you with the details. I will try to keep costs below $40/person.

With that in mind, I hope you had an enjoyable 'shrooming season.

Cheers to you all, Markus

2006 Executive Edmonton Mycological Society

President & Webmaster:
Markus Thormann
(780) 432-1392
mthorman@nrcan.gc.ca

Past President:
Vacant

1st Vice President: Mike Schulz
(780) 939-2106
mjschulz@wildmushrooms.ws

Treasurer: Loretta Puckrin
(780) 458-9889
loretta@second-impressions.com

Secretary: Melanie Fjoser
(780) 987-4412
mfjoser@wildmushrooms.ws

Membership: Alan Fleming
(780) 463-8540
alan.fleming@telus.net

Foray Coordinator: Bill Richards
(780) 998-3507
emsforays@wildmushrooms.ws

Program Director: Martin Osis
(780) 987-4412
mosis@wildmushrooms.ws

Communications Coordinator:
Robert Simpson
(780) 481-7905/ Wk: (780) 420-6850
rsimpson@dursim.com

Newsletter Editor: Geri Kolacz
(780) 475-7927
gkolacz@telus.net
Mailing: Diane Murray

Directors-at-large:
Pieter Van Der Schoot
(780) 696-2436
Robert Rogers
(780) 433-7882
David Rowe
(780) 469-7187
George Litven
(780) 476-7912

Mailing Address:

Edmonton Mycological Society
1921, 10405 Jasper Avenue
Standard Life Building
Edmonton, AB T5J 3S2

Website Address:
www.wildmushrooms.ws

Rozites caperata
(continued from page 1)

aspects of this mushroom so that you do not mistake it for a poisonous or non-edible fungus.

Ecology

This fungus is mycorrhizal with conifers, hardwoods and bushes in the blueberry family. In Alberta look for mossy, old-growth coniferous forests. Gypsy mushrooms normally grow in northern zones throughout the world.

Morphology

Cap: 5-15 cm (2-6") wide. Oval expanding to convex, broadly knobbed, wrinkled or corrugated radially, silky or silky scale, moist with superficial hoary coat at first.

Notice the gill structure.Photo courtesy: L. Puckrin

The colour ranges from a warm tan to a yellow-brown or orange-brown with paler margins. The flesh is thick and white. Because of the radial and wrinkled effect the Gypsy cap has definite lines on the top.

Gills: attached to stem, close. Begin pale and then turn brown or cinnamon brown in colour. The gills are covered by a partial veil when young.

Stalk: 5-12 cm (2-5"). Long, firm, solid and whitish that is equal or slightly enlarged at the base. The base sometimes has a faint volvalike zone and the apex is often striated or scruffy. The veil leaves a thick white ring at the midsection of the stalk that is movable. There may also be a whitish covering near the base.

The cap of Rozites caperata is wrinkled and has radial lines. Photo courtesy: Loretta Puckrin

Spore print: Rusty-brown, spores are 11-15 x 7-10 microns, elliptical, roughened or warty. Some cystidia (see text and diagram on page 12) present on gill edges.

Rozites is often elusive but half of the fun of 'shrooming is the hunt. They don't usually appear in groups or large clusters and it generally takes a bit of hiking to find enough to make a meal. Finding a gypsy mushroom usually leads to a joyous dance. Last year they appeared sporadically in various areas. This year the conditions appear to be more favourable as we have found groups and singles in quite a few of our favourite sites.

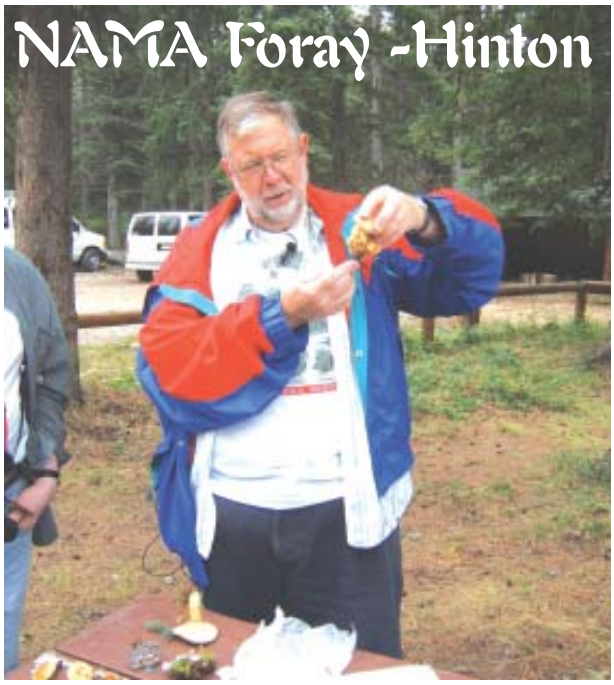
That is, enough to actually have a good meal and enjoy the unique flavours of this fungus. They were very visible at the NAMA Foray and were featured in one of the dishes at the Mycophagy.

Here in Alberta, they have made appearances at various sites including some of our EMS foray areas. So put on your favourite hiking boots, grab your 'shrooming kit and head out to your special places. They are out there and not as shy as last year. Good luck and good hunting.

