Fall 2009

Mushrooms of Field and Forest

PL PA 3190

Instructor:

Kathie T. Hodge

401 Plant Science, 255-5356

kh11@cornell.edu

Teaching Assistant:

Dan Clune <djc74@cornell.edu>

Plant Science Bldg, Room 326, Wednesdays, 1:25-4:25 PM and 7:30-9:30 PM

Course web site:
http://www.plantpath.cornell.edu/Courses/pp319/index.html

Summary of the course

The course provides an introduction to the identification of mushrooms and other macrofungi. We travel to diverse ecosystems near Ithaca to collect fungi, then learn the skills needed to identify them in the evening laboratories. Students work with field guides, microscopes, and technical keys to learn to identify macrofungi, and learn to recognize in the field a handful of common genera.

Goals of this course

Mushrooms are a beautiful and important part of forest ecosystems. In this course we'll focus on collecting mushrooms in various forested landscapes around Ithaca, and on learning how to identify them. Note the critical distinction between knowing *how to identify* something and knowing *what it is*. You will not leave this course able to point at a mushroom and say its name. Your aim for this course is to learn how to look at mushrooms, how to describe them, and how to find the resources you need to identify them with some confidence.

Learning which mushrooms are edible is not a goal of this course. We will learn a few of the important poisonous ones. The skills you learn during the course may lead you to try some fungi for dinner, but you *must not* eat mushrooms you have identified until you have developed a thorough knowledge of edible and poisonous fungi. In the meantime, have your mushrooms checked by the Professor, T.A., or other expert source.

I expect you to leave the course with the following mycological skills:

- ✓ Recognize a fungus when you see one.
- ✓ Appreciate the roles of fungi in the ecosystem.
- ✓ Know how to find, collect, and preserve macrofungi.
- ✓ Be able to describe in vivid detail the morphological characteristics of any mushroom.
- ✓ Given an unknown fungus, know what to look for to identify it, and be able to find an appropriate resource to do so.
- ✓ Recognize a handful of common mushroom genera and groups in the field
- ✓ Be able to tell others, convincingly, why fungi are cool.

Course outline

Field Trip destinations depend on weekly weather patterns and the caprice of the instructors.

Sept. 2 **class meets in room 404 Plant Science (just for today)**

Afternoon: Introduction: Course structure and goals
About fungi
Major mushroom groups
Introduction to Collection requirement and specimen preparation

Evening: **NO EVENING LAB THIS WEEK**

Sept. 9

Afternoon: Field trip

Evening: Identification of specimens
minilecture: more on mushroom identification; the ecology of mycorrhizal fungi
Using microscopes and keys to identify macrofungi

Sept. 16

Afternoon: Field trip

Evening: Identification of specimens
minilecture: ascomycetes

DROP DATE : **You may not drop this class after Sept. 16.**

Sept. 23

Afternoon: Field trip

Evening: Identification of specimens
QUIZ: what have you learned so far?

Sept. 30

Afternoon: Field trip

Evening: Identification of specimens
minilecture: mushroom cultivation and culturing

Oct. 7

Afternoon: Field trip

Evening: Identification of specimens; work on collection requirement

Oct. 14

Afternoon: Field Trip

Evening: Identification of specimens; work on collection requirement

Oct. 21

Afternoon: No Meeting

Evening: **Final Practical Examination, room 326 PS**

Oct. 28

No Meeting: **Due date for collection & writing assignment**

Recommended textbook:

Alan E. Bessette, Arleen R. Bessette, and David W. Fisher. 1997 (1996). **Mushrooms of Northeastern North America**. Syracuse University Press. 582p.

I strongly recommend that you purchase your own field guide. This one is my current favorite, as it includes good keys and more of our local species than other books.

You may want to purchase other books to support your studies. Keep in mind that no single book includes all (or even most) of the fungi you will find this fall. Before you buy, have a look at several and consider your preference for using color pictures or keys, and whether you'd like broad coverage, or less coverage with more detail. Avoid European books, as we have many distinct species in America, and also avoid books more than twenty years old: mycology is a developing science and the names found in older books are not current. Ask the Professor for advice, if you like.

