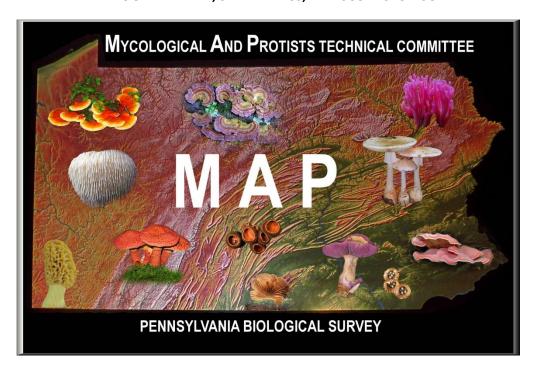
EDUCATIONAL MYCO-RESOURCES ON THE WEB

COMPILED IN 2022 AND 2023 BY <u>JERRY HASSINGER</u> TO SUPPORT THE OUTLINED STRATEGIES IN THE PENNSYLVANIA DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES DRAFT (1/6/2022) "<u>FUNGI CONSERVATION WORK PLAN</u>."

THESE STRATEGIES ARE THE INFORMAL BASIS FOR A FUTURE AND ONGOING WORKING RELATIONSHIP BETWEEN DCNR AND THE PENNSYLVANIA BIOLOGICAL SURVEY'S (PABS) MYCOLOGICAL AND PROTISTS TECHNICAL COMMITTEE (MAP-TC).

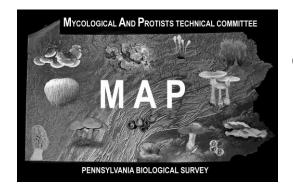
THIS COMPILATION WAS REVIEWED BY MEMBERS OF THE MAP-TC:

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MAP VISION: FUNGI CONSERVATION INFORMED BY SCIENTIFIC DATA TO COMPLY WITH THE INTENT OF PENNSYLVANIA'S ENVIRONMENTAL AMENDMENT SECTION 27, ARTICLE 1, PENNSYLVANIA CONSTITUTION

PAGE 27-28



DIANNA SMITH: MYCOLOGY EDUCATION

www.fungikingdom.net, www.fungikingdom.org

PART I MYCO-RESOURCES: ONLINE MYCOLOGY COURSES, CLASSES AND EDUCATIONAL MATERIALS

Compiled 2022/2023 by PA Biological Survey's Mycological and Protists Technical Committee Jerry Hassinger, MAP TC Chair

The web is a dynamic source of myco-resources related to education. The following seven sites will refer you to hundreds of other sites. This compilation includes only brief descriptions of what is available. The most comprehensive information is available on the North American Mycological Association's and the Northeast Mycological Federation's web sites.

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SEVEN FREE AND PAID BEST MYCOLOGY ONLINE COURSES, CLASSES, TRAINING WITH CERTIFICATIONS.

Best online mycology courses and classes in 2022. (courseforme.com)

Mycology is a prominent part of biology which focuses on fungi. This unique academic discipline is important because some types of fungi have potential benefits to human health. Also, there are some types of fungi that have potential harm to humans. Thus, mycology, which is the study of fungi, is so important because it boosts the knowledge of people about the various properties of different types of fungi.

In case you are interested in this field, there are various mycology courses online to help you learn more about this intriguing subject area. In this article, you will get to know the excellent online mycology courses which you can enroll in to boost your knowledge of fungi.

What is Mycology?

Mycology is a field in biology which is involved in the study of fungi (a group that includes mushrooms and yeasts). This field explores the genetics, biochemical properties, taxonomy of fungi with their human use as a source of food, traditional medicine, tinder and entheogens, and their dangers such as infection or toxicity.

A mycologist is a biologist that specializes in mycology.

Medical mycology has to do with the study of fungi organisms that cause diseases in man. Mycology discipline branches into phytopathology, a field that studies plant diseases; these two fields are closely knitted. This property is because the majority of plant pathogens are fungi.

Benefits of Mycology

Some of the importance of the study of fungi is given below:

- With mycology, there is further improvement in the use of fungi to break down pollutants and the most durable organic materials.
- Mycological research has led to the development of some drugs such as statins, a cholesterol lowering-drug, and antibiotics like tetracycline, streptomycin and penicillin.
- It has an important application in the wine, dairy and baking industries as well as in the manufacture of inks and dyes.

CAREERS IN MYCOLOGY AND IMPORTANCE

The careers in mycology are:

1. MYCOTOXICOLOGY— this is the study of the toxins produced by mushrooms. Fungi produce varieties of chemicals that have toxic effects on organisms of all kinds. Of all the types of fungi, mushrooms are known to be the most toxic. Therefore, this field of study helps to detect the mushrooms that are toxic and the ones that are not. Thus, with this field, edible mushrooms are differentiated from the harmful ones.

Moreover, some compounds in some mushrooms have beneficial properties; this makes them suitable for use as medicine. Therefore, mycotoxicologists help develop new drugs using these compounds, so they tend to work in pharmaceutical companies.

- 2. PHYTOPATHOLOGY- involves the study of plant diseases, particularly those that affect crops. This discipline is very important for differentiating between harmful and beneficial fungi. At the same time, this field provides means of treating crops and preventing further infections while enabling the use of certain fungi as pesticides. These attributes are a result of fungi being a major pest of many crops, while some others play symbiotic roles and enable plants to extract water and nutrients from the soil.
- 3. **ETHNOMYCOLOGY:** This is another interesting field in mycology that involves the study of the historical uses of fungi. Fungi have been used for food, medicine, hallucinogens and a host of other things in the past and in the present-day. Therefore, professionals in this field (ethnomycologists) help study these uses and inform frontline researchers and the general public on which fungi have known side effects and which are harmless.

Also, the diversity of fungi and the relatively disorganized history of fungi's classification make it quite daunting and confusing to study their classes and uses as a layman. However, with ethnomycologists, the dense and helpful information about fungi provided by past cultures and societies is sorted to enhance the general public's better understanding of these organisms.