Geraldine Kolacz

Environment of the gypsy mushroom (above) and a grouping of some found in the Lambert Creek area (below).Photos courtesy: L. Puckrin & G. Kolacz

NAMA Foray -Hinton



Dr. Walt Sundberg explains some of the intricacies of identifying fungi to the beginner's group at Cache Percotte. The members of the group were not technically beginners, as in newbies, but we sure learned a lot and found some very interesting fungi. Photo courtesy: Robert Rogers

The Hinton Forestry Training Centre was the perfect setting for the 2006 North American Mycological Association's Foray. A huge thank you to Martin Osis and Melanie Fjoser and their NAMA committee for all their hard work. In particular a huge thank you to Alan Fleming and his drivers who had to distribute over 140 people to and from 18 different foray sites over a period of four days with no one getting lost!

The weather cooperated for the most part and the diversity of sites, ranging from swamps to 45 degree moss-covered slopes in forests, were enjoyed by all. Those who did not go on forays enjoyed a good variety of speakers and workshops and some finished off their day with a dip at the Miette Hot Springs.

Our lunches and dinners were sumptuous and we were treated to some excellent speakers -- Dr. Cathy Cripps, our chief mycologist for the event, gave us an inspiring talk on "Rocky Mountain High-elevation Fungi". She presented a power point presentation that included alpine and sub-alpine mushrooms. Some of the fungi that are located at these levels are smaller than a penny. The majority of the species are found doing the "Mushroom Crawl". Our other speaker, Dr. Bryce Kendrick discussed Microscopic and Macroscopic species. The Edmonton Mycological Society was fortunate to have Bryce speak to our club at our general meeting that followed the NAMA Foray.

Of course, meeting fellow mushroomers from all over North America had to be one of the highlights of the weekend. The majority of attendees were from the United States, some as far away as Florida and New York. The majority of the states were well represented. Having a chance to talk to people about the types of fungi in their areas and the environments that they grow in was a great learning experience and a lot of fun.

And then there was Mycophagy. When I read my conference program and saw: ***4:30-5:30: Mycophagy Ursula Pohl*** - I was more than a little curious. When we went into the gymnasium to put our specimen out for labelling, there was a table marked "Mycophagy" *Curiouser and curiouser*. Oh Well!!! who has time for mysteries, there are mushrooms to find and mountains to climb. At four-thirty I found out what mycophagy was all about-- FOOD. Yes, we enjoyed about ten different, delicious and interesting dishes containing agarics, *Boletus edules*, shaggy manes, *Rozites* and others.

All-in-all a fantastic time was had by all.

Species List for the NAMA Foray

Agaricus cf. *bitorquis*
Agaricus silvicola
Albatrellus cf. *syringae*
Armillaria ostoyae
Auricularia auricula
Auriscalpium vulgare
Baeospora myosura
Baeospora myriadophylla
Bisporella citrina
Bjerkandera adusta
Bovista pila
Calocera cornea
Calocybe cf. *ionides*
Cantharellopsis prescotii
Cantharellula umbonata
Catathelasma imperialis
Chlorosplenium aerugenascins
Chroogomphus vinicolor
Chrysomyxa ledicola ?
Clavaria rosea
Clavariadelphis cf. *borealis*
Clavariadelphus ligula
Clavariadelphus aff. *sachalinensis*
Clavaridelphus truncatus
Clavulinopsis corniculata
Clitocybe avellaneialba
Clitocybe avellaneialba
Clitocybe cerussata
Clitocybe clavipes
Clitocybe dilatata
Clitocybe gigantea
Clitocybe maxima
Clitocybe odora
Clitodybe clavipis
Collybia familia
Collybia tuberosa
Coprinus atramentarius
Coprinus comatus
Coprinus micaceus
Cortinarius cf. *anserinus*
Cortinarius cf. *betulinus*
Cortinarius brunneus
Cortinarius cf. *camphoratus*
Cortinarius croceus
Cortinarius cf. *elegantior*
Cortinarius illibatus group
Cortinarius cf. *limonius*
Cortinarius semisanguinius
Cortinarius sp. - *multiformis group*
Cortinarius splendens
Cortinarius traganus
Cortinarius triumphans
Cortinarius trivialis
Cortinarius cf. *vibratilis*
Crepidotus applanatus
Crepidotus calolepis
Crepidotus ellipsoideus
Cudonia cf. *circinans*
Cudonia monticola
Cystoderma amianthinum
Cystoderma granulosum
Dacrymyces palmatus
Daedaleopsis confragosa