Field Trips

Each Wednesday afternoon we will travel to a different collecting area around Ithaca. Dress appropriately: boots and long pants are strongly recommended; raingear or an umbrella may be needed. Bring paper or a small notebook to record notes on the fungi you collect. Insect repellant is also suggested (see below).

Pick up your collecting bags, and some waxed paper or a tackle box from the cart, then **meet at 1:25 sharp at the vans in the parking "Circle" off Tower Rd**., just outside the front doors of the Plant Science Building.

Every year we temporarily lose one or two students in the woods. If you are prone to this, bring a compass to keep yourself oriented, or stay with a group. Cornell mycologists have a tradition of hooting in the woods to keep track of each other. If you're lost, hoot for help. If you hear a hoot, someone needs your help. Hoot back.

Plagues and Pestilence: a special note

Normally the biggest hazards in a field course are getting lost and getting into poison ivy or nettles. These are transient concerns. We also have two insect-borne diseases to look out for: West Nile Virus and Lyme Disease. A few simple precautions are advised.

West Nile Virus

This virus is transmitted by mosquitoes. Most people infected by this virus experience mild, flu-like symptoms, then recover. But in some cases a potentially fatal encephalitis may result. No vaccine exists, so you should take precautions against mosquito bites: cover your arms, legs, and head while in the field, and wear insect repellant. For further information:

`http://www.cdc.gov/ncidod/dvbid/westnile/`

Lyme Disease

This disease is spread by deer ticks, and is infrequent in Tompkins County. It is treatable with antibiotics if detected soon after infection, but if undetected can lead to a debilitating chronic infection. After returning from the field, check yourself for ticks: they often bite in protected areas, such as under your socks or waistband. The earliest symptom of Lyme

disease is often a red "bull's eye" rash, often in a ring around the bite site. It may be accompanied by flu-like symptoms. For further information:

`http://www.cdc.gov/ncidod/dvbid/lyme/index.htm`

Evening Sessions

For evening sessions, meet in the laboratory, Plant Science 326. Bring whichever field guide you have purchased and a notebook. Some additional books will be available in the lab. Work on the specimens you collected during the afternoon.

Grades

Your grades are based upon:

- **10%** Quiz (Sept. 23)
- **30%** Final Examination (Oct. 21)
- **40%** Collection assignment (see separate handout for details, due Oct. 28)
- **20%** Blog assignment (see separate handout for details, due Oct. 28)

Attendance and Participation

This is a short course. We expect you to be present on all field trips and during all evening labs. We hope that you will have a valid and documented reason if you do miss a session. We also expect you to interact positively with the instructors and other students, and to show consideration for your peers by keeping the lab tidy and looking out for one another on field trips.

Students who miss a field trip or evening session must meet with the Professor to catch up on missed material.

I will deduct 10% of your final grade for each missed trip or evening lab if you fail to make-up any missed class.

Help is available

Make an appointment with Professor Hodge (phone 255-5356; email kh11@cornell.edu) or visit during **office hours: 11 AM through 1 PM on Thursdays.** Professor Hodge's office and laboratory are in rm. 401 Plant Science.

Laboratory Equipment and Procedures

(1) In lab, we'll provide materials for microscopy.

We'll provide the following items before each field trip:
collecting bag (or bring your own basket!)
waxed paper and/or paper bags

You should bring:
a sturdy pocket knife
a hand lens (optional, but nice to have)
appropriate shoes or boots; long pants are recommended
paper and pencil for field notes
(raingear if needed)
bring your field guide to the evening labs

(2) Your presence in the laboratory during scheduled lab periods is expected.

(3) Eating and drinking are not permitted in the laboratory.

(4) Clean up any spills from reagent bottles immediately. KOH is the greatest danger, as it can easily ruin a microscope lens. If you suspect KOH from alongside a coverslip has gotten on your lens, clean it off immediately!

(5) Clean lenses only with lens paper, never with tissue or cheesecloth. Never use alcohol to clean lenses, as this may dissolve the glues used to hold the lens elements in place. Our microscopes would cost a lot to replace. Take care of them!

(6) Books are never to be removed from the laboratory!