SEVEN ONLINE COURSES

1. Centre of Excellence: Mycology Diploma Course

The Centre of Excellence: Mycology Diploma Course introduces you to the fundamentals of mycology, its major subfields, and the key roles of mycologists and the relationship of mycology with other areas. You will learn about the main four divisions of fungi. In this course, you will learn about the characteristics of microscopic fungi and the groups of macroscopic fungi. In this aspect of the course, explore the morphology, distribution, roles and symbiotic relationships of these groups of fungi with other organisms.

Moreover, you will get to know how both microscopic and macroscopic fungi reproduce and grow in nature, as well as the equipment and methods you can use to grow fungi in a laboratory. Over 300 people have enrolled for this course.

2. MycoLogos: Mushroom Identification: Basics & Beyond

The instructor of the MycoLogos: Mushroom Identification: Basics & Beyond is Peter McCoy, a professional mycologist, an author and founder of MycoLogos, an online platform known for its provision of high-quality courses about fungi of all kinds. This class offers in-depth lessons about the world of mushroom hunting. It offers you information about over 65 species of mushrooms. In all, this great class provides you with the knowledge and skills for a lifetime of discovery in this field.

3. Fungially: Medicinal Mushroom Online Class

The instructors of this great course are <u>Dr Lindsay Chimileski</u>, a naturopathic physician, Willie Crosby, an experienced instructor and other guest teachers. These instructors walk you through important topics like Materia Medica, psilocybe research, making mushroom preparations and growing medicinal mushrooms.

In this course, you will learn how to use mushrooms for skincare, immune system, cancer and Lyme while exploring how to use psychoactive fungi in a safe way. This course will help you to develop a confident relationship with these great fungi allies called mushrooms. With this course, you will be able to grow, create, forage, prepare and consume varieties of medicinal mushrooms as well as the medicinal mushroom products that you like.

4. MycoLogos: FUNGAL ECOLOGY FROM THE SEA TO THE SKY

MycoLogos: FUNGAL ECOLOGY FROM THE SEA TO THE SKY offers you a deeper understanding of the fungi world. From this course, you will know the vast roles of fungi in the world's ecosystem and niches. With the lessons in this course, you will be able to boost your knowledge of fungi and their relationship with the environment and other organisms.

5. Fungially: Commercial Mushroom Cultivation Online Class

The Fungially: Commercial Mushroom Cultivation Online Class focuses on the fundamentals of mushroom cultivation and details on starting a commercial mushroom farm. The instructor of this course is Willie Crosby, an experienced instructor with a great passion for helping people discover the potential of using fungi to improve lives through food, medicine and social thought.

This course takes you through the methods you can adopt to successfully sell fresh mushrooms, products other than mushrooms and how to access and apply for grant money.

The knowledge you gain from this course will prevent you from the trials and screw ups of starting to grow mushrooms as a beginner, thus, enabling you to grow mushrooms and mycelium successfully. The lessons in this course make it a suitable class for both home-scale growers and small scale mushroom farmers.

6. Mushroom exam: Online Mushroom Identification Courses...

The Mushroom Exam: Online Mushroom Identification Courses... is an amazing course that teaches you the foundational knowledge you need to begin your journey on becoming a mycologist.

The courses under this comprehensive course are five and are categorized based on location. These are the United Kingdom Mushroom Identification Course, European Union Mushroom Identification Course, North America and Canada Mushroom

Identification Course, Australian Mushroom Identification Course and Morel Mushroom Identification Course.

Each of these courses enables you to identify the mushrooms in a specific location. Enrolling on any or all of these courses will help broaden your knowledge of identifying mushrooms and boost your understanding of the beneficial and harmful ones.

7. Outschool: Mycology: The Kingdom of Fungi

Explore the fascinating field of mycology on the Outschool course, Mycology: The Kingdom of Fungi. The instructor of this course is Arwen Hubbard, a passionate teacher of space and environmental science. This instructor teaches you about fungal classification, evolution, physiology and evolution.

This course covers lessons about various types of fungi, from mushrooms to yeasts. Also, you will get to understand the different kinds of fungi, their roles in ecology, their relationship with other organisms, and their human uses.

NORTH AMERICAN MYCOLOGICAL ASSOCIATION

NAMA EDUCATION RESOURCES

NAMA provides a wide spectrum of educational materials for teachers and naturalists, as well as media for affiliated clubs to enrich meetings — from an introduction to mycology to a detailed overview of the fleshy Ascomycetes.

Read about Mushroom Basics, Lichen Basics, Dyes and Papermaking.

<u>Video Presentations</u> with attached Powerpoints and Teaching guides are useful educational programs. The video can be shown to a group, or, used as a basis for Powerpoint presentations. Over 20 useful programs here! This is a terrific resource for deepening your understanding of genera and to provide an instant program for club meetings.

MATERIALS FOR TEACHING MYCOLOGY

Inspire kids from kindergarten through high school to learn the science of mushrooms. NAMA's teaching materials are best suited for use in a classroom, nature center, science museum, or focused study group. The materials include lesson plans, field trip activities, references, and games.

1. The Fungus Files is an entire educators program for K-6 with an e-book

AN EDUCATORS GUIDE TO FUNGI FOR K-6

Welcome to The Fungus Files: An Educator's Guide to Fungi K-6 (Second Edition), where the oft overlooked Kingdom of Fungi is used to promote an incredibly accessible model of interdisciplinary ecological education. The Fungus Files is packed with dynamic and diverse activities designed to be easily adaptable to students of all ages, learning styles and ability levels.

Wake up your classroom, science group, nature centre, or backyard with this user-friendly tool kit!

Download the entire e-book here or browse the individual chapters to find the activity that suits your immediate needs. **Note** on links below: section pdfs are all caps; activities are upper/lower case.