Exobasidium cf. *vaccinii*
Flammulina velutipes
Floccularia fusca
Fomitopsis cajanderi
Fomitopsis pinicola
Fuligo septica
Galerina hypnorum
Ganoderma applanatum
Geastrum fimbriatum
Geastrum quadrifidus
Geastrum saccatum
Geastrum triplex
Geopyxis cf. *carbonaria*
Gloeophyllum odoratum
Gloeophyllum sepiarium
Gomphidius glutinosa
Gomphus clavatus
Gymnopilus penetrans ?
Gymnopilus penetrans
Gymnopus confluens
Gyromitra infula
Hebeloma cf. *crustuliniforme*
Hebeloma sinapizans
Helvella elastica
Helvella lacunosa
Hericium coralloides
Hericium ramosum
Hydnellum caeruleum
Hydnellum suaveolens
Hydnum repandum
Hydnum umbilicatum
Hygophorus cf. *piceae*
Hygrocybe acutoconica
Hygrocybe conicus
Hygrophorus chrysodon
Hygrophorus erubescens
Hygrophorus hypothejus
Hygrophorus odoratus
Hygrophorus olivaceoalbus
Hygrophorus piceae
Hygrophorus pudorinus
Hygrophorus russula
Hypholoma capnoides
Hypholoma fasciculare
Hypholoma sublateritium
Hypomyces lateritius on Lactarius deterrimus
Hypomyces ochiaceus on Russula sp.
Hypomyces sp.
Hypsizygus tessulatus
Inocybe geophylla
Inocybe lanuginosa
Inocybe cf. *sororia*
Inocybe sp. *rimosa group*
Inocybe splendens var.splendens
Inocybe cf. *terrigina*
Inonotus tomentosus
Laccaria amethystina
Laccaria bicolor
Laccaria laccata
Laccaria pumila
Lactarius aff. *affinis* var. *affinis ?*
Lactarius affinis var. *varidilactis*
Lactarius deterrimus
Lactarius glyciosmus
Lactarius cf. *kauffmanii*
Lactarius repraesentaneus
Lactarius resimus
Lactarius rufus
Lactarius scrobiculatus
Lactarius torminosus var. *torminosus ?*
Lactarius uvidus
Laxitextum bicolor
Leccinum boreale
Leccinum insigne
Leccinum cf. *insolens* var. *brunneo-maculatum*
Leccinum scabrum ?
Lentinellus omphalodes
Lepiota cf. *cortinarius*
Lepiota cristata
Lepiota felina
Lepiota sp. - *clypeolaria group*
Lepista irina complex
Lepista nuda
Leptonia sp. - *asprella- gracilipes complex*
Leucopaxillus giganteus
Lycogala epidendrum
Lycoperdon perlatum
Lycoperdon pyriforme
Lyophyllum decastes
Lyophyllum fumosum
Melanoleuca cognata
Melanoleuca melaleuca ?
Mycena acicula
Mycena adonis
Mycena amabilissima
Mycena flavoalba
Mycena cf. *greiseiconica*
Mycena haematopus
Mycena overholtsii
Mycena pura
Mycena rorida
Omphalina ericetorum
Onnia tomentosus
Otidea auricula
Otidea smithii
Panaeolus semiovatus
Panaeolus solidipes
Paneolus campanulatus
Peziza arvernensis
Peziza repanda
Phacidium sp.
Phellinus pini
Phellinus tremulae
Phlogiotis helvelloides
Pholiota destruens
Pholiota flavida
Pholiota cf. *spumosa*
Pholiota squarrosa
Phragmidium sp. - poss. *Rusa acicularis*
Phyllotopsis nidulans
Pluteus cervinus
Pluteus flavofuligineus
Pluteus leoninus
Pluteus lutescens
Pluteus luteus
Pluteus cf. *pellitus*
Pluteus petasatus
Pluteus romellii
Pluteus sp. nov.
Polyporus badius
Polyporus cf. *elegans*
Polyporus varius
Psathyrella multipedata ?
Psathyrella velutina
Ramaria abietina
Ramaria caulifloriformis
Ramaria concolor
Ramaria gelantiniaurantia var. *gelantiniaurantia*
Ramaria leptoformosa ?
Ramaria rubripermanens
Ramaria sandaracina var. *sandaracina*
Ramaria sp.
Ramaria sp. (subgenus *Lentoramaria)*
Ramaria suecica
Ramaria testaceoflava
Ramariopsis kunzii
Rhodocollybia maculata
Rozites caperata
Russula aurea
Russula brevipes
Russula cascadensis ?
Russula crassotunicata
Russula decolorans
Russula delica
Russula cf. *foetens*
Russula gracilis
Russula grisea
Russula cf. *integra*
Russula lutea
Russula subfoetens
Russula virescens
Sarcodon calvatum var. *odoratum ?*
Sarcodon scabrosus
Scutellinia scutellata
Spathularia flavida
Spathularia velutipes
Sphaeronamella helvellae
Spongipellis spumeus
Stropharia alcis
Suillus brevipes
Suillus cf. *brevipes* var. *subgracilis*
Suillus flavidus
Suillus granulatus
Suillus grevillii
Suillus laricinus
Suillus tomentosus
Suillus umbonatus
Syzygospora sp.
Thelephora caryophyllea
Thicholomopsis decora
Trametes pubescens
Trametes suaveolens
Trichaptum abietinum
Trichaptum subchartaceum
Tricholoma cf. *atrosquamosum*
Tricholoma caligata
Tricholoma flavovirens
Tricholoma focale
Tricholoma cf. *inamoenum*
Tricholoma myomyces
Tricholoma platyphylla
Tricholoma saponaceum
Tricholoma sulphurescens
Tricholoma sulphureum
Tricholoma terreum
Tricholoma vaccinum
Tricholoma virgatum
Tricholomopsis decora
Tricholomopsis rutilans
Tyromyces chioneus
Xeromphalina campanella
Xeromphalina cauticinalis

Mushroom Stalks

-or Stipes as we are told they should be called.

