



Overseeing the Overseers

DCR/DWSP Citizen Advisory Committees

Justin Gonsor, Quabbin Visitor Center Staff



Numerous laws have been enacted over the years to ensure the adequate and safe flow of drinking water to the metropolitan Boston region. Citizen advisory boards created through some of these legislative mandates provide input on policies and regulations related to the Quabbin Reservoir, Ware River, Wachusett Reservoir, and Sudbury Reservoir watersheds.

QWAC

The Quabbin Watershed Advisory Committee (QWAC) was created by the Massachusetts Resource Authority Act of 1984 and is codified under Massachusetts General Laws (MGL) chapter 92A½, section 13. QWAC's mission is to advise the Division of Water Supply Protection (DWSP) on its policies and regulations regarding fishing, boating and other recreational activities, and environmental matters within the Quabbin Reservoir Watershed.

The committee consists of one member from the general public, appointed by the DCR Commissioner, as well as repre-

sentatives selected from ten different organizations: Massachusetts Council of Sportsmen; Trout Unlimited; Quabbin Fisherman's Association; Worcester County League of Sportsmen; North Worcester County Quabbin Anglers; Massachusetts Audubon Society; Swift River Valley Historical Society; Massachusetts Wildlife Federation; New England Sierra Club; and Friends of Quabbin, Inc. Meetings are generally held 4-5 times a year and usually take place on Mondays at 7:30 p.m. in the Quabbin Visitors Center in Belcher-town. The original nine members of QWAC were sworn into service on May 17, 1985 (see picture on Page 5).

QWAC was thrust into the public eye in 1987 when the committee gave their

Continued on Page 4



Quabbin Reservoir is crystal clear.

NUMBER 35

Fall 2016

Massachusetts Department
of Conservation and Recreation
Division of Water Supply Protection
www.mass.gov/dcr/watersupply.htm

Plight of the Bumblebee

Ecologically Important Pollinating Species are in Decline By Jillian Whitney, DCR Wildlife Biologist

Both native bees and European honeybees pollinate 35% of the world's food crops. All bees are of equal importance. Drastic declines in their numbers, however, has been a hot topic for several years now; many government and non-profit agencies are banding together to get answers and save the bees. Without bees, our world would look like a much different place.

Some species of moths, flies, wasps, beetles, butterflies, bats, birds and mammals are pollinators. The 25,000 bee species around the world are, by far, the most effective pollinators. Bees pollinate flowers by moving pollen

from the anthers (male part) to the stigmas (female part) of flowers as they move about collecting nectar. Eighty percent of all flowering plants are pollinated by animals and the majority rely on bees to do that job.

North America is home to 4,000 of these bee species. In Massachusetts you can commonly see species of Bumblebees, Solitary Bees, Social Bees and the European Honeybee. The monetary value of bees in the United States alone is over 15 billion dollars!

Both wild and managed bees require specific habitat and food to thrive. Recent declines of both native bee species and the European honeybee has prompted much attention to find the cause and solve the problem. Just 60 years ago there were 6 million beehives in the United States, and today there are only 2.5 million. Some native species populations have seen a 90% decline over the past 30 years.

Since 2006 there has been an intense focus on this issue. The Environmental Protection Agency (EPA) and United States Department of Agriculture (USDA) released a report in 2013 listing some major reasons for the drastic population loss, including: habitat loss and fragmentation, parasites and disease, poor nutrition, and pesticide exposure. Given that bees pollinate 75% of all crops in the United States it is vital that the efforts to fix this issue remain a priority.

The Massachusetts Department of Agriculture (MDAR) is currently working on a pollinator protection plan for the Commonwealth. The MDAR apiary program supports beekeepers,



Bumble Bees, like this one feeding on the nectar of a Globe Thistle, provides the vital ecological role of a pollinator.

pesticide applicators, farmers, land managers, educators, regulators and government officials.

With so many agencies collaborating there is hope that this problem will be fixed. Here are some ways you can help, too!

- Plant a pollinator garden (<http://blogs.massaudubon.org/yourgreatoutdoors/six-native-plants-to-grow-for-pollinators/>)
- Avoid or minimize pesticide use (<http://agr.wa.gov/fp/pubs/docs/388-TenWaysToProtect-BeesFromPesticides.pdf>)

And then there is honey...