2. There is a simple <u>Basic 45 Minute Lesson on Fungi</u>, with instructions and supporting material.

BASIC 45-MINUTE LESSON ON FUNGI

- You will need about 45 minutes of setup time to prepare the classroom or nature center. At least two long tables will be needed as well as a chalkboard, chalk and an eraser. Hand lenses should be available and some classrooms, science centers and nature centers are equipped with microscopes. At least one mushroom poster should be set up where you and the students can refer to it during the lesson. The tables should have books on mushrooms displayed and spore prints, both completed and in progress. Several methods of making spore prints should be demonstrated such as placing a mushroom cap on an index card; a paper cup with an index card with a hole for the mushroom to hang through; a glass slide with a mushroom cap placed on it. The rest of the tables should be covered with fungi, samples of mycelium and slime molds, fresh specimens if it is mushroom season and dried specimens if fresh ones are not available. Use as much variety as possible (one student counted 37 different kinds on the table), puffballs, dead man's fingers, and earthstars being the favorites.
- When the students enter the room, I like to have them stand around the table, but some teachers prefer that they sit in chairs at first. If it is a school class, the teacher will usually have given them an introduction to mushrooms. Each student gets a two sided handout, The Fungal Kingdom and There's Fun In Fungi for grades 4-8 and Mushrooms and Parts of a Mushroom for grades K-3. We talk about fungi for a few minutes and then I call on students to read the questions and answer them. I then let them pick up the mushrooms and look at them with a hand lens and we talk about their various features. I encourage them to ask questions and to compare the mushrooms to the pictures on the charts and in the books on the table. They usually have lots of stories to tell about mushrooms that they have seen. The questions on the handout can be answered for homework, if the teacher assigns it.
- If there is additional classroom time (grades 4-8), I let each student pick a mushroom from the table and draw and describe it, using the second handout, Further Fungi Activities. We might also answer the additional questions on the handout, More Questions About Fungi. Some students might want to use the dictionary to look up the definitions of words associated with fungi that I have written on the board. Some students might want to look at the books on the table. For extra time (grades K-3), I would hand out pictures of mushrooms to color at their work stations or have them draw their own pictures of mushrooms and color them. An alternative follow up lesson (grades K-6), would be to take a walk in the woods, using the handout, Mushroom Workshop for finding certain mushrooms. They can just look at the mushrooms or you can have them pick a sample few, depending on the

rules for the area in which you are walking. When they return from the walk, they can draw and describe them or they can pick one to make a spore print. I have also received wonderful thank you letters and drawings from the students.

- I have also used the handout, <u>The Fungal Kingdom</u>, with a High School Ecology class and Ecology Club. Additional material is enclosed in this manual for other lessons and for games about mushrooms.
 - by Sandy Sheine



3. There is also a new alternative <u>Lesson Plan</u> for grades K-12.

LESSON PLAN FOR TEACHING ABOUT FUNGI

This is a suggested introductory lesson plan for teaching K-12 classes in schools and nature centers about fungi. The length of school classes is generally 45-60 minutes. The lesson should cover that time frame.

Objective

To learn about the basic characteristics of the Kingdom of Fungi.

Follow up

- If there is more time after the lesson, or on another day, follow-up lessons and activities are offered in the files of the Manual of Instructional Materials for Teachers and Naturalists Teaching about Fungi. There are choices for a walk in nearby woods or additional classroom activities.
- NOTE: the additional NAMA Education Resources, including Mushroom Teaching Kits, Books for Young People, Recommended Reference Books, Educational Programs, and Online Teaching Resources.
- This lesson can be adapted for older students or adults with additional material elsewhere on this website. Photos of local mushrooms in different seasons can be shown. Simple mushroom identification keys and checklists of genera are helpful, too.
- Even more teaching material, written by Gary Lincoff, author of the National Audubon Society Field Guide to North American Mushrooms, can be found at www.nemf.org.
- An excellent additional source of teaching material on fungi for all levels is on Tom Volk's website.

Submit questions and suggested new materials to Sandy Sheine by email.

4. The <u>NAMA Manual has instructional materials for Teachers and Naturalists</u> teaching about fungi: Grades K-12

Manual of Instructional Materials for Teachers and Naturalists Teaching About Fungi: Grades K-12

Introduction

The following files may be downloaded and copied for educational purposes only. They include teaching materials appropriate for Grades K-3, Grades 4-12 and adult education use in a classroom or lab setting. Additional material includes games, outdoor activities and extracurricular assignments. Particular attention should be given to two resources: The Fungus Files: An Educator's Guide to Fungi K-6 (terraBrie Stewart, Second Edition); and How the Mushroom Got its Spots, An Explainers Guide to Fungi, (Sue Assinder and Gordon Rutter, members of the British Mycological Society Education Group). Both are available below in pdf format. Further reference material can be found in a new Lesson Plan. The lessons may be enhanced with samples of fresh or dried fungi, books, posters, hand lenses, and drawing materials.

Contents

Classroom Teaching Materials, Grades K-12

- The Fungus Files: An Educator's Guide to Fungi K-6. This educator's guide explores the world of fungi through worksheet activities, hands-on activities, and classroom demonstrations. An excellent resource for K-6, and an excellent resource of basic information for adults. Written by Terra Brie Stewart and illustrated by Rost Koval.
- **How Mushrooms Grow, Grades K-12**. Nine color drawings by Louise Freedman; used best when projected onto a screen and discussed with class
- Basic 45 Minute Lesson on Fungi, Grades K-12
- Questions about Mushrooms, Grades K-3
 - Answers to "Questions about Mushrooms"
 - "Questions about Mushrooms" in Spanish
- Questions about Fungi, There's Fun in Fungi, Grades 4-12
 - o Answers to "Questions about Fungi"
 - "Questions about Fungi" in Spanish
- More Questions About Fungi, Grades 4-12
 - Answers to "More Questions About Fungi"
 - "More Questions about Fungi" in Spanish
- How To Make a Spore Print, Grades K-12
- Further Fungi Activities, Grades 4-8
- Mushroom Workshop, Grades K-12
- The Fungal Kingdom, Grades 4-12