When looking at fungi we often concentrate so much on the cap and the gill structure that we forget all about the stem (or stipe). It just holds up the mushroom to make it easier for us to find, doesn't it?

When you start looking at the variations in the stipe you begin to understand that there is as much information for identifying your species in the stripe as in the other pars of the mushroom. Be aware that "Mushrooms of Western Canada" (which many EMS members call 'Leni's book') calls this part of the mushroom the 'stalk.'

Most books will show you various shapes of the stipe, which are basically outlines of the shape. Others will also show you the way the stipe attaches to the cap of the mushroom. Both of these are valuable bits of information but the reality of mushrooms is that they seldom match the exact graphic representations. Be aware of variances, even within the same picking site, and use that information as an indication rather than a definitive characteristic.

The stipe is so much more than its overall shape and attachment. There is colour, staining, odour, texture and substance as well.

The straight stipe with a lighter colour above the delicate veil remnant is typical of Rozites.

Some mushroom varieties grow in clumps, like this example of the hedgehog. This 'clumping' is also true of Honey mushrooms. This does not mean that a viable example of either of these cannot grow by itself.

Most indicators will be a combination of all these characteristics.

Take our *Leccinum boreale*. The stipe is thick, solid, slightly fibrous and has a fine netting of scales on the outside. The stipe will change colour when cut. No strong odour is noticeable (except of course the wonderful mushroom smell). One book description is "white, grooved at the top, coarse black ornamentation, massive; narrower at the top and the base, up to 10cm tall and 3cm wide at the top" Would you recognise the 'Red Top" species you pick by this description or have you mostly stopped at the cap and gill structure? The one point of 'coarse black ornamentation' is what will help you pick out this particular mushroom from its close cousins.

The *Cortinarius* species often have thin wisps of fibre, left over from the detaching of the veil, on the stipe. This is used as a major indicator of this group of mushrooms.

The Gypsy (see main article) has an easily movable, and removable, portion of the veil on the stipe.

We are used to the *Boletus* species having solid stems. There are, however, some *Suillus* species that have hollow stems – a cross section would resemble a ring - hence the common name of one species being 'hollow-foot'.

Russula species have a great range in cap colours but the stipe is consistent. One of the identifying characteristics is that the stipe, when broken across the width, has a sound reminiscent of a piece of chalk breaking.

The local Honey Mushrooms have two common edible types, which are mostly differentiated by the size and formation of their stipe. The earlier variety has a more slender stalk, while the later variety is thick, approaching the size and shape of a *Leccinum* stipe. If you laid the two stalks together, minus the caps, you could still tell the difference due to the outside colour and the inside consistency. The Honey Mushroom stipe has almost a cotton candy consistency and is easier to tear longitudinally, while the *Leccinum* is much more solid.

The next time you are trying to identify a species of fungi, remember to look at the outside, cut a cross-section, try breaking, tearing, smelling and rubbing the stipe. The resulting information will be valuable in your identification process.

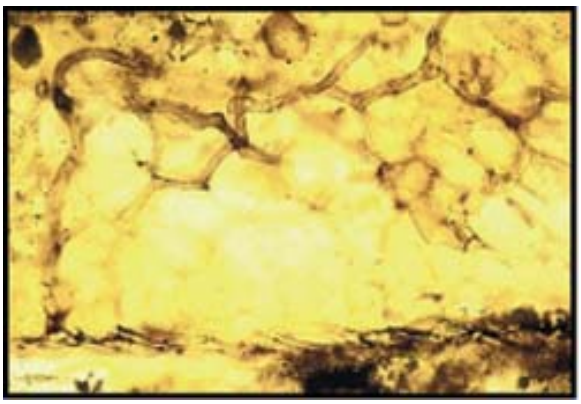
Loretta Puckrin

By cutting a cross-section you can easily see the inside colour, texture, and attachment characteristics.
Photos courtesy: Loretta Puckrin

A mushroom can have a completely solid, partially solid or completely hollow stipe - and then everything in between. Again a cross section, this time horizontally, shows the difference clearly.

The stipe of the honey mushroom is easy to shred. Even when trying to break it across the radius, there will be splintering or a ragged break unlike the Russula, which breaks more cleanly. You can also see the woolly texture on the inside of the stipe and the bright white colour.