Another 'bee-nefit' pollinators provide is honey.

Did you know that 16 ounces of honey results from the equivalent of 1,152 bees, traveling 112,000 miles, visiting 4.5 million flowers?

Continued on Page 6

In This Issue:

Overseeing Overseers 1
Citizen Advisory Groups

Pollinators Plight 2
An ecologically important species in decline

Phosphorus 3
New state laws to keep water safe

Kids Corner 7
Connect the dots

Wachusett Wins Award 8
Kudos for Watershed Management

Photo/Image Credits

- Page 1 Quabbin Visitors Center
- Page 2 Univ. of Mass, Anne Avrill Research Group
- Page 3 Kelley Freda
- Page 4 Kelley Freda
- Page 5 Top - DCR Archives
Right - Quabbin Visitors Center
- Page 6 Top - Univ of Mass, Anne Avrill Research Group
Bottom - Kelley Freda
- Page 8 DCR Staff



Quabbin Sunrise by Dale Monette

Managing Phosphorus

New regulations are good for water quality. By Kelley Freda, DCR/DWSP Environmental Analyst

Nutrients such as nitrogen and phosphorus are a normal part of aquatic ecosystems at low levels. When there is an abundance in surface waters, they act as fertilizer, causing excessive growth of algae and weeds. Algae are short lived, and when they die and decay, they consume the available oxygen in the water. The lack of oxygen can kill fish and animals and it can cause water bodies to become cloudy and odorous, limiting recreational activity.

Major sources of nutrients to streams and groundwater are dissolution of natural minerals, effluent from sewage-treatment plants, faulty septic systems, animal waste and fertilizer application. Although controlling the input from natural sources is almost impossible, the other sources are relatively easy to control. Some of the ways to minimize nutrients from entering drinking water supplies include: implementing existing laws that limit the amount of phosphorus being discharged from waste water treatment plants; ensuring that septic systems are working as designed; picking up pet waste; and stopping, or at least limiting, the use of fertilizers containing phosphorus.

Phosphorus from fertilizer can infiltrate through the soil into groundwater and then flow into surface waters. It can also be washed off the ground surface with rainfall (especially if it is left on or applied to impervious surfaces), entering into storm drains that flow to a nearby water source, or directly into surface waters.

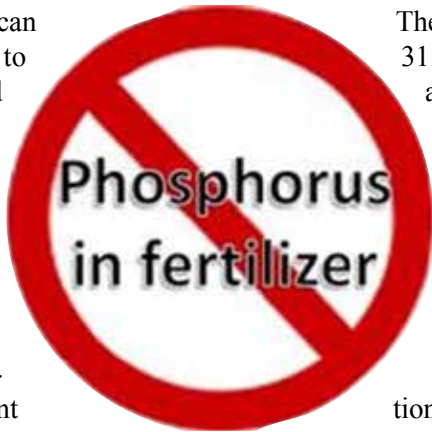
In an effort to control phosphorus input from fertilizers, the Massa-

chusetts Legislature passed An Act Relative to the Regulation of Plant Nutrients in 2012. This law directed the Massachusetts Department of Agricultural Resources (MDAR) to develop regulations that ensure plant nutrients are applied in an effective manner for maintaining healthy lands while minimizing the impacts of the nutrients on surface and ground water resources.

The regulations, 330 CMR 31.00, impact anyone who applies plant nutrient materials to both agricultural and non-agricultural land, including lawn and turf. These regulations apply to individual homeowners and landscapers.

Some specific restrictions and requirements for use of nutrient application on turf and lawns from these regulations include:

- Phosphorus-containing fertilizer may only be applied when a soil



A 2010 algal bloom in the Sudbury Reservoir, which serves as an emergency water supply. DCR's watershed management has helped prevent this type of event from occurring in either the Quabbin or Wachusett Reservoirs, the active source water supply for over 2 million people. While this bloom may be a temporary condition, its effects on the aquatic ecosystem can have long-term effects.

test indicates that it is needed or when a lawn is being established, patched or renovated.