- Math-Science Unit 1, Grades 4-8
- Math-Science Unit 2, Grade 9-12
- Charting Mold Growth, Grades 2-6
- Making Yeast Bread, Grades 3-6
- Mushroom Common Names, Grades 4-12
- Additional Class Projects, Grades 4-12
- Mushroom Dissection Lab, Grades 8-12
- Mold Control Activity created by the Hydroville Curriculum Project at the Environmental
 Health Sciences Center of Oregon State University_(The original activity utilizes 3M
 Petrifilms and the alternative version utilizes potato dextrose agar plates. The activities
 are identical, however the lab protocol differs depending on the plating method used.
 The activity uses yeast instead of mold since yeast is easier to work with.)
 - Mold Control Student Section
 - Mold Control Teacher Section
 - o Alternative Mold Control Student Section
 - Alternative Mold Control Teacher Section

Further Teaching Activities

- Fun With Fungi Field Trip Activities, Grades 4-12
- Fun With Fungi Post-trip Activities, Grades 4-12
- Fun With Fungi Instructor Reference Material, Grades 4-12
- A Few Comparisons, Grades 4-8
- Spring Mushrooms, Grades 4-12
- Art Papers from Fungi, Grades 4-12
- Making Spore Prints
- I Grow Mushrooms, Mushroom Cultivation
- Careers in Mycology: Mycological Society of America poster
- References for Teaching About Fungi

Recommended Books for Teachers

- Assinder, Sue; Rutter, Gordon, How the Mushroom Got its Spots: An Explainers' Guide to Fungi. British Mycological Society Education Group, Royal Botanic gardens, Kew, Richmond, Surrey, TW9 3AE UK and The Biotechnology and Biological Sciences Research Council, Polaris House, Swindon, Wiltshire, SN2 1UH UK, 2002
- Kendrick, Bryce, A Young Person's Guide to the Fungi. Mycologue Publications, Waterloo, Ontario, Canada, 1986
- Arora, David. Mushrooms Demystified. Ten Speed Press, Berkeley, CA, 1986
- Lincoff, Gary. The Audubon Society Field Guide to North American Mushrooms. Alfred A. Knopf, Inc., New York, 1981
- Watling, Roy. Fungi. Smithsonian Institution Press, 2003

5. Websites of interest for teachers

Online Teaching Resources

Follow the links below to find the best websites for teaching about mushrooms. In the list below, you'll find awesome professional websites, photography, directories to more mushroom websites, Tom Volk's novel mushroom of the month, and information about truffles, lichens and slime molds. These resources are designed as a starting place to get students interested in learning more about fungi.

Professional Sites

- Amanitas: Rod Tulloss
- The Fifth Kingdom
- Fungi Growing on Wood: Emberger, Gary
- Index Fungorum
- MushroomExpert
- NCBI Taxonomy Browser
- NY Botanical Garden Herbarium
- Pacific NorthWest Key Council keys
- Tom Volk's Fungi
- Website on Fungi: George Barron

General

- Acta Fungorum (Italy)
- British Mycological Society: free resource for teachers to download material on fungi
- Encyclopedia of Life/Fungi
- Fun Facts About Fungi
- Fungi For Fun
- Fungi Magazine
- FungiKingdom: by Dianna Smith. Fungi education, photos, descriptions and articles.
- Gary Lincoff's Pages (NEMF)
- Gary Lincoff's website
- Lichens of North America
- Mushroom Observer
- MushroomTheJournal
- MycoMatch The Pacific Northwest Key Council
- MykoWeb
- Myxomycetes
- North American Mushroom Basics
- North American Truffling Society

- NorthEast Mycological Federation
- Paul Stamets: Fungi Perfecti
- Tom Volk's Fungus of the Month



6. Books for Young People

Books for Young People

Note: some of these books are out of print, but may be still available from libraries, amazon.com, or ebay.com.

Non-Fiction

- Allen, Berg, Dusheck, Taylor, Microorganisms, Fungi, and Plants. Holt, Rinehart and Winston, New York, NY, 2002 (Three textbooks: Annotated Teacher's Edition, Teaching Resources, and Assessment Item Listing) (Grades 4-8)
- Arnold, Katya and Swope, Sam. Katya's Book of Mushrooms. Henry Holt and Co., Inc., New York, NY, 1997 (Grades 4-8)
- Arora, David and Bowers, Jeannette, Mushrooms of the World Coloring Book. Dover Publications, Inc., New York, NY, 1984 (Grades K-4)
- Assinder, Sue, Rutter, Gordon, How the Mushroom Got its Spots, An Explainers' Guide to Fungi. British Mycological Society Education Group, Royal Botanic gardens, Kew, Richmond, Surrey, TW9 3AE UK and The Biotechnology and Biological Sciences Research Council, Polaris House, Swindon, Wiltshire, SN2 1UH UK, 2002 (Grades K-8 and Teacher Guide)
- Carson, Mary Kay, Fungi. Sundance/Newbridge Educational Publishing, 2004 (Grades 9-12)
- Conklin, Gladys, Fairy Rings and Other Mushrooms. Holiday House, New York, NY, 1983
 (Grades K-4)
- Delafosse, Claude, and Heliadore, *Le champignon*, (in French). Editions Gallimard Jeunesse, Paris, France, 1995 (Grades K-3)
- Heller, Ruth, Plants that Never Bloom. Grosset & Dunlap, New York, NY, 1984 (Grades K-3)
- Johnson, Sylvia, *Mushrooms*. Lerner Publishing Company, Inc., Minneapolis, MN, 1982 (Grades K-3)
- Kaveler, Lucy, The Wonders of Fungi. John Day Co., New York, NY, 1964 (Grades K-3)
- Kendrick, Bryce, A Young Person's Guide to the Fungi. Mycologue Publications, Waterloo, Ontario, Canada, 1986 (Grades 4-8)

