Wild Mushroom Sub-Committee Update and Report

Mr. Erik Bungo, Rapid Response Team (RTT) Coordinator, VDACS
Sub-committee Chair

2014-2015 AFDO COMMITTEE CHARGES

Wild Mushroom Sub-Committee

***Chair:** Erik Bungo, Virginia Department of Agriculture & Consumer Services, Richmond, VA

Charge 1: Collect and review available wild mushroom guidance documents and develop an AFDO Wild Mushroom guidance document for regulatory authorities to use as a model.

Discussion:

Recommendations:

Executive Committee Action:

Approval ☐ Disapproval ☐ Date _____

Objectives

Focus: 2013 FDA Food Code section 3-201.16 Wild Mushrooms

A. Except as specified in (B) of this section, mushroom species picked in the wild shall not be offered for sale or service by a Food Establishment unless the Food Establishment has been approved to do so.

Goal: create a guidance document to assist inspection personnel and regulatory programs in making decisions about wild harvested mushrooms in their jurisdiction

***Will not address cultured and/or farm-raised mushrooms that are raw and unprocessed as these are considered raw agricultural commodities. Post-harvest processing by growers such as washing, slicing, cutting, chopping, drying, heating, canning and/or packaging would require inspection under the applicable CFRs.

http://www.afdo.org/mushroom

Wild Mushrooms

Association of Food and Drug Officials

"Promoting Public Health, Fostering Uniformity, and Establishing Partnerships"

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Wild Mushroom Subcommittee

Charges Roster

Meeting Notes

- December 18, 2014

Resources

- Basics of Wild Harvested Mushroom Identification - San Francisco State University
- Farm-Grown, Cultivated Mushrooms - Kentucky Cabinet for Health and Family Services
- Food Code Fact Sheet: Wild Mushrooms - Oregon Health Authority
- Guidance Document for a Model Wild-Harvested Mushroom Program - Conference for Food Protection Wild-Harvested Mushroom Committee
- Inspection of Farm-Raised Mushroom Growers/Processors and Inspection of Wild Mushroom Harvesters - Virginia Department of Agriculture and Consumer Services
- Minnesota Food Code Rule Revision Wild Mushroom Advisory Workgroup Report
- Model Wild Mushroom Code
- Mushroom Farm Food Safety and Security Self-Assessment - Pennsylvania State University
- North American Mycological Association (NAMA)
  - Affiliated Clubs
  - Volunteer Toxicology Identification Consultants
- Wild Mushroom Buyer Verification - Oregon Health Authority

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<< Wild Mushroom Resource Page

Wild Mushroom Subcommittee Roster

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Name	Owner	Last modified	File size
reference material	me	May 28, 2015 me	–
AFDO Guidelines for Harvesting and Selling Wild Mushrooms (draft).docx	af do	May 28, 2015 af do	–
AFDO Wild Mushroom Sub-Committee Update.pptx	me	May 28, 2015 me	9 MB
Wild Mushroom Survey Questions.docx	me	May 28, 2015 me	22 KB

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reference material - Goog

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Name	Owner	Last modified	File size
(12) Basics of Wild Harvested Mushroom Identification.pdf	me	May 28, 2015 me	13 MB
2014-2015 Wild Mushroom Sub Committee Charges (1).docx	me	May 28, 2015 me	27 KB
CFP Council I Recommendations Final Version.pdf	me	May 28, 2015 me	608 KB
DOC042811.pdf	me	May 28, 2015 me	63 KB
Guidance Document for a Model Wild--harvested Mushroom Program.pdf	me	May 28, 2015 me	104 KB
Mushroom Processor Food Safety Guidelines.pdf	me	May 28, 2015 me	322 KB
VDACS FOM - Cultivated and Wild Mushrooms.docx	me	May 28, 2015 me	29 KB
Wild Mushroom MN Workgroup Report 2012.pdf	me	May 28, 2015 me	478 KB
Wild Mushroom Model Code.pdf	me	May 28, 2015 me	5 MB

Current Status

- To date we have held 4 conference calls and started a rough document draft
- Minutes from the calls are posted on the AFDO website
- All sub-committee info is available at www.afdo.org/mushroom

Where to Start?