Weird and wacky fungi – Precambrian Park: Fossil Fungi



So, how old are fungi anyway? Good question, let's go back in time. Many of you will have seen the *Jurassic Park* movies, with dinosaurs being the dominant force on Earth. These dinosaurs lived in the Triassic, Jurassic, and Cretaceous periods, i.e., from about 250 to 65 million years ago (mya), and many of them foraged on the lush plant life that was abundant at that time. What many people forget is that most of these plants are there because of fungi. Colonization of *terra nova* by the first land plants is believed to have happened in the Ordovician period, between 550 and 440 mya. These plants were related to today's liverworts, mosses, and hornworts, i.e., they were small, generally grew in moist areas, and lacked a number of characteristics common to today's flowering plants. At the time, terrestrial environments were harsh terrains, poor in nutrients, and prone to desiccation. Consequently, most plants would have had a very difficult time surviving these conditions. We know that certain fungi assisted plants with the colonization of land (more below). We're now closer to the origin of fungi, but we still have to go back a few more years. So, let's take this journey and discover when fungi likely first appeared and how they have evolved over time.

Some general background first. Fossil fungi tend to be microscopic and not always found with their reproductive structures attached. Therefore, positive identification is often extremely difficult. They are not especially rare as fossils, and the best preserved examples are generally found in amber, e.g., in Oligocene (34-24 mya) and Cretaceous ambers (146-65 mya) from northern France. Fossils have been found from each of the four divisions of fungi.

Chytridiomycetes

These tiny, predominantly aquatic fungi are the oldest fungi and naturally have the earliest fossil records. Their fossil remains have been found in the Vendian strata (Late Precambrian, 650 to 544 mya) of northern Russia, and much more abundantly in the more recent Rhynie chert in Scotland (about 400 mya; Taylor et al. 1992). Most fossil chytrids resemble representatives from two extant (meaning they are alive today) orders, the Blastocladiales and the Spizellomycetales. These orders consist of decomposers of organic matter and plant parasites (Fig. 1, the chytrid [top] has colonized the seed of a plant [bottom]).

Zygomycetes

The fossil records of zygomyetes are restricted to arbuscular mycorrhizal (AM) fungi, since they grow predominantly in the roots of plants and preserve much better than other free-living zygomycetes. The earliest record of an AM fungus came from a 460 million year old Ordovician fungus found in Wisconsin. The fossilized fungal hyphae (Fig. 2, hyphae in roots of a plant) and spores of that specimen strongly resembled modern AM fungi, in particular members of the Glomales. Similar fossilized fungi have been found in many of the well-preserved Scottish Rhynie chert plants, though to date the only AM fungus formally described has been those found in the outer cortex of stems of *Aglaophyton major* (a fossil plant); it was named *Glomites rhyniensis*.

Ascomycetes

The earliest unequivocal fossil ascomycetes have been described from the Rhynie chert (Taylor et al. 1999). The fruiting bodies of these fungi have been found just below the epidermis of partially decayed stems, rhizomes (below ground stems), and microphylls (tiny leaves) of the fossil lycophyte *Asteroxylon mackiei* (related to today's club mosses, e.g., *Lycopodium*). The fossil history of the ascomycetes is still poorly understood because of the imperfect

(Weird and Wacky ...continued on page 9)

Devonian Exposition Update

Another very successful "City of Champignons" Exposition was held at the Devonian Gardens. With the warm weather, lack of rain and scarcity of fungi, we were all a bit concerned about the quantities and qualities of the fungi on display. Thanks to the foragers, the public had plenty to explore. With Melanie's leadership and a lot of hard work from EMS volunteers, the Expo was a huge success.

Everyone braved the rain and the cold and enjoyed the warm atmosphere at the Pine Pavilion. Visitors learned about fungal identification by looking at the fungi and seeing the spores at microscopic levels. They also had a chance to learn by watching a presentation by Martin Osis and checked out other display tables that included preserves, books, posters and other items pertaining to fungi. When it was time for a break from all the learning, there was Judy and company *(photo bottom, far right)* cooking up a storm with their mushroom soup and mushrooms on buns. The volunteers enjoyed a special treat -- mushroom burgers.

Our efforts were rewarded as we gained quite a few new members, approximately a dozen to date. By sharing our knowledge we are helping the general public understand the role fungi play in our environment and the role they play in health matters as well.

A huge thank you goes out to our hosts at the Devonian Botanic Gardens. Thanks for asking us back again this year, for allowing us to use your beautiful facilities (the Pine Pavilion), and for your advertising and encouragement.