- Millman, Lawrence, Fascinating Fungi of New England. Kollath & Stensass Publishing, Duluth, MN, 2011
- Mollen, Cora and Weber, Larry, Fascinating Fungi of the North Woods. Kollath & Stensaas Publishing, Duluth, MN, 2007 (Grades 4-12)
- Pascoe, Elaine, Fungi (Kid's Guide to the Classification of Living Things). PowerKids Press, 2003 (Grades K-5)
- Perry, Phyllis, J., Let's Learn About Mushrooms. Harvey House, New York, NY, 1974 (Grades K-4)
- Plowman, Wendy, *Fungi: A Kingdom of their Own*. Wild Resources Conservation Program, State of Pennsylvania, 2007 (Grades 4-8)
- Royston, Angela, *Life Cycle of a Mushroom*. Heinemann Library, Chicago, IL. 2009 (Grades K-3)
- Selsam, Millicent, Mushrooms. William Morrow and Co., Inc., 1986 (Grades K-3)
- Stewart, terraBrie, *The Fungus Files: An Educators Guide to the Fungi, Grades K-6* (Second Edition). Friends of the Environment Foundation, Alberta National Plant Council, Nature Alberta, Canada, 2013 (Grades K-Adult)
- Tesar, Jenny, *Fungi. Our Living World Series*. Blackbirch Press, Inc. Woodbridge, CT, 1994 (Grades 1-4)
- Watling, Roy, Children and Toxic Fungi: The Essential Medicinal Guide to Fungal Poisoning in Children. Royal Botanic Garden, Edinburgh, Scotland, 1995
- Watts, Barrie, Mushroom. Silver Burdett Co., 1986 (Grades K-3)
- Webster, Vera R., Plant Experiments. Childrens Press, Chicago, 1982 (Grades 4-8)

Fiction

- Aesop Fable, Tharlet, Eve, The Grasshopper and the Ants. Silver Burdett Co., Morristown, NJ, 1985 (Grades K-3)
- Amato, Mary, Invisible Lines, Egmont, USA, New York, 2011 (Grades 5-8)
- Barklem, Jill, Autumn Story. Philomel Books, Putnam Publishing Group, New York, NY, 1980 (Grades K-3)
- Beskow, Elsa, *Children of the Forest*. Floris Books, 15 Harrison Gardens, Edinburgh, Scotland, 2005 (Grades K-3)
- Bodecker, N.M., The Mushroom Center Disaster. MacAdam/Cage, 2004 (Grades K-3)
- Brown, Judith, Max and the Truffle Pig. E.M.Hale & Co., 1966 (Grades 2-5)
- Cameron, Eleanor, Stowaway to the Mushroom Planet. Little Brown and Company, Boston, MA, 1988 (Grades 4-8)
- Cameron, Eleanor, Mr. Bass's Planetoid. Little, Brown and Company, Boston, MA, 1958 (Grades 4-8)
- Cameron, Eleanor, A Mystery for Mr. Bass. Little, Brown and Company, Boston, MA (Grades 4-8)
- Cameron, Eleanor, Time and Mr. Bass. Little, Brown and Company, Boston, MA (Grades 4-8)

- Cameron, Eleanor, The Wonderful Flight to the Mushroom Planet. Little Brown and Co., Boston, MA, 1988 (Grades 4-8)
- Dorros, Arthur, The Fungus That Ate My School. Scholastic Press, New York, NY, 2000 (Grades K-5)
- Gates, Susan, Killer Mushrooms Ate My Gram. Puffin Books, 2000
- Ginsburg, Mirra, Mushrooms in the Rain. Macmillan Publishing Co., New York, NY, 1974 (Grades K-3)
- Guraleva, Natasha, *Adventures of Little Herbert in Mushroomland*, 3 volumes, available at www.mushroomland.net, 2008 (ages 4-8, 7-11, and 8-12)
- Hadley, Maggie, Fungus Fred Goes Foraying. British Mycological Society, Royal Botanic Gardens, Kew, Richmond, Surrey TW9 3AE UK, 2002 (Grades K-4)
- Krahn, Fernando, Sebastian and the Mushroom. Delacorte Press, 1976 (Grades K-4)
- Leister, Mary, Wee Green Witch, Stemmer House, 1979 (Grades K-3)
- Lobel, Anita, Under a Mushroom, Harper Row (Grades K-3)
- Monsell, Mary Elise, Crackle Creek. Atheneum, New York, NY, 1990 (Grades K-4)
- Moore, Inga, The Truffle Hunter. Kane/Miller Book Publishers, Brooklyn, NY, 1987 (Grades 3-6)
- Romanova, Natalia, Once There Was a Tree. Dial Books, New York, NY, 1985 (Grades K-4)
- Seymour, Miranda, Casper and the Secret Kingdom. Silver Burdett Co., 1987 (Grades K-3)
- Snicket, Lemony, (aka Daniel Handler), *The Grim Grotto (A Series of Unfortunate Events, Book 11)*. Illustrated by Helquist, Brett. Harper Collins, New York, 2004 (Grades 5-8)
- Tharlot, Eve, *The Grasshopper and the Ant*. Silver Burdett Co., Morristown, NJ, 1985 (Grades K-3)
- Truupold, Irma, The Land of the Green Sun, Tallinn Periodika (Grades K-3)

Compiled by Sandy Sheine



7. Bibliography of Books on Fungi

Recommended Books on Fungi (Compiled by Sandy Sheine)

Note: some of these books are out of print, but may be still available from libraries, amazon.com, or ebay.com.