- Do not apply plant nutrient materials to sidewalks or other impervious surfaces. Any that lands on these surfaces must

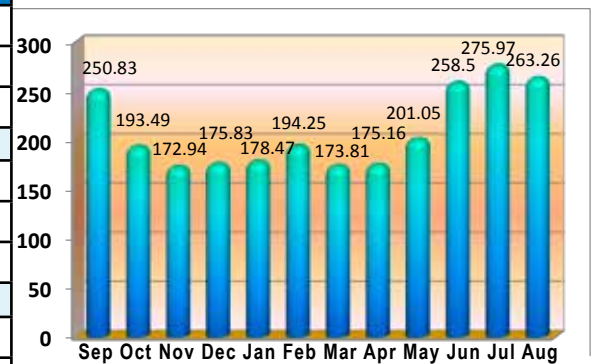
Continued on Page 6

- Reservoir Watch - September 2015 to August 2016

Reservoir levels and 12-month precipitation

Reservoir	Quabbin	Wachusett
Minimum	521.93'	388.21'
% Full	85.2%	86.6%
Date	8/31/16	5/16-17/16
Maximum	526.39'	391.49'
% Full	93.3%	93.0%
Date	5/15-16/16	2/8/16
Precip.	38.32"	32.10"
Average	47.91"	44.87"

System-wide 12-month Water Usage (in million gallons per day)



Massachusetts has been experiencing a drought since July 2016, with most of the state currently with a Drought Warning status. Quabbin Reservoir's size has allowed it to stay in "Normal" operating range of above 80% capacity for quite some time. The drought, however, has taken a toll; on November 12, 2016, the Quabbin Reservoir dipped to 79% capacity, which is the "Below Normal" operating range. There are no mandatory restrictions associated with "Below Normal" levels at Quabbin and there is still a long way to go before the "Drought Warning" stage at 65% full. DCR and MWRA encourage residents and businesses to save water wherever they can. There will be more detailed information in the next issue of *Downstream*. **Statewide drought updates: www.mass.gov/eea/drought.**

Advisory Groups

From Page 1

recommendations for Quabbin's first formal Public Access Plan. The next big issue for QWAC to debate was the idea of a controlled white-tailed deer hunt at Quabbin. At a meeting in October of 1989, the committee recognized the forest regeneration problem and supported reducing the deer herd within the Reservation. Quabbin was opened to limited, controlled hunting in 1991, after more than 50 years of no hunting. The Quabbin hunt still takes place to this day and has become a successful model in how to effectively reduce deer density

as well as encouraging ample regeneration of the forest. QWAC continues to receive annual briefings on the deer hunt program and provides DCR recommendations on the program.

WRWAC

The Massachusetts Legislature passed an act in 1995 that created the Ware River Watershed Advisory Committee (WRWAC). This law, found at MGL ch. 92A½, s. 14, relieved QWAC of its advisory duties within the Ware River Watershed (WRW). Like its predecessor, the commit-

tee was formed with the purpose of advising DWSP on its policies and regulations regarding recreational, land use, environmental, wildlife, and habitat matters within the WRW. Similar to QWAC, WRWAC is made up of one member from the general public, appointed by the Commissioner, and representatives from 16 different organizations: Massachusetts Council of Sportsmen; Worcester County League of Sportsmen; Trout Unlimited; A Rod and Gun Club; the Select boards of Barre, Hubbardston, Oakham, and Rutland; the Histori-



Wachusett moonrise.

The MWRA Advisory Board

The Massachusetts Water Resources Authority (MWRA) was created in 1985 to provide safe, reliable drinking water to its member communities. The MWRA Advisory Board was established to represent these communities and provides oversight as the MWRA executed this mission. The Advisory Board has provided guidance on critical water system decisions, from the avoidance of filtration to the recent installation of ultraviolet disinfection at the MWRA water treatment plants.

The Advisory Board has always been concerned with the fiscal relationship between MWRA and the Division of Water Supply Protection, as the MWRA – and its ratepayers – are required by law to fully fund the source water protection activities of the state agency. The Advisory Board worked closely with Senator Stephen Brewer and the Legislature in 2004 to establish the Water Supply Protection Trust to oversee DWSP's funding and budget allocations. Recognizing that including the community/ratepayer perspective was critical to the decisions related to source water protection, the newly formed Trust included a representative from the Advisory Board. Since the creation of the Trust the watershed budget has more than doubled, providing



the Division of Water Supply Protection with the necessary tools to protect the drinking water supply. DWSP has been able to hire the necessary staff, purchase critical equipment and repair vital infrastructure in the watersheds that provide 51 communities their drinking water.