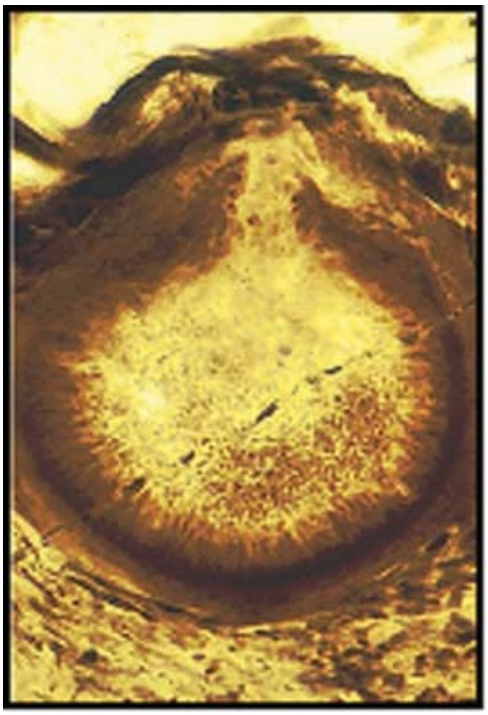
Photos courtesy: Henry Kolacz

Species List for the Devonian Exposition

Agaricus spp.
Agaricus silvicola
Agaricus crocodilinus
Amanita vaginata
Chalciporus piperatus
Clavicorona pyxidata
Clitocybe gibba
Clitocybe geotropa
Clitocybe spp.
Cortinarius alboviolaceus
Cortinarius mucosus
Cortinarius spp.
Cortinarius trivialis
Crepidotus ellipsioides
Crepidotus mollis
Cystoderma cinnabarina
Cystoderma amiantinum
Fomes fomentarius
Fomitopsis subroseus
Fomitopsis cajanderi
Fomitopsis pinicola
Ganoderma applanatum
Geastrum triplex
Gloeophyllum sepiarium
Gomphidius glutinosus
Gomphus clavatus
Hericium ramosum
Hydnellum peckii
Hydnum repandum
Hygrophorus erubescens
Hypomyces luteo-virens
Hypsizygus marmoreus
Inocybe sororia
Inonotus obliquus
Lactarius deliciosus
Lactarius rufus
Leccinum boreale
Leccinum fibrilosum
Leccinum insigne
Leccinum snellii
Leptonia spp.
Leucopaxillus giganteus
Leucopaxillus piceinus
Lycoperdon perlatum
Lyophyllum decastes
Marasmius oreades
Nectria cinnabarina
Nidula candida
Phellinus pini
Phellinus igniarius
Phellinus tremulae
Pholiota squarrosa
Phyllotopsis nidulans
Piptoporus betulinus
Pleurotus ostreatus
Pluteus cervinus
Polyporus badius
Polyporus umbellatus
Pseudohydnum gelatinosum
Rozites caperata
Russula subfoetans
Russula aurigena
Russula spp.
Russula decolorans
Russula chamaeleontina
Spathularia flavida
Stereum spp.
Syzygospora mycetophila
Trametes sp.
Trichaptum abatinum
Trichaptum biformis
Tricholoma virgatum
Tricholoma calagatum
Tricholoma saponaceum
Xeromphalina campanella

Weird and Wacky

(continued from page 7)



nature of the fossil record. Essential characters are only rarely preserved. The special significance of the Rhynie chert is that structures are preserved in great detail. For example, the Rhynie chert ascomycetes contain characters of the sexual stage of the fungus (e.g., perithecium [Fig. 3, the sexual reproductive structure], asci, and ascospores), which are morphologically identical to those found in modern pyrenomycetes (a general term given to small ascomycetes with flask-shaped reproductive structures). This discovery has had significant implications for dating the origin of this group of fungi.

Basidiomycetes

Two fossil fungi similar to extant Tricholomataceae have been found in amber from the Cretaceous (146-65 mya) and Miocene (24-5 mya) periods. The fruiting bodies of *Archaeomarasmius leggetti* (Fig. 4) from mid-Cretaceous amber of New Jersey resemble the extant genera *Marasmius* and *Marasmiellus* (Hibbett et al. 1997). Its spores are smooth and broadly elliptic with a distinct hilar appendage (a tiny basal "knob" on the spore). *Protomycena electra*, similar to the extant genus *Mycena*, is represented by a single, complete fruiting body from Miocene amber of the Dominican Republic. Based on comparison to extant *Marasmius* and *Mycena* species, the two fossil fungi were likely decomposers of leaf litter or wood debris.

We don't have to go overseas though to find fossil fungi. Fossil ectomycorrhizal fungi were found recently among plant remains in the middle Eocene (55-34 mya) Princeton chert in B.C. The fungi were associated with roots of pine trees, and although no fruiting bodies were found, their morphological characteristics and the identity of the host suggest that they were closely related to *Rhizopogon* and/or *Suillus* (LePage et al. 1997). In that same chert, Currah and Stockey (1991) found evidence of another basidiomcyete.

This one was a smut (a parasite), which had colonized the reproductive structures of a flowering plant. In fact, our co-founder and life member Randy Currah is in an elite group of mycologists worldwide to have examined fossil fungi.

So, from an evolutionary perspective, chytrids are the oldest fungi, followed by zygomycetes, ascomycetes, and finally our youngest fungi, the basidiomycetes. Fungi are older than any land plant and most likely facilitated the expansion of aquatic plants onto land some 500 mya. Comparatively, the fossil record of fungi is quite spotty and rather small compared to that of plants and animals, but in time, many of the gaps will be filled, and we will gain a better understanding of the origin and history of this remarkable Kingdom of Fungi.

Photo courtesy: Markus Thormann

Literature cited

Currah, R.S. & R.A. Stockey. 1991. A fossil smut fungus from the anthers of an Eocene angiosperm. Nature **350**: 698-699.

Hibbett, D. S., Grimaldi & M.J. Donoghue. 1997. Fossil mushrooms from Miocene and Cretaceous ambers and the evolution of Homobasidiomycetes. Amer. J. Bot. **84**: 981-991.