North America

- Arora, David. Mushrooms Demystified. Ten Speed Press, Berkeley, CA, 1986
- Kibby, Geoffrey. An Illustrated Guide to Mushrooms and Other Fungi of North America.
 Dragons' World Ltd., London, 1993
- Lincoff, Gary. *The Audubon Society Field Guide to North American Mushrooms*. Alfred A. Knopf, Inc., New York, 1981
- McKnight, Kent, and McKnight, Vera B., A Field Guide to Mushrooms: North America, Peterson Field Guides, Houghton-Mifflen, Boston, MA, 1987
- Miller, Orson and Miller, Hope. North American Mushrooms. Globe Pequot Press, Guilford, CT, 2006
- Phillips, Roger. Mushrooms of North America. Little Brown and Co., Boston, 1991

Regional

- Ammirati, Joseph, Trudell, Steve, Mushrooms of the Pacific Northwest, Timber Press, Portland, OR, 2009
- Ammirati, Joseph, Traquair, James, Horgen, Paul, *Poisonous Mushrooms of the Northern United States and Canada*. University of Minnesota Press, Minneapolis, MN, 1986
- Arora, David, All That the Rain Promises, and More..., Ten Speed Press, Berkley, CA, 1990
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MYCOLOGICAL RESOURCES ON THE INTERNET: RESOURCES FOR TEACHING, CORNELL

Mycology Resources: Teaching (cornell.edu)

There are 65 myco-resources referenced.; some are outdated and no longer available..

Forest Pathology

These pages constitute an excellent on-line textbook of forest and shade tree pathology (including a good introduction to fungi) by Jim Worrall, a pathologist with the US Forest Service

Mycology Online

Mycology Online is a guide to fungal pathogens of humans, the diseases they cause, and selected case studies. This Australian site is searchable, nicely illustrated (not for the squeamish!), and replete with information.

Penn State Mushroom Spawn Lab

Pennsylvania State University's strong program in mushroom cultivation presents fact sheets and other information about commercial mushroom production on these pages. PSU's mushroom growers' information pages are part of this site.

The Fifth Kingdom

W.B. Kendrick's delightful introductory mycology textbook, The Fifth Kingdom, is partly available online. This site includes over 800 lavish, colorful illustrations as a supplement to the text, which is available from Mycologue Publications (q.v.). The text of sample chapters is available, too. Dr. Kendrick's website also includes other publications for sale.

Tom Volk's web pages

One stop shopping for mycology. These pages feature a "fungus of the month" column, with entertaining text and nice photos, in addition to a plethora of other information about fungi. Tom is a professor at the University of Wisconsin-La Crosse, USA.

UC Berkeley's Introduction to Fungi

The Museum of Paleontology at the University of California, Berkeley provides a well-prepared introduction to the kingdom Fungi, and also to two groups that have historically been studied by mycologists, the Oomycota and slime molds. Similar introductions are available for all other taxa. This link makes a valuable addition to any teaching program.

2023 Mycological Curriculum for Teachers and Educators

https://www.ffungi.org/en/education

FUNGI EDUCATION

In public schooling, as much needs to be taught about fungi, as is taught about plants and animals. On this website you will find a free mycological curriculum and unique educational resources that deepen our understanding of the interconnected ways in which fungi live and thrive throughout our world—including in our soil, our trees, our air and water, and even inside our bodies. Come explore and learn with Fungi Education!

Goal 1. Creation of a global mycological school curriculum so that as much is taught about fungi in traditional schooling worldwide, as is of plants and animals.

Goal 2. Expand the number of people contributing to the discovery and documentation of species worldwide through a citizen science program: What you see, matters!

Do you remember learning all about fungi in school? Probably not because most schools do not have a comprehensive mycological curriculum. We believe that it is essential to teach all youth about the importance and wonders of fungi to encourage more understanding, research, and conservation in the future. Simply put, we are creating a free mycological curriculum for schools worldwide to teach about fungi as much as they teach about plants and animals.

We have begun this mission by creating an English version of the mycological curriculum aligned with NGSS standards in partnership with Reconsider and Fantastic Fungi. Our program also includes free activities for kids and many learning resources. We've had over 2,500 enrollments from 50 countries! During a year we've been teaching lessons from the curriculum at schools in the USA and Chile to more than 600 students. We've also hosted 9 training webinars for teachers, which you can use to learn how to teach some of the curriculum lessons.

Welcome to Fungi Education Resources

Fungi Education provides free learning resources to inspire people and children across the globe to learn and explore all the wonders of fungi. On this website, you will find unique educational tools that deepen our understanding of the interconnected ways in which fungi live and thrive throughout our world—including in our soil, our trees, our air and water, and even inside our bodies. Come and discover the miracles of fungi right here. You will find Fungi Education curriculum resources below.

What you see matters

Citizen Science: We have established a scientific collection standard, so that people interested in fungi can properly collect their own specimens and information.

Children's Fungi Education Books; the seven best ...

https://a-z-animals.com/reviews/the-best-childrens-books-about-fungi-reviewed-and-ranked/

THE 7 BEST CHILDREN'S BOOKS ABOUT FUNGI —

MASON GOES MUSHROOMING

- 32 pages.
- Recommended for children ages 4 through 9.
- A whimsical story about a boy and his dog foraging for mushrooms in Vermont.

Mason Goes Mushrooming is an illustrated story, written in a classic children's book format. As such, it interweaves educational ideas with an engaging story about a young boy who sets off into the woods with his <u>dog</u>.

Their goal is to forage for mushrooms, a practice that requires some knowledge and expertise. The watercolor images set the imaginative tone and reflect just how exciting and magical mushrooming can be.

This is a great pick for anyone looking to shake their child's common fears about mushrooms. It's also excellent for families that plan to go mushrooming sometime soon and would like to give their children a good idea of what it's all about.

Instead of a simple walk in the woods, Mason shows us that mushrooming can be a magical journey through the imagination. The book is for children 4 to 9 years old, 32 pages long, and available on Kindle and in hardcover formats



MUSHROOM RAIN

- 32 pages.
- Customers recommend this book for children ages 4 through 8.
- Describes the wide variety of mushrooms that spring up following rain

Written for 4- to 8-year-olds, *Mushroom Rain* explores all of the ideas and interesting things about mushrooms that adults know and love. From the underground information networks to the wild and fascinating expressions of fungi in nature, your child will get an appreciation for the wonder that fungi inspire.

