INTRODUCTORY MYCOLOGY FOR THE CURIOUS NATURALIST LLS7 Week 2
Morels and other Spring Mushrooms Class Download

THE SLIDES

MUSHROOMS: THE FIFTH KINGDOM

MYXOMYCETES: SLIME MOLDS
- PHYSARUM POLYCEPHALUM
- FULIGO SEPTICA

ASCOMYCETES
- MORCHELLA SP. MORELS
- GYROMITRA FALSE MORELS
- PEZIZA REPADNUM CUP FUNGI
- PEZIZA BADIO-CONFUSA LOOK-ALIKES
- GYMNOSPORANGIA JUNIPERII CEDAR APPLE GALL

BASIDIOMYCETES
- POLYPORES
  - POLYPORUS SQUAMOSUS DRYADS SADDLE
  - FAVOLUS ALVEOLARIS
  - LAETIPORUS SULPHUREUS SULPHUR SHELF
- JELLY FUNGI
  - TREMELLA MESENERICA WITCHES BUTTER
  - T. FOLIACEA/EXIDIA GLANDULOSA

AGARICS: GILLED MUSHROOMS
- PLEUROTUS OSTREATUS OYSTER MUSHROOM WHITE SPORES
- PLEUROTUS SAPIDUS OYSTER SPORES LILAC-GRAY
- FLAMMULINA VELUTIPES VELVET FOOTED COLLYBIA/ENOKI
- WHITE SPORES, NO ANNULUS
- GALERINA AUTUMNALIS DEADLY: BROWN SPORES
- ANNULUS, PUNKY WOOD
- PLEUTEUS CERVINUS DEER MUSHROOM, FREE PINK GILLS
- ENTOLOMA VERNUM POISON: ATTACHED PINK GILLS
- TRICHOLOMA PLATYPHYLLA QUESTIONABLE, WHITE GILLS/SPORES
- COPRINUS MICACEUS/RADIATUS INKY CAP, DARK SPORES
- PANEOLUS COMPAULATUS EDIBILITY UNKNOWN, HALLUCINOGENIC
- PANEOLUS FOENISECII EDIBLE, HALLUCINOGENIC
- AGARICUS RODMANII DARK SPORES, FREE GILLS
- STROPHARIA RUGOSSO-ANNULATA DARK SPORES, ATTACHED GILLS
- WOOD-CHIP MULCH CULTIVATED
- AGROCYBE PRAE.COX/DURA BROWN SPORES, WOOD-CHIP MULCH
- AMANITA BISPORIGERA DEADLY: DESTROYING ANGEL
- FREE WHITE GILLS, ANNULUS, VOLVA
MORELS AND FALSE MORELS:

1. TURTLE AND MOREL
2. GYROMITRA POSSIBLY DEADLY
3. GYROMITRA SECTION
4. VERPA CONICA + M. SEMILIBERA
5. SEMILIBERA BASKET
6. BLACKS: ANGUSTICEPS/ELATA
7. BLACKS
8. BLACKS: SEASONAL INDICATORS
9. ASPARAGUS + BLONDES
10. TROUT + ESCULENTA
11. ESCULENTA HABITAT/INDICATORS
12. EXCLENTA + S. RUGOSSO-ANNULATA
13. ESCULENTA/CRASSIPES
14. TULIPFERA/DELICIOSA
15. MOREL GROUP
16. MOREL PLATE


NAMA: THE NORTH AMERICAN MYCOLOGICAL ASSOCIATION
WWW.NAMYCO.ORG

AREA GROUPS:
MID HUDSON MYCO. ASSOC: http://www.midhudsonmyco.org/mhmacontactus.html
CONN. VALLEY MYCO. SOCIETY: 10 LOUNSBURY RD., TRUMBULL CT 06611
BOSTON MYCOLOGICAL CLUB: 6 OAK RIDGE DRIVE#4, MAYNARD MA 01754
MONADNOCK MUSHROOMERS UNLIMITED: PO BOX 1796, KEENE NH 03431
NEW YORK MYCO. SOCIETY: 401 E 74TH ST. APT 14J, NY NY 10021
MID YORK MYCO SOCIETY: 7313 ORISKANY RD ROME NY 13440
COMA: http://www.comafungi.org/
VERMONT MYCOLOGICAL CLUB: 87 HALL ST. WINOOSK VT 05404

RECOMMENDED FIELD GUIDES:
1. LINCOFF, GARY: THE AUDUBON SOCIETY FIELD GUIDE TO NORTH AMERICAN MUSHROOMS. THIS IS THE BEST ALL AROUND GUIDE, AND THE EASIEST FOR BEGINNERS TO USE.
2. PHILLIPS, ROGER: MUSHROOMS OF NORTH AMERICA. THE BEST CATALOGUE OF PHOTOS
3. McKNIGHT & McKNIGHT: PETERSONS FIELD GUIDES TO MUSHROOMS
4. BESSETTE,BESSETTE,&FISCHER: MUSHROOMS OF NORTHEASTERN NORTH AMERICA. KEYS AND PHOTOS

MUSHROOM: THE JOURNAL OF WILD MUSHROOMING IS THE QUARTERLY FOR COLLECTORS. 1511 E 54TH ST GARDEN APT CHICAGO IL 60615 $19/YEAR.
WWW.MUSHROOMTHEJOURNAL.COM