The Advisory Board has consistently supported DCR's watershed operations while playing its signature role

of "constructive critic" to ensure that the right amount of dollars are spent the right way. "The role the Division of Water Supply Protection plays cannot be overstated," said Lou Taverna, MWRA Advisory Board Chairman, who recently stepped up to represent the Advisory Board on the Trust after the retirement of Katherine Haynes Dunphy, who had served on the Trust since its inception.

"The DCR/MWRA water has rightfully been dubbed the best in the country by national organizations. But providing this high quality water to citizens of the Commonwealth begins by maintaining the protection and purity of the water at its source. The Advisory Board is proud to be a part of the Trust that ensures that this mission is fulfilled in a manner that is both thorough and cost-effective."



The initial Quabbin Watershed Advisory Committee take their positions in 1985.

Front row (L-R): Senator Robert D. Wetmore, Representative William Moriarty, and Commissioner of Fisheries, Wildlife, and Recreational Vehicles, Walter Bickford. Second row, MDC Commissioner William Geary, Tom Barnes (sitting in for Anthony Brighenti of Athol – North Worcester County Quabbin Anglers Association), Alexandra Dawson of South Hadley – Sierra Club, Thomas Berube of Barre – Massachusetts Sportsmen's Council, Robert A. Clark of Petersham – Friends of Quabbin, Inc., Joseph Michniewicz of Paxton – Worcester County League of Sportsmen's Clubs, Dr. Betsy Colburn of Lincoln – Massachusetts Audubon Society, William Martell of Belchertown – Quabbin Fisherman's Association, Joseph Trainor of Chelmsford – public member, and Dean Clark of Shrewsbury – Trout Unlimited.

cal Societies of Barre, Hubbardston, Oakham, and Rutland; Massachusetts Wildlife Federation; Massachusetts Audubon Society; Sierra Club; and the Upper Ware River Watershed Association. All appointments to the committee were filled in 1997; in its first year, WRWAC met 15 times to discuss public access issues on DCR lands. Nowadays, the group meets between 5-7 times a year, usually on Thursdays at 7 p.m. at the Franklin Wood Studio (behind the police/fire station) in Rutland.

WRWAC supported DWSP's decision to develop separate Public Access Plans for the Quabbin Reservoir Watershed and the WRW. WRWAC submitted a list of ten specific recommendations regarding DWSP's draft 2000 Public Access Management Plan update, most of which were incorporated into the final plan. WRWAC was once again tapped to advise DWSP in 2009 regarding its next Public Access Management Plan update. WRWAC contributed to a user and abutter survey, helping organize input from recreational user groups as well as from concerned citizens and land abut-

ters to DCR lands.

These two legislatively authorized committees continue to advise DWSP with their insight on controversial topics. At times they have worked together, for example holding several joint meetings to review the findings of the DCR Science and Technical Advisory Committee (STAC) regarding forestry operations in the watershed system; both QWAC and WRWAC will independently assess the Comprehensive Land Management Plan that is being developed as a result of STAC's recommendations.

Working Together

Public input is an integral part of the development and refinement of DWSP's various policies and management plans. The state legislature ensured this component would exist by establishing the watershed citizen advisory committees. DWSP works closely with the advisory committees and relies on their comments, recommendations, suggestions and concerns to develop the best policies possible for the management of the watershed system. 💧



The Water Supply Citizens Advisory Committee

The Water Supply Citizens Advisory Committee (WSCAC), was originally formed in 1977 to review a proposed diversion of the Connecticut River for water supply to the metropolitan Boston area. When, the Massachusetts Water Resource Authority (MWRA) assumed responsibility for the delivery, treatment, and distribution of water in the system in 1985, it also formally adopted WSCAC as its official water supply advisory group at that time. The committee is able to conduct independent research devoted to more intensive study of particular watershed issues.