The book even explores how fungi are related to humans, uncovers the nature of the fruiting body, and touches on some of the unique and bizarre species you might not be familiar with. For example, did you know that some mushrooms shine neon green when it's dark? *Mushroom Rain* is 32 pages long, available on Kindle and in hardcover, and has an excellent 4.9/5-star rating on Amazon.



THE MUSHROOM FAN CLUB

- 56 pages.
- Recommended for children ages 6 and older.
- Made it to the best of 2018 lists from Quail & Quire and the Globe and Mail
- Kids learn about the strikingly beautiful coral mushroom
- Customers rate this book 4.9 out of five stars

Appearing on the "Best of 2018" lists of big names like *Globe and Mail* and *Quill & Quire, The Mushroom Fan Club* is an imaginative and illustrative children's book by Elise Gravel.

The story is about mushroom hunting, one of the author's favorite family pastimes. Instead of focusing on science, however, Gravel unweaves the wonder of mushrooming by turning all life forms into English-speaking, curious characters in the story.

All of these characters tell their story in personal terms rather than scientific detail. Children who read this book might see the forest floor in new ways, engaging with the natural world as if it were intelligent, sentient, and friendly.

The Mushroom Fan Club was written for kids 6 and older, is 56 pages long, available in Kindle, Comixology, and Hardcover formats. It's also extremely well-rated with over 400 5-star reviews on Amazon.



MUSHROOMS OF THE WORLD WITH PICTURES TO COLOR (DOVER NATURE COLORING BOOK)

- 48 pages.
- Recommended for children ages 8 and older.
- A coloring book with 92 mushroom species to color.

If your child is a visual learner, this is the perfect fungi book for them. Detailed and specific photos of more than 90 species of mushrooms are ready to be colored in. The images are illustrations, but they're near-exact replicas of the real thing. Alongside the color-in pictures are clear descriptions, written for 8 to 18-year-olds, that inform children about the important details of various mushrooms.

For example, they'll know which species are poisonous, which are safe to eat, how those species interact with their ecosystems, and much more. There's also a section that gives general details about mushrooms and the fungi life cycle.

This book is a perfect way for any child who's curious about mushrooms to explore their creativity while generating a deep interest in fungi. *Mushrooms of the World with*

Pictures to Color is 48 pages long, available in paperback, and has a fantastic 4.7/5-star rating on Amazon.



NATURE'S TREASURES: TALES OF MORE THAN 100 EXTRAORDINARY OBJECTS FROM NATURE (DK TREASURES)

- 192 pages.
- Customers recommend this book for children ages 5 through 9.
- Perfect for children between the ages of seven and nine interested in nature
- Brimming with all sorts of different animal facts
- Customers rate this book 4.9 out of five stars

Nature's Treasures details all of the primary sections of life on this planet, looking into animals, plants, fungi, algae, and even rock formations. Your child will traverse a wide geographical range as well, learning about how these aspects of the world interact from far and wide. While it's a generally scientific book written for 7 to 9-year-olds, it still takes on a storytelling style and engages readers with a narrative. The story pieces itself together by focusing on various objects that occur naturally in the world, detailing them with beautiful photos and graphics. The book will resonate points of deep interest for any child who's interested in various aspects of the natural world. It is 192 pages long, available on Kindle and in hardcover format, and has an exceptional 4.9/5-star rating on Amazon.



HUMONGOUS FUNGUS (UNDERGROUND AND ALL AROUND)

- 64 pages.
- Recommended for children ages 7 through 9.
- Filled with gorgeous illustrations by Wenjia Tang, a popular freelance illustrator.

Humongous Fungus is a quintessential children's science book. It's equipped with engaging illustrations and snappy turns of phrase that will transform your child's ideas about fungi from sticky, smelly growths into a wonderous walk of life. The science in the book is soft, entering into the narrative both through fun language and interesting illustrations. In many ways, the science is slipped into the story like crushed-up medicine in a tasty treat.

Your child will learn about the microscopic fungi floating through your yard as well as the humongous networks of fungi that power our forests. They'll also explore how fungi are used as medicine, how species usually pop out more clearly in the fall, and how they can even be foraged right from the forest floor in some cases.

All the while, you're taken on a soft and easy journey with the aid of excellent artwork and storytelling craft. The book was written for 7 to 9-year-olds, is 64 pages long, and has a 4.9/5-star rating on Amazon. It is also available on Kindle and in hardcover formats.



FUNGARIUM: WELCOME TO THE MUSEUM

- 80 pages.
- Recommended for readers ages 8 through 12.
- A detailed survey of all types of fungi.

Fungarium is a little more comprehensive and intended for adolescent readers aged 8-12. The book goes into extended detail about particular species of mushrooms and how they interact with the world. As a more scientific read, this is a great option for children who have already expressed a interest in mushrooms. Kids with a love for fungi can use the book as a constant companion, even referencing it to identify some of the fungi around your home.

Fungarium: Welcome to the Museum also details the overwhelmingly positive impact that mushrooms have had on human life. For example, the use of fungi in penicillin.

The book is 80 pages long, available on Kindle and in hardcover formats, and has more than 700 reviews on Amazon with an overall rating of 4.9/5-stars.



HOW TO CHOOSE THE RIGHT CHILDREN'S BOOK ABOUT FUNGI

Selecting one of the books above is easiest when you think of them in terms of your child's current relationship with fungi. Are they scared of fungi? If so, books like *The Mushroom Fan Club* that anthropomorphize fungi might be a good option.

Have they spent a lot of time in the woods, and do they have an interest in exploring the forest more often? Mason Goes Mushrooming is an excellent option for kids who might show an interest in getting out and engaging with fungi in nature.

Those who are more engaged with visuals and creativity might benefit from *Mushrooms of The World*. Kids with a general interest in science and a willingness to engage with new topics might love *Humongous Fungus* as it's scientific but smoothly tailored for children to learn from.

NORTHEAST MYCOLOGICAL FEDERATION - NEMF

www.nemf.org

There's a wealth of mycology resources available on the Northeast Mycological Federation's website. And any one of these resources, for example: <u>Dianna Smith:</u> <u>Fungikingdom.net</u>, will in turn refer you to numerous other on-line resources.