LePage, B.A., Currah, R.S., Stockey, R.A. & G.W. Rothwell. 1997. Fossil ectomycorrhizae from the middle Eocene. Amer. J. Bot. **84**: 410-412.

Taylor, T.N., Hass, H. & H. Kerp. 1999. The oldest fossil ascomycetes. Nature **399**: 648.

Taylor, T.N., Remy, W. & H. Hass. 1992. Fungi from the Lower Devonian Rhynie chert: Chytridiomycetes. Amer. J. Bot. **79**:1233-1241.

Markus Thormann

Foray Updates

The members of the first foray of the 2006 year for the Edmonton Mycological Society as they gather for the Morel Hunt. *Photo courtesy: Alan Fleming*

The Edmonton Mycological Society has had a number of forays this year, some forays were well attended and some forays witnessed the few and hardy. The Rannach Grazing Reserve Foray (picture above) was a lot of fun but the fungi did not cooperate. There were a couple of forays in the river valley and at one of them, the Pioneer Cabin Foray, an interesting fungus was found. A *Grifola umbellata* was growing on a piece of ginger. Who would have thought we grew pieces of ginger in Edmonton!!!

The Poplar Creek and Ashland Dam weekends were well attended and there was a degree of success as can be seen by the species list for Ashland Dam (sidebar).

Grifola umbellata growing on a piece of ginger.Photo courtesy: Geraldine Kolacz

The NAMA foray, the Bow Valley Foray and the Devonian Exposition are featured elsewhere in this issue.

Still to come is the final foray for this season at Lambert Creek *(by the time you receive this issue, that too will have past and hopefully many made it and had great success).*

Species List for the Edmonton River Valley Foray

Agaricus silvicola
Agaricus sp.
Clitocybe sp.
Coprinus atramentarius
Fomes fomentarius
Gandoderma applanatum
Grifola umbellata
Hebeloma crustuliniforme
Inocybe eutheles
Marasmius oreades
Pholiota spumosa
Pluteus cervinus
Polyporus badius
Russula subfoetens
Stereum sp.
Trametes hirsuta
Trametes versicolor

July 08-09 2006, Ashland Dam and adjacent property species list

Agaricus silvicola
Amanita vaginata
Bisporella citrina
Boletus zelleri
Clavaria pyxidata
Collybia dryophila
Coprinus comatus
Cortinarius aurantioturbinatus
Cortinarius sp.
Crepidotus mollis
Dacrymyces palmatus
Fomes fomentarius
Fomitopsis cajanderi
Fomitopsis pinicola
Galerina sp.
Ganoderma applanatum
Geastrum quadrifidum
Gloeophyllum sepiarium
Gomphus clavatus
Hericium ramosum
Hydnellum caeruleum
Lactarius rufus
Leccinum boreale
Lenzites betulina
Leucopaxillus giganteus
Leucopaxillus piceinus
Lycogala epidendrum
Melanoleuca cognata
Peziza repanda
Phellinus igniarius
Phellinus pini
Phellinus tremulae
Pholiota sp.
Phyllotopsis nidulans
Piptoporus betulinus
Pleurotus ostreatus
Pleuteus lutescens
Pluteus cervinus
Pluteus patricius
Polyporus varius
Psathyrella sp.
Russula aeruginea
Russula brevipes
Russula emetica
Russula sp.
Russula xerampelina
Scutellinia scutellata
Stemonitis axifera
Stemonitis splendens
Stereum hirsutum
Stereum purpureum
Trametes elegans
Trametes hirsuta
Trichaptum abietinum
Trichaptum biforme
Tricholoma populinum

Bow Valley Foray Update

A dozen or so EMS members from the Edmonton area travelled south to attend a foray in Bow Valley Provincial Park on the July 22nd weekend. Seven members from Calgary were happy to commute daily to the foray site, to join them in events in their own backyard.

Temperatures were hot and the ground dry, and mushroom diversity was inevitably affected by these conditions. However, some species were found, adequate to prepare an impressive fungal exhibit for people who came to the Visitor Centre of the park on Sunday afternoon.

One very unusual specimen appeared in the exhibit – a chanterelle (*Cantharellus cibarius*) - much to the surprise of many members who claimed that this particular mushroom did not grow in the southern region of the province. The mystery was solved when it was learned that it had in fact been brought in by a member who had been on a foray a few days earlier (in the St. Catharine's area of Ontario).

Members participated in two interesting hikes on their forays – one in the Grotto Canyon (no species here) and another along the Heart Creek Trail (some specimens of both mushrooms and wild berries).

Daily group picnics, involving a sharing of food items, added to the enjoyment of the weekend.

The success of the foray can be attributed to the ability of the organizers to be flexible in organizing the program to match present conditions, as well as to the ability of members to simply have a good time together, sharing common as well as diverse interests.

We in Calgary, appreciate the efforts of the Foray leaders to plan a weekend within easy driving distance for Calgary members and look forward to any future EMS forays in this region. In the meantime, we will try to get together as an informal group to pursue our common interest.