- CFP guidance material titled “Draft Model Guidance for Wild Harvested Mushrooms” from Council I as a starting point for recommendations that are consistent with our focus
- FDA Food Code Annex 3 – page 407 for 3-201.16
  - Over 5000 species of fleshy mushrooms grow naturally in North America. The vast majority have never been tested for toxicity. It is known that about 15 species are deadly and another 60 are toxic to humans whether they are consumed raw or cooked. An additional 36 species are suspected of being poisonous, whether raw or cooked. At least 40 other species are poisonous if eaten raw, but are safe after proper cooking.

Culinary Interest

- We determined that there are about 25-30 species of wild mushrooms that are of culinary value (actually worth eating and normally sold) that are similar across the United States and may not have poisonous look-a-likes. These mushrooms are easily identifiable to the entry level harvester with some basic training.

Recommendations

1. Harvester must describe their qualifications and training in writing or otherwise be able to demonstrate knowledge to regulatory authority for approval.
2. Harvesters should also keep records with the names of the Food Establishments where wild mushrooms were sold, including dates/species/quantities. In addition the package/container of mushrooms should have a label/tag stating the following:

- Common name and scientific name of mushroom species
- Name and address (city, state, zip code) of the harvester
- Location/county of harvest
- Dates of harvest
- An accurate net weight

The intent of this requirement is to help establish record-keeping and traceability to assure safety of wild harvested mushrooms.

Recommendations

3. Food Establishments should keep records with the name and contact information of the person who identified the mushroom and the mushroom seller including invoices with dates/species/quantities. The mushrooms should remain in the container in which they were received and accompanied with a record (tag/label). The records should be retained for at least 90 days from the date the container is emptied.

4. Check all other Federal, state and local laws for regional parks and forests regarding the harvesting of wild mushrooms for commercial use.

Harvesting

- State Department of Natural Resources
  - Some states allow and some do not
  - Limits on amount for personal use
  - Commercial harvesting may require permit
- U.S. Forest Service
  - Not permit required if for personal use
    - 3 species, 1 gallon limit of each
  - Must have “Commercial Use Permit”
    - $120 per calendar year for permit
    - Maps and limits www.fs.usda.gov/r6

Introduction to Mushrooms

- Mushroom is a word derived from the Latin and Greek words " Fungus" and "Mykes".
- In the present concept, a fungus species is considered edible if eating causes no health disorders.
- In broad sense mushrooms are fungi (pathogens).
- Some fungi are parasitic, causing damage or death to plants, animals, and even other fungi!
- Can cause severe damage to many crop plants including corn, wheat, potatoes, and fruits.
- Mushrooms may be edible, inedible and non-poisonous, or poisonous.
- Mushrooms are a low-calorie food consumed raw or cooked and as garnish to a meal.
- Mushrooms are a rich source of nutrients: 21 to 30% protein, with mineral elements Ca, Na, P, K, and low in fat (0.35-0.65 % dry wt.)
- Mushrooms are a good source of B vitamins, such as riboflavin, niacin and pantothenic acid. Fat, carbohydrate and calorie content are low and there are approximately 20 calories in an ounce of mushrooms.

Why Collect Wild Mushrooms?

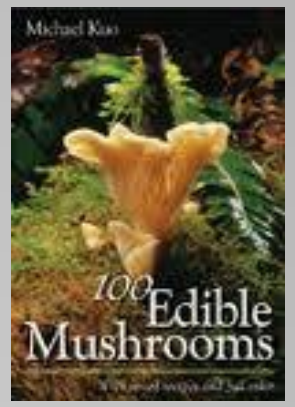
- Many can't be cultivated (boletes, chanterelles, truffles, matsutake, and others only grow as symbionts of trees).
- Highest value mushrooms are all wild harvested.
- Foray - a brief excursion into the field in search of mushrooms, plants, and other organisms; great way to enjoy the outdoors and get some exercise.
- Mycophile – an enthusiast of mushrooms; *especially* : one whose hobby is hunting edible wild mushrooms.
  - Curiosity and scientific interest
  - Potential source of natural dyes and medicinal compounds
  - Potential source of food as edible wild mushrooms are usually free for the picking
- **Caution: Ingestion of some mushroom species are dangerous to human health**

