

dcr

Massachusetts



The newsletter for owners of land protected by a Watershed Preservation Restriction (WPR) held by the Department of Conservation and Recreation (DCR), Division of Water Supply Protection.

Summer 2018

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Foray Anyone?

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Photo : Jim Taylor

Watershed Currents

The Magic of Mushrooms

A Different Kind of Internet



An array of mushrooms you may find in the forest. A deep red Bicolor Bolete emerges from the leaf litter (top left). An Orange Polypore grows from dead wood. Also note the lichen that grows on the granite boulder in the foreground of this image (top right).



A cluster of Honey Mushrooms cling to an old stump. Check out the deep-set gills under the cap (bottom right). Turkey Tail mushrooms, part of a sub-group known as "Shelf Fungus" due to their form and growth habit, grow on the side of a downed tree (bottom left).



Photos (clockwise from top left) : Ken MacKenzie, Jim Taylor, Ginny Dautreuil, Ginny Dautreuil.

As you ramble through the brambles on your land, you will see some fascinating expressions of nature. Some are lush green plants, others are animals – perhaps furry with four legs or maybe winged and feathered. But what about all those different kinds of mushrooms?

Many seem to pop up out of nowhere after the rain. There are lichens make their home cemented to rocks. Also consider the molds that break down everything organic when the life cycle ends – and begins anew, freeing up the forest chemistry to nourish the environment all over again. Technically they all fall under the umbrella of Mycology, the study of mushrooms, fungus, rot, molds, lichen and all other non-photosynthesizing growth.

Mycology is a vast, complex subject which is recently becoming better understood with the introduction of genetic coding. Many new connections have been made and many old assumptions dispelled, so the body of knowledge is changing rapidly.

Over the last few years I have studied the role mycology plays in forest ecology. I have brought new knowledge and understanding into my WPR stewardship work by attending mycology conferences that include lectures and workshops as well as group forays in search of mushrooms, lichen and other fungal growth.

The role mycological activity plays in forest health is much more important than once thought. Only in the last few years has it become common knowledge that there is a "Mycelial net," a fibrous subterranean network of Mycelium that is essential for the proliferation of photosynthesizing plants. It acts like a tubular transport network, facilitating the uptake of water, nitrogen, and nutrients, as well as the return of energy to the soil, the Mycelium themselves and other surrounding plants. Some of these organisms stretch on for quite a distance, connecting plants together.

It has been suggested that forest growth is not so much a competition but more of a collaboration, working through this net, sharing energy throughout the seasons and life cycles. Perhaps you have seen whitish fibers while digging in long undisturbed soils. Discovery of these findings has given rise to interest in no-till farming as well as reinforcing the idea of non-disturbance of established forest growth.

Mushrooms are one of the most obvious expressions of this hidden world. The mushroom itself is the "fruiting body" (much like a tomato or a zucchini), renewing the fungus' life-cycle through spore dispersion. Many of us think of mushrooms as a great pizza topping or a tasty addition to quiche, but some are dangerously toxic, so it is essential to know your mushrooms if you plan to harvest them for eating.

Meet the Staff

Ken MacKenzie**NR's Acting Director**

Ken MacKenzie has been in the field of Ecology and Wildlife Management for almost 20 years. He joined the Division of Water Supply Protection's Natural Resource Section as the Senior Wildlife Biologist in November of 2007. Ken leads a team of biologists that conduct research on various wildlife species, including breeding birds, small mammals, common loons, bats, gulls, amphibians, and moose. Additionally, he implements programs that help to mitigate the impacts of certain wildlife species on water quality.

Ken has also been Acting Director of the Natural Resources Section since the beginning of 2018, when Dan Clark (profiled in Watershed Currents Winter 2013) took a new job as the Regional Director for Quabbin



Ken in the field.

Photo: DCR Staff

Reservoir and Ware River. In this expanded role, he supervises several programs, including Land Acquisition, Watershed Preservation Restrictions, wildlife habitat management, and invasive plant management.

Prior to joining DWSP, Ken worked for MassWildlife as a Habitat Biologist, creating and running the Landowner Incentive Program - now the MassWildlife Habitat Management Grant Program (MHMGP; see the article below).

Ken earned his Master's Degree in Natural Resource Management from East Stroudsburg University (PA) while working for the New Jersey Division of Fisheries and Wildlife. He worked on the NJ Black Bear Project; his master's thesis was on the home range and habitat use of Black bears.

Ken is originally from Plymouth, MA but now makes his home in Marlborough with his wife, 7 year-old daughter and 6 year-old son. He spends lots of time coaching and playing with his kids, and enjoys photography, campfires, and being a dad. *-Ken MacKenzie*

MassWildlife Habitat Management Grants**An Opportunity for WPR Land Owners**

The Massachusetts Division of Fisheries and Wildlife (MassWildlife) is responsible for the conservation, restoration, protection, and management of the fish and wildlife resources of Massachusetts. They recognize that land protection is not always enough to protect biological diversity. The MassWildlife Habitat Management Grant Program (MHMGP) was developed to encourage landowners to engage in active habitat management on their properties to maximize the benefit to the various wildlife species of the state.