POISON CONTROL: 1 800 222 1222
BILL BAKAITIS  845-677-3185    4/15/19
FUNGI AND ENVIRONMENTAL CONTAMINANTS

You will recall from the first program that saprophytic fungi digest their food by excreting enzymes into the organic substrate upon which they depend. By virtue of this feeding strategy it is thought that, in general, many of the organic contaminants in their environment are not taken up by the fungi. Organic pesticides therefore do not bio-accumulate in fungal tissue. Oyster mushrooms, for example, used to clean up oil contamination in industrial waste lagoons, are thought to be safe to eat and produce a marketable product as part of the bioremediation process. See for example https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4052754/

This paper concludes with the following provisional summary complete with caveats and calling for more research:

*Mushroom is a tremendous boon to the idea of using this for mycoremediation process as a real-world solution. The cultivation of edible mushroom on agricultural and industrial wastes may thus be a value added process capable of converting these discharges, which are otherwise considered to be wastes, into foods and feeds. Besides producing nutritious mushroom, it reduces genotoxicity and toxicity of mushroom species. Mycoremediation through mushroom cultivation will alleviate two of the world’s major problems i.e. waste accumulation and production of proteinaceous food simultaneously. Thus, there is a need for further research towards the exploitation of potential of mushroom as bioremediation tool and its safety aspects for consumption as product.*

It is quite a different story however with elemental heavy metals such as arsenic, lead, cadmium and certain radioactive isotopes. Fungi in general, and several species of ‘edible mushrooms’ in particular, are known to either incorporate (absorb) or latch onto (adsorb) heavy metals. This is the reason for the industrial use of compounds including copper and arsenic as ‘wood preservatives’: they kill or otherwise impede the fungi which otherwise degrade the wood meant to be protected. Some fungi are so susceptible to this process that they are thought to be valid biomarkers for heavy metal pollution in the environment.

Of the Spring Mushrooms discussed in this presentation, Morels are thought to be particularly sensitive to both Lead and Arsenic accumulation. If you intend to collect and consume Morels you will want to have a look at the two articles cited in *CAUTION: Lead/Arsenic Apple Orchards/ Morels* on the accompanying sheet.

Beyond that, it is now considered prudent to avoid the consumption of any mushrooms collected near roadways which carried vehicles using leaded gasoline. Of course it is also prudent to avoid drinking water from most taps in Dutchess County unless the water has had a chance to run for 20 minutes or so thereby clearing the lead which had leached from the household pipes overnight.
THE RULES OF MYCOPHAGY

There are old mushroom eaters, and there are bold mushroom eaters, but there are no old and bold ones!

Consider for a moment that there are thousands of species of fungi that fruit in any given area. Some may appear nowhere else in the world. Some are edible, some toxic, and some are so variable that they are at times edible and at other times toxic. Often there is no good way to differentiate between species without hours or days of long tedious chemical and microscopic work. Furthermore, the toxicity of mushrooms is unknown until they are actually eaten by fellow mushroom collectors. There are no good animal models.

Consider also that the edibility of mushrooms is often contingent upon the particular biology of the mushroom eater. Some mushrooms are edible to some but poison to others. And being like meat in composition, mushrooms are subject to rapid bacterial decay. While the heat of cooking will destroy some of the toxins, other toxins will survive, especially if the cook attempts a delicate presentation, such as a light sauté or stir-fry!

Consider further that some mushrooms, edible in themselves, contain substances that interact with other foods making them poison! Perhaps the most well-known interaction of this type is the way certain mushrooms interact with alcohol. Alcohol consumed for up to a week or two after the meal cannot be fully metabolized and toxic metabolites accumulate in the body in amounts sufficient to cause extreme discomfort or death.

Mushrooms also differ with regard to the speed with which their toxins operate. Some go to work immediately, while others have reactions delayed by hours, days, weeks or months. In addition carcinogenic compounds which presumably would not show their true effect for years are known to be present in mushrooms, even in the common store-bought variety.

You can see then that the eating of wild mushrooms, however tasty and tempting this might be, is not accomplished without risk. Here then is a set of Rules for the Eating of Mushrooms that the prudent Mycophage might employ.

1. DO NOT EAT ANY MUSHROOM UNLESS YOU ARE 100% CERTAIN OF ITS IDENTITY AS A SAFE SPECIES. CHECK IT OUT IN RELIABLE TEXTS.
2. TEST YOUR OWN REACTION TO A MUSHROOM BY EATING ONLY A SMALL PORTION OF A SINGLE SPECIES AT A TIME. REPEAT A FEW DAYS LATER TO TEST FOR DEVELOPED ALLERGIC REACTIONS.
3. MAKE SURE THE MUSHROOM IS THOROUGHLY COOKED BEFORE YOU EAT IT.
4. DO NOT CONSUME ANY ALCOHOL WITH THE MEAL OR FOR A FEW DAYS AFTER.
5. KEEP A FEW UNCOOKED MUSHROOMS IN THE FRIDGE FOR IDENTIFICATION SHOULD A TOXIC REACTION DEVELOP.

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