MYCOLOGY RESOURCES

https://www.nemf.org/mycology-resources/field-guides-and-monographs/ https://www.nemf.org/mycology-resources/basic-key-to-gilled-mushrooms/ https://www.nemf.org/mycology-resources/basic-key-to-non-gilled-mushrooms/

https://www.nemf.org/mycology-resources/field-guides-and-monographs/ https://www.nemf.org/mycology-resources/information-for-beginners/ https://www.nemf.org/mycology-resources/of-spores-and-scholars-by-rebeccahall/

https://www.nemf.org/mycology-resources/poisonous-lookalikes/

https://www.nemf.org/mycology-resources/mycology-websites/

GENERAL MYCOLOGY WEBSITES

Myco Quebec Gary Lincoff

Gary Emberger: Fungi Growing on Wood
David Fischer: American Mushrooms
Kathie Hodge: The Cornell Mushroom Blog
Michael Kuo: MushroomExpert.Com

Roger Phillips: Roger's Mushrooms Dianna Smith: Fungikingdom.net

Tom Volk's Fungi

Introduction to the Fungi (U.C. Berkeley)

Mykoweb: Michael Wood

Index Fungorum
"Fungi" Magazine

Mushroom: The Journal of Wild Mushrooming

Acta fungorum (Italy)

PROFESSIONAL & SPECIALIST MYCOLOGY WEBSITES

Index Fungorum

Amanitaceae – Rod Tulloss

Jens H. Petersen/Borgsjö: Clavarioid Genera Key (pdf)

NCBI Taxonomy Browser

Boletaceae - Roy Halling

Kendrick: The Fifth Kingdom

Russulales – Bart Buyck

Russulales – Kibby & Fatto

Home of the Xylariaceae

Pacific Northwest Key Council Keys

MUSHROOM PHOTOGRAPHS

Hugh Earle Smith: Mushroom Photographs from Ft. Bragg

George Barron

Peter Katsaros and Eleanor Yarrow

Peter Russell and Dianna Smith

Dianna Smith

David Work

CalPhotos: Fungi

Taylor Lockwood

DIANNA SMITH

www.fungikingdom.net, www.fungikingdom.org

FUNGIKINGDOM.net is a frequently updated educational site created by mycology enthusiast Dianna Smith to provide amateur mushroom collectors access to informative lessons, presentations, photos and descriptions of fungi common to northeastern NA.

This site has a wealth of information pertaining to: mycology lessons, articles, fungi photos, descriptions and field guide recommendations.

MYCOLOGY EDUCATION

• CO-EVOLUTION of EARTH's SYSTEMS & LIFE FORMS Over the Past 4.6 Billion Years: Focus on Fungi: Pt. 1 of 2 · CO-EVOLUTION of EARTH's SYSTEMS & LIFE FORMS Over the Past 4.6 Billion Years: Focus on Fungi: Pt. 2 of 2 · BIBLIOGRAPHY: Presentation on the Co-Evolution of Life's Systems and Forms: Focus on Fungi by Dianna Smith · POLYPORES: Fun(gi) for All Seasons by

Dianna Smith · AN INTRODUCTION TO MYCOLOGY & The Amazing Fungi Kingdom · FUNGI KINGDOM - THE BIG PICTURE by Dianna Smith · AGARICALES: Characteristics of Select families by Dianna Smith · MACROSCOPIC CHACTERISTICS OF THE MAJOR MORPHOLOGICAL GROUPS OF FUNGI by Dianna Smith · The BOLETACEAE Family (The Boletes) by Dianna Smith · ATYPICAL 'BOLETES' IN THE BOLETALES ORDER by Dianna Smith · MYCO-SPEAK Presentation by Dianna Smith · THE MEANING OF SCIENTIFIC NAMES FOR FUNGI by Dianna Smith · ONE HUNDRED+ EDIBLE MUSHROOMS & TOXIC LOOKALIKES by Dianna Smith · LACTARIUS & LACTIFLUUS Presentation by Dianna Smith · RUSSULA in Northeastern N.A. by Dianna Smith · MEDICINAL MUSHROOMS: Hype, Facts & Hope by Dianna Smith · FUNGI and THEIR ASSOCIATED TREES by Dianna Smith · RESISTANCE IS FUTILE: the Allure of Corticioid Fungi · INTRODUCTION TO MYCOFLORA: THE POWER OF CITIZEN SCIENCE · EDIBLE MUSHROOMS & POISONOUS LOOKALIKES

ARTICLES

ADVANCED CHECKLIST OF FUNGI COMMON TO Northeast N.A. · TAXONOMIC CLASSIFICATION of MACROFUNGI · FUNGI NAME CHANGES · NEW NAMES FOR FUNGI · MYCO-SPEAK (Glossary of Mycological Terms) · WHAT FUNGI NAMES MEAN by Dianna Smith · MUSHROOM NUTRIENTS by Dianna Smith · EDIBLE POLYPORES by Dianna Smith · SAPROTROPHIC FUNGI That Grow from Dead Wood · 100+ SPRING SEASON FUNGI OF THE NORTHEAST

QUICK LINKS TO FUNGI PHOTOS & DESCRIPTIONS

- ASCO CUPS
- ASCO FLASKS
- BOLETES: SPONGE-PORED FUNGI
- CANTHARELLOID FUNGI
- CLUBS, CORALS, 'CAULIFLOWERS' & FIBER FANS
- CRUST FUNGI & STEREUMS
- GASTEROID FUNGI (Bird's Nests, Earth Stars, Puffballs & Stinkhorns!)
- GELATINOUS & RUBBERY FUNGI
- GILLED MUSHROOMS: Light-spored
- GILLED MUSHROOMS: Colored & Dark-spored
- LACTARIUS, LACTIFLUUS and RUSSULA
- POLYPORES
- TOOTHED (Spines)
- ASCOMYCOTA: Cup Shaped Fungi