This program is only open to owners of conserved land in Massachusetts. The money is given to:

- Improve habitat for game species (those species that can be legally hunted, fished, or trapped in MA).
- Manage habitat for Species of Greatest Conservation Need, with special emphasis on State-Endangered and State-Threatened Species.
- Expand recreational opportunities for hunting, fishing, trapping, and other wildlife associated recreation on conserved land.

Applicants can receive between \$10,000 and \$50,000 per grant. This is a reimbursement program, and there is no grantee match requirement. The grant usually opens for applications in the early fall. Sign up for the MassWildlife newsletter (www.mass.gov/lists/masswildlife-monthly-news) for the announcement of this and other funding opportunities.

Some examples of projects that might be funded by MHMGP include: mowing or brush hogging of a field; control of invasive plants (mechanical and chemical); prescribed burning; woodland improvements (thinning, cutting, or girdling of trees); planting of trees or other plants that are beneficial to wildlife; and nest site creation/installation of nesting structures.

Before applying for this grant, please consult with Caroline Raisler, Watershed Preservation Restriction Coordinator, to make sure that your WPR allows the land management practices you have in mind. You can contact James Burnham at MassWildlife (508-389-6343) for questions about the grant. More information can also be found at www.mass.gov/service-details/masswildlife-habitat-management-grant-program.

-Caroline Raisler

Mushrooms - from Page 1

The appreciation of mushrooms (and the underlying mycelium), however, need not be an affair of the palette. Other uses for mushrooms include medicinal tinctures, dyes, specialized paper making, and other forms of art.



The Deadly Amanita. As the name implies, it is poisonous.

Photo: Joe Adamowicz

Each of these organisms favors certain habitats, tree/vegetation types, and other unique sets of conditions. Understanding and finding them is a matter of mixing art and science. Furthering the mycological mystique, many mushroom 'foragers' can be very secretive of that special place they have found where their prizes grow.

If you are now intrigued by the magic of mushrooms and would like to know more, look below for books and consider joining one of the Mycology Clubs. If you are not quite convinced yet, search the internet for "Largest

Living Organism on Earth" and read about the Honey Fungus. For something a bit more hair-raising, look up "Zombie Ant" for the story on the life cycle of the Cordyceps, a particularly amazing mushroom type.

~Jim Taylor

So, You Want To Be a Forager

Foraging for mushrooms doesn't necessarily require a long and exhausting trek one thinks of for a major nature discovery hike. Rather, the mushroom forager only needs to find that special spot in the woods – a rotted log, a damp spot, a recovering burn, or disturbance area – someplace where the mycelium simply find the right conditions to flourish. Anyone can experience the thrill of the subtlest clue resulting in the excitement of hitting the mushroom jackpot. Besides appropriate clothing, footwear, water, and protection from insects and the elements, you will also need some reference books, specific tools and a bit of technique to *foray*.

The Tools

- A good-sized basket to carry your finds
- A flat-tipped, sharp knife for carefully cutting and prying mushrooms out of the ground.
- Magnifying glass or jeweler's loupe for close study
- A well-illustrated, compact mushroom ID book
- A pencil and small notebook to document conditions, locations and anything unusual

The Technique

The best time for a foray is usually within a day or two of a good soaking rain, when many mycological organisms lie in wait to spring forth, in some cases seemingly almost before your eyes. Each mushroom type tends to favor unique characteristics of a particular locale (forest types, slope, terrain, recent burn or regeneration areas). Often times this information can lend a clue to exactly what you are looking at, as well as suggesting other places to find this same organism.

If you are collecting for identification purposes, you need only gather one or two samples. Mushrooms are essential to regeneration, so always leave some behind. Use a flat-tipped knife to dig out the entire stem intact; what lies just below the surface may provide important information.

Be thoughtful of the environment. Do not disturb that which you do not plan to collect. Fill resultant holes. If you roll a log over to see what's there, put it back in place to protect the underlying mycelium. A good forager leaves few traces behind.

Have fun on your foray. However, **DWSP recommends that you DO NOT eat any finds you may come across.** Leave those decisions to an experienced, knowledgeable expert.

~Jim Taylor

Mycology Books

Stamets, Paul. ***Mycelium Running: How Mushrooms Can Help Save the World***, 2005, Ten Speed Press

Lowenfels, Jeff. ***Teaming with Fungi***, 2017, Timber Press

Tudge, Colin. ***Secret Life of Trees***, 2006, Penguin Books

Mycology Clubs

New England Mycological Foundation; www.nemf.org

Boston Mycological Club; www.bostonmycologicalclub.org/

Berkshire Mycological Society; www.bms.iwarp.com

Here are some of the essentials for collecting and studying mushrooms: a basket, a flat-tipped sharp knife, a journal, and a loupe or magnifying glass. Each mushroom possesses unique characteristics, so it is also important to have a reference book, such as this edition of the *Audubon Pocket Guide: Familiar Mushrooms of North America*.