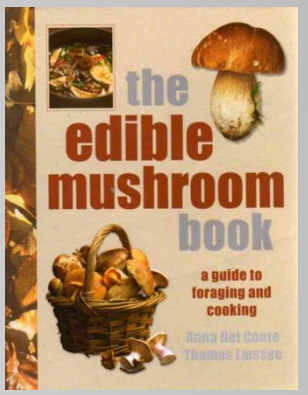
In History

- Ötzi the Iceman is a well-preserved mummy from 3300 BC. His body was found on the border of Austria and Italy. Among many interesting things, two species of mushrooms were found in Ötzi's possession on a leather string. Both mushrooms were polypores but they were probably used for two different purposes. One was a tinder fungus, which was found with a fire-starting kit. The other species was a medicinal birch polypore likely used as an antimicrobial.
- Roman Emperor Claudius was said to have been murdered by being fed the death cap mushroom.
- The parents of the physicist Daniel Gabriel Fahrenheit, who created the Fahrenheit temperature scale, died in Danzig on August 14, 1701 from accidentally eating poisonous mushrooms.

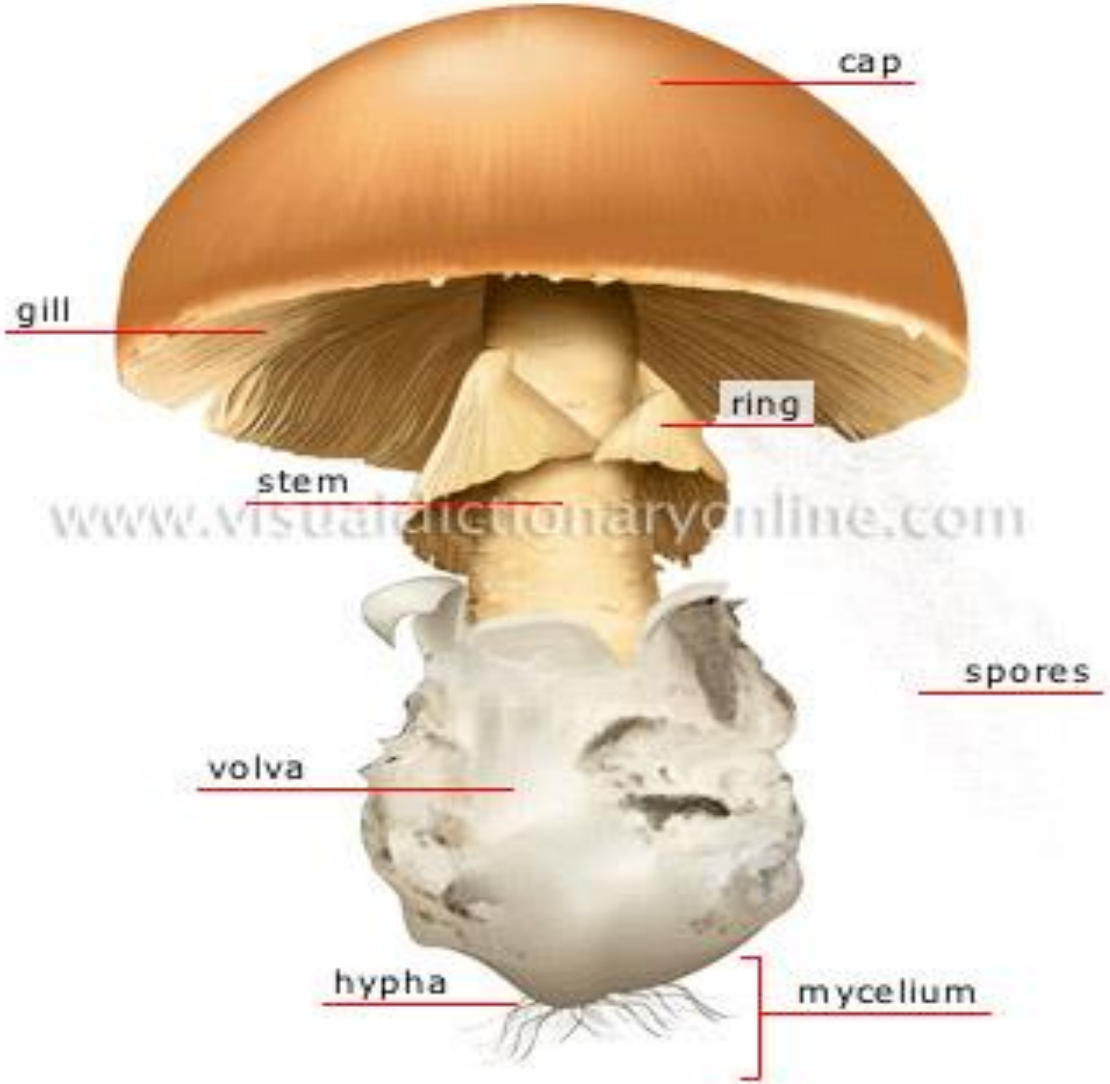
Identification Keys

- Most start with the shape of the fruit body
  - Cap (what is under the cap?)
  - Gills, tubes, spines or ridges (all produce, contain and release the spores)
  - Stalk
  - Mycelium
- Field guides and books are very helpful
- Although there are a number of poisonous, even deadly, mushrooms in the woods, and though it is true that a single mushroom can prove to be a deadly meal, mushroom field guides, if used as intended, serve to alert and inform mushroom hunters of the dangers of mistaking poisonous look-alikes for choice edible mushrooms.