As an independent committee funded by the MWRA, WSCAC provides an ongoing source of public input for the MWRA and state agencies such as the Department of Conservation and Recreation (DCR) and the Department of Environmental Protection (DEP). The committee has participated in securing passage of state legislation, including the Interbasin Transfer Act of 1983, the Water Management Act of 1985, and the Watershed Protection Act of 1992. The committee's current focus is water quality – source protection and management of the watersheds, reservoirs, and MWRA's distribution system.

WSCAC's diverse membership is balanced geographically and by interest, representing source water communities, watershed associations, water utilities, environmental groups, business, water users, and other interested parties. The MWRA supports WSCAC with funding for office space, expenses, and a staff selected by and answerable to the committee. DCR also supports the committee by providing utilities and office space at Quabbin Reservoir's Blue Meadow Conference Center. The committee currently meets monthly in locations around the state.

Pollinator Plight

- from Page 2

- Provide a source of water for bees (<http://honeybeesuite.com/water-sources-for-bees/>).
- Provide nesting habitat for bees (www.xerces.org/wp-content/uploads/2008/10/nests_for_native_bees1.pdf).

It is so easy to take our food for granted. Try to remind yourself the next time you take a bite out of that freshly grown New England apple that without the bees those apples would be hard to come by. 💧



The European Honey Bee, like the one shown above, is just one species responsible for the pollination and propagation of 75% of commercially grown crops.

Seven Fun Facts About Bees

1. Bees have six legs and are therefore classified as insects.
2. Bees have a straw-like tongue, called a proboscis, to suck up nectar.
3. The four stages of bee development are egg, larvae, pupae and adult bee.
4. Bumblebees, like honeybees, live in colonies.
5. Honey is the ONLY food that includes everything to sustain life.
6. Honeybees are the only bees that die after they sting.
7. Bumblebees are not aggressive, but if they do feel threatened, they will raise one of their middle legs (or both middle legs) to warn you and will show you their stinger before stinging.

Phosphorus

- from Page 3



A DCR staff member takes a study sample of an algal bloom.

- be swept back onto the grass or cleaned up.
- No applications of plant nutrients shall be made between December 1 and March 1, to frozen and/or snow covered soil, to saturated soil, or soils that frequently flood, within 20 feet of waterways if using a broadcast method, or 10 feet if using a more targeted application, within a Zone I of a public water supply well or within 100 feet of surface waters that are used for public drinking water supply.
- Plant nutrient amounts that may be applied shall not exceed UMass Guidelines for plant nutrient application rates to turf.

- Soil tests for nutrient analysis shall be obtained from UMass Extension Soil Testing Lab or a laboratory using methods and procedures recommended by UMass. A soil test is valid for 3 years.

A complete list of the restrictions and text of the regulations can be found at www.mass.gov/eea/docs/agr/pesticides/docs/plant-nutrient-regulations.pdf.

Eutrophication is the process by which a body of water becomes enriched in dissolved nutrients that stimulate the growth of aquatic plant life, usually resulting in the depletion of dissolved oxygen. EPA Water Quality Criteria recommend a concentration of no more than 0.050 mg/L total phosphorus in tributary streams in order to prevent accelerated eutrophication of receiving water bodies.

Phosphorus is measured as part of the regular water quality monitoring programs in the Wachusett Reservoir, Ware River, and Quabbin Reservoir watersheds. Annual mean concentrations for Wachusett tributaries ranged from 0.015 mg/L to 0.050 mg/L. Quabbin and Ware tributary averages were 0.008 mg/L to 0.032

mg/L. Higher numbers could be attributed to extreme weather events, when heavy rainfall washes sediments and/or fertilizer into the streams. For more information on water quality in the watershed system, go to www.mass.gov/eea/agencies/dcr/water-res-protection/water-quality-monitoring/water-quality.html

DCR encourages the public to help keep phosphorus out of the state's waters. According to MDAR, most lawns in Massachusetts do not need additional phosphorus for healthy growth. Therefore, please choose the fertilizer with 0% phosphorus (usually the middle number) listed on the bag.

Following the newly enacted fertilizer regulations will help to reduce the chance of surface and ground waters becoming impacted by an over abundance of nutrients and provide high quality water for drinking and recreation. 💧



Quabbin calm.