Books available in the Laboratory

Get to know some of these diverse resources on fungi, stored in the bookcase in the lab, arranged by call number. NEVER remove any books from the room. They must remain here for others to consult. One particularly recommended website with keys to mushrooms of the northeast is `MushroomExpert.com`

Call Number	Author and Title
QK603 A29, v.4A,4B	Ainsworth, G.C. et al. [eds.], The Fungi IVA, IVB.
QK617 .B37x 1999	Barron, G., Mushrooms of Northeastern North America
RA1242.M9 B46x 1995	Benjamin, D.R., Mushrooms: Poisons & Panaceas
QK617 B483X 1997	Bessette, A. et al. Mushrooms of Northeastern North America
QK629.B6 B47x 2000	Bessette, A., et al. North American Boletes
QK617 .M84x 1995	Bessette. A, Mushrooms of North America in color : a field guide companion to seldom-illustrated fungi
QK608 S9 C45a v.1-4	Breitenbach, J. & Kränzlin, Fungi of Switzerland (vols. 1 –6).
QK629 G2 C6	Coker & Couch, Gasteromycetes of Eastern US and Canada.
QK629 C8 E68	Eriksson, J., & L. Ryvarden, Corticiaceae of North Europe, 8 vols.
QK629 P7 G46 v.1, 2 1986	Gilbertson, R. L., & Ryvarden, North American Polypores (2 vols).
QK604 M98 1981	Stevens, R.B., ed., Mycology Guidebook, 2nd ed.
S133 A3 P no. 1112	Groves, J.W., Edible and Poisonous Mushrooms of Canada.
QK603 H393	Hawksworth, D. L., Mycologist's Handbook.
QK604 A29	Hawksworth, D.L. & al., Ainsworth & Bisby's Dictionary of the Fungi, latest edition
QK512.7 J25	Jahns, H. M., Collins Guide to the Ferns Mosses and Lichens
QK606.5 C71 1994	Jülich, W. Color Atlas of Micromycetes
QK629 A3 K2	Kaufmann, The Agaricaceae of Michigan (2 vols.)
QK623 D6 K84	Korf, R. P., Keys to the genera of Discomycetes and Tuberales.
QK629 A4 L27, v.1-5	Lange, J., Flora Agaricina Danica. 5 vols.
QK617 L32 v.1-6	Largent, D. et al., How to Identify Mushrooms to Genus, I-VI.
QK617 L73	Lincoff, G. Audubon Society Field Guide to North American Mushrooms.
RA1242 M9 L73	Lincoff, G. & Mitchel, Toxic and Hallucinogenic Mushroom Poisoning.
QK629 P7 L91P	Lowe, J. L., Polyporaceae of NY State (except Poria).
QH1 I58 v.18, no.3	Martin, G.W. The Tremellales.... Univ. Iowa Stud. Nat. Hist. 18(3). 1944.
QK635 M38	Martin, G. W. & Alexopoulos, The Myxomycetes.
QK617 M27 1987	McKnight, K. & V. A Field Guide to Mushrooms.
QK617 M64 1997	Miller, O. Mushrooms of North America.
QK626 .M64 1988	Miller, O. Gasteromycetes: morphological and developmental features
QK514 A1 G191 v. 2b pt.2	Moser, M. Keys to Agarics and Boleti.
QK635 O14	Olive, L.S., The Mycetozoans.
QK617 P552x 1991	Phillips, R. Mushrooms of North America
QK617 P78 F6	Pomerleau, R., Flore des Champignons au Québec
QK617 P787 F6 Supl.	Pomerleau, R., ditto
QK623 P5 R56	Rifai, Australasian Pezizales
QK623 A1 A82 1990	Schmid, I. & H. Ascomyceten in Bild (Parts I and II)
QK623 D6 S4 1942	Seaver, F. J., North American Cup-fungi (Operculates). Suppl. ed.
QK623 D6 S41	Seaver, F. J., North American Cup-fungi (Inoperculates).
QK629 L9 S64	Smith, A. H. Puffballs and their Allies in Michigan.
QK617 S64 H8 1979	Smith, A. H., H. V. Smith, & N. A. Weber. How to know the gilled mushrooms
QK617 S64 H81n 1981	Smith & Smith, How to Know the non-gilled fleshy fungi