Mushroom Structure



Mushroom Poisoning

- 2% of all mushrooms (32 deadly species)
- Most not fatal (something like 50 to 250 involved in non-fatal poisonings)
- Four (4) main types:
  1. Protoplasmic Amatoxins – cell damage and destruction followed by organ failure
  2. Neurotoxins – sweating, coma, convulsions, hallucination (can affect autonomic and/or central nervous system)
  3. Gastrointestinal Irritants – nausea, cramping, diarrhea
  4. Disulfiram-like toxins - no symptoms unless alcohol is consumed within 72 hours after eating them, in which case a short-lived acute toxic syndrome is produced

How Do We Know?

The North American Mycological Association (NAMA) tracks poisoning cases

- Voluntary reporting
- Record about 70 human cases per year
- About 10% are symptomatic poisonings
- There's a lot they don't hear about

Which to Worry About

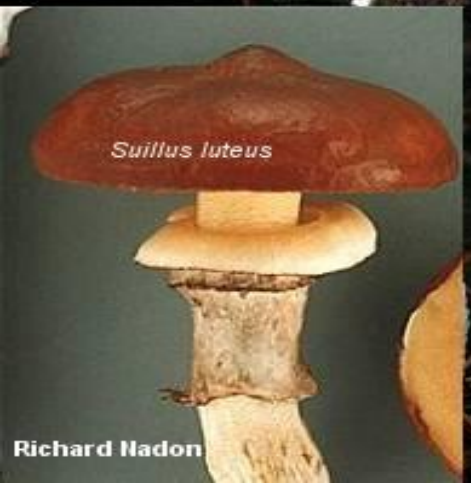
- Species of *Amanita and Agaricus*
  - Some species are edible, others are deadly.
  - Not a group for beginning identifiers.
- False morels
  - Although eaten in some places, can be deadly if improperly prepared or if a local strain is more toxic.
- Little brown mushrooms (LBMs)
  - Many are confusingly similar or require microscopy to identify.
- Other poisonous look-a-likes