Ethel Luhtanen

Rozites caperata
R. caperatus
Cortinarius caperatus
(THE GYPSY)

Rozites is named after the 19th century French mycologist Ernest *Roze*. *Caperata* means wrinkled.

The Gypsy is widespread and common throughout our woods, found singly or in groups on the ground. It is one of my favourite edibles, with a pleasant odour, and minty flavour.

It contains the amino acid, S-2-amino ethyl-4-cysteine.

The fungi contains anti-carcinogenic substances, with inhibition rates against both sarcoma 180 and Ehrlich carcinoma of 70%.

New anti-viral

A new anti-viral, RC-183, has been found to show in vitro activity against the herpes simplex I and II, as well as varicella zoster virus, influenza A virus and the respiratory syncytial virus. Drs. Pirano and Brandt at the University of Wisconsin- Madison Medical School reported this discovery in Anti-Viral Research, 1999 43:2.

An anti-viral drug RC28, based on a protein molecular weight of 28 kD has been shown active against a number of enveloped viruses. As well as those viruses cited above, activity against Cytomegalovirus has been noted.

It is not active against non-enveloped viruses such as Coxsackie and strains of ECHO viruses. Work is ongoing. Frank Pirano et al, Int J Med Mush 2005 7:3.

The related *R. gonglylophora* is cultivated in Brazil by leafcutting ants that eat the mycelical hyphae.

- The Fungal Pharmacy
Medicinal Mushrooms
of Western Canada
by Robert Rogers

EMS Calendar of Events for 2006

Please Join Us!!

All forays are undertaken at your own risk. You are responsible for transportation and accommodation.

September

9/10 *Foothills Campout and Foray*
Mushroom: Honey Mushrooms, Hedgehogs and Chanterelles
Location: Lambert Creek Area

27 **Meeting:** *Honey mushrooms - the multiple faces of Armillaria* by Markus Thormann

October

25 **Meeting:** *Scary and nasty mushrooms* by Martin Osis
Photo Contest Recap

November

TBA **President's Dinner**
Watch for details. This is an excellent way to wind up the year and, of course, find out who the winners of the Photo Contest are as well as enjoy good food and good company.

The Annual General Meeting of the EMS will be in February 2007

Sorrentino's Mushroom Walk and Dinner, September 10, 2006

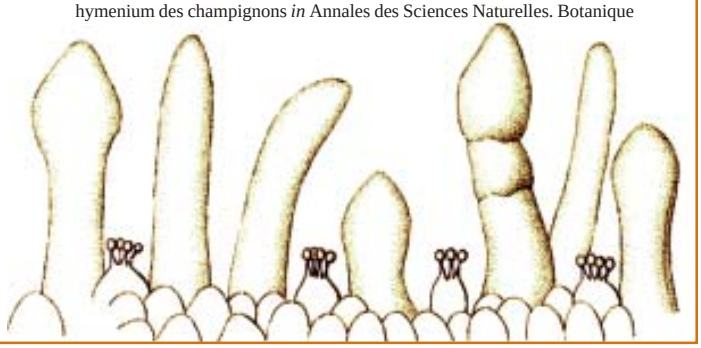
In the afternoon of September 10, 42 mushroom-lovers met under a sunny sky at Sorrentino's West to participate in this year's Mushroom Walk & Dinner. Under the leadership of Martin Osis, we embarked on a 2 1/2 –hr. walk through nearby city parks and neighborhoods and picked any and all mushrooms we could find. Along with the identities of each mushroom, Martin, Melanie, and Markus introduced everyone to the diversity and many unusual characters of the world of fungi. Shortly before 6 p.m., we returned to the restaurant and enjoyed a scrumptious meal. A forest mushroom soup wetted our appetites and was followed by one of three entrees (gnocchi, penne, or risotto, each with various wild and cultivated mushrooms) and a delicious tiramisu for dessert. All participants had a lot of fun and enjoyed themselves. This was the second year we participated in Sorrentino's Mushroom

Species List

Agaricus arvensis
Agaricus sp.
Armillaria mellea group
Bovista sp.
Collybia sp.
Coprinus atramentarius
Coprinus comatus
Coprinus quadrifidus
Cortinarius sp.
Crepidotus sp.
Hebeloma crustuliniforme
Lactarius deliciosus
Lactarius sp.
Lepista sp.
Lycoperdon perlatum
Marasmius oreades
Suillus grevellii
Trametes pubescens
Tricholoma flavovirens

Cystidia are special "sterile" cells that are found on the gills and other parts of some mushrooms. There are many shapes and sizes of cystidia. Because of this characteristic, a cystidium cell can be very useful in fungal identification. Cystidia cells do not produce spores but are located with the basidia, which are the spore producing structures. The cystidia are larger and when seen under a microscope their shapes are very distinct. To the right is a diagram of cystidia and basidia.

Image of Panaeolus semiovatus from Joseph Henri Léveillé (1837) Sur le hymenium des champignons *in* Annales des Sciences Naturelles. Botanique



Last two meetings for 2006 are September 27 and October 25

Time: 7:00 pm **Location: Riverbend Library**