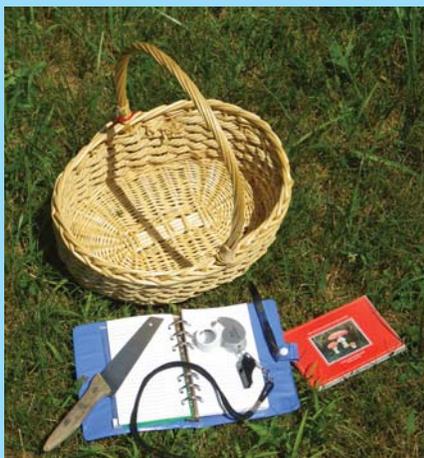


Photo: Jim Taylor

Hunting DCR/DWSP Property

Wachusett Land East of I-190 Now Included

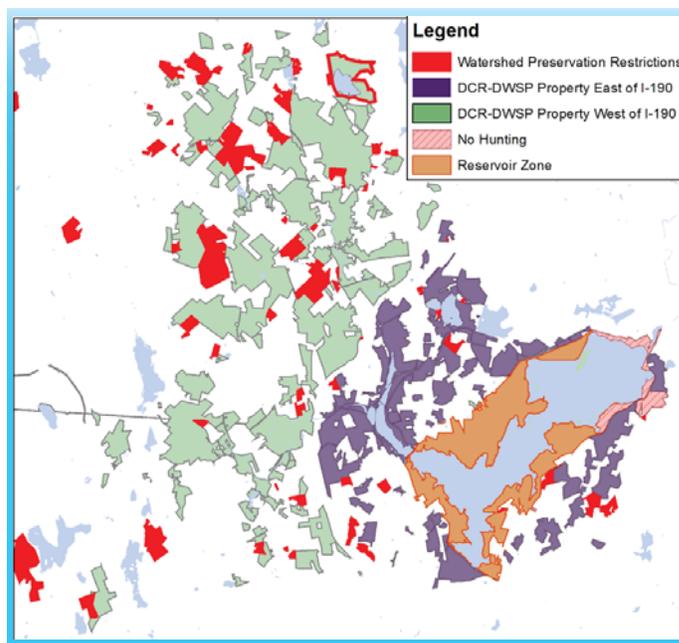
The density of deer and their impacts on forest regeneration is one measure DWSP staff tracks when protecting water quality. Too many deer can diminish the ecological integrity of the forest and reduce the quality of the water that this system provides to 2.5 million people.

DWSP's ownership of protected lands for the Wachusett Reservoir is characterized by small parcels scattered around the 74,800 acre watershed, interspersed with WPRs and other private land. There are 15 WPRs in the portion of the Wachusett watershed east of I-190 and 49 west of I-190.

DWSP opened its lands west of I-190 to hunting in 1996, but hunting remained prohibited on lands east of I-190. Over the past few years, DWSP foresters began to see significant impact on forest regeneration on the un-hunted lands, which are closer to the Wachusett Reservoir itself. In response, staff estimated deer populations and documented forest regeneration impact, using recently published scientific information to derive deer density based on deer droppings. They found that in the areas open to hunting, deer density was low and had little impact on the forest; however, where hunting was still prohibited, deer density was significantly higher and impacting forest regeneration. DWSP concluded that additional deer hunting would improve the health of the watershed forest.

Beginning this fall, DWSP is expanding its Deer Management Program in the Wachusett Reservoir watershed (see map insert). Most areas east of I-190 will now be treated basically the same as the previously-hunted land west of I-190. Hunting for all state seasons and game is now permitted in both of these areas. A DWSP hunting permit is required to hunt these properties and is valid for five years. Dogs, however, are not allowed on the property east of I-190. On the lands closest to the reservoir, labeled

2018 Wachusett Watershed Hunt Zone



the “Reservoir Zone”, there will be a controlled deer hunt, with a separate annual permit selected by lottery.

The Quabbin Controlled Deer hunt will remain unchanged from previous years. The Ware River watershed will remain open to the public for hunting without any required special permits from DWSP. Most WPRs leave it up to the landowner to decide whether or not to allow hunting on their property, though a few WPRs explicitly require or prohibit public access for hunting.

For information about hunting in the Wachusett Reservoir watershed, including links to obtain permits and an interactive map of hunting areas, go to: www.mass.gov/service-details/wachusett-reservoir-watershed-deer-hunt.

For information about the Quabbin Controlled Deer Hunt, including links to obtain permits and enter the annual lottery, go to: www.mass.gov/service-details/quabbin-reservoir-watershed-deer-hunt.

~Caroline Raisler

dcr
Massachusetts



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