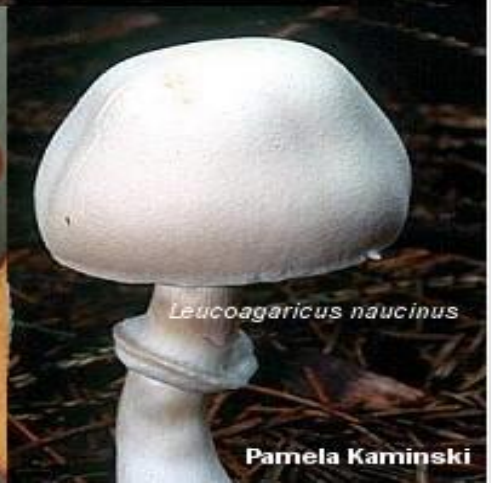

Agaricus bitorquis
Richard Nadon


Amanita bisporigera
Michael Kuo


Agaricus arvensis
Pamela Kaminski


Fly agaricus


Suillus luteus
Richard Nadon


Leucoagaricus naucinus
Pamela Kaminski

Other Causes of Illness

- Ingestion of edible mushrooms that are rotting or contaminated with pathogenic bacteria, heavy metals, or toxic chemicals. It is best not to collect and ingest edible mushrooms growing along roadways or highways (these may accumulate significant levels of lead or other toxic organic substances).
- Ingestion of edible wild mushrooms that causes a person to become overly concerned or worried, leading to an anxiety reaction or psychosomatic illness.
  - Miscellaneous symptoms include among others, nausea, vomiting, panic reaction, chills, hot flashes, sweaty palms on the hands, etc.

Other Reactions to Mushrooms

- Food allergy
- Food poisoning
- Insecticide or herbicide contamination
- Consuming mushrooms infested with larvae or partially decomposed fungi
- Panic reaction
- Drug interaction (MAOIs)
- Alcohol interaction

Worth Considering

- Some mushrooms are poisonous if uncooked.
- Some mushrooms are toxic if not prepared properly.
- Mushrooms rot quickly in plastic and keep longer in paper bags.
- Mushroom hunting is not a full time job in the eastern and central US.
- Mushroom “experts” are seldom experts in all mushrooms.
- In much of the world there is an irrational fear that mushrooms are different, that people can’t learn to tell the difference between the edible and the poisonous, and that the best defense is to reject all wild mushrooms. Mycophobia is a cultural overreaction.
- Regulatory authorities have expressed their concerns in regulating wild harvested mushrooms at the retail level.
- The Conference for Food Protection (CFP) has attempted to develop a national model for regulatory programs to address wild harvested mushrooms.
- The 2013 FDA model Food Code has changed the codified text to give the regulatory authority more flexibility for adopting/enforcing their own laws and/or policies.

References and Resources

- Schwab, Alexander. *Mushrooming Without Fear: The Beginner's Guide to Collecting Safe and Delicious Mushrooms*. Skyhorse Publishing Inc., 1996.
- Lincoff, Gary. *The Complete Mushroom Hunter: An Illustrated Guide for Finding, Harvesting, and Enjoying Wild Mushrooms*. Quarry Books, 2010.
- Kuo, Michael. *100 Edible Mushrooms*. The University of Michigan Press, 2007.
- National Audubon Society. *Field Guide to Mushrooms of North America*. Chanticleer Press Inc., 1981.
- National Audubon Society. *Field Guide to Trees of Eastern Region North America*. Chanticleer Press Inc., 1980.
- Dr. Kathy Hodge, Cornell University
- Mr. Steve Haas, Haas Shrooms
- North American Mycological Association (NAMA) www.namyco.org
- The American Mushroom Institute (AMI) www.americanmushroom.org
- The International Mycological Association (IMA) www.ima-mycology.org

FINAL CAUTIONARY NOTE

NEVER EAT A WILD MUSHROOM UNLESS YOU ARE CERTAIN THAT IT IS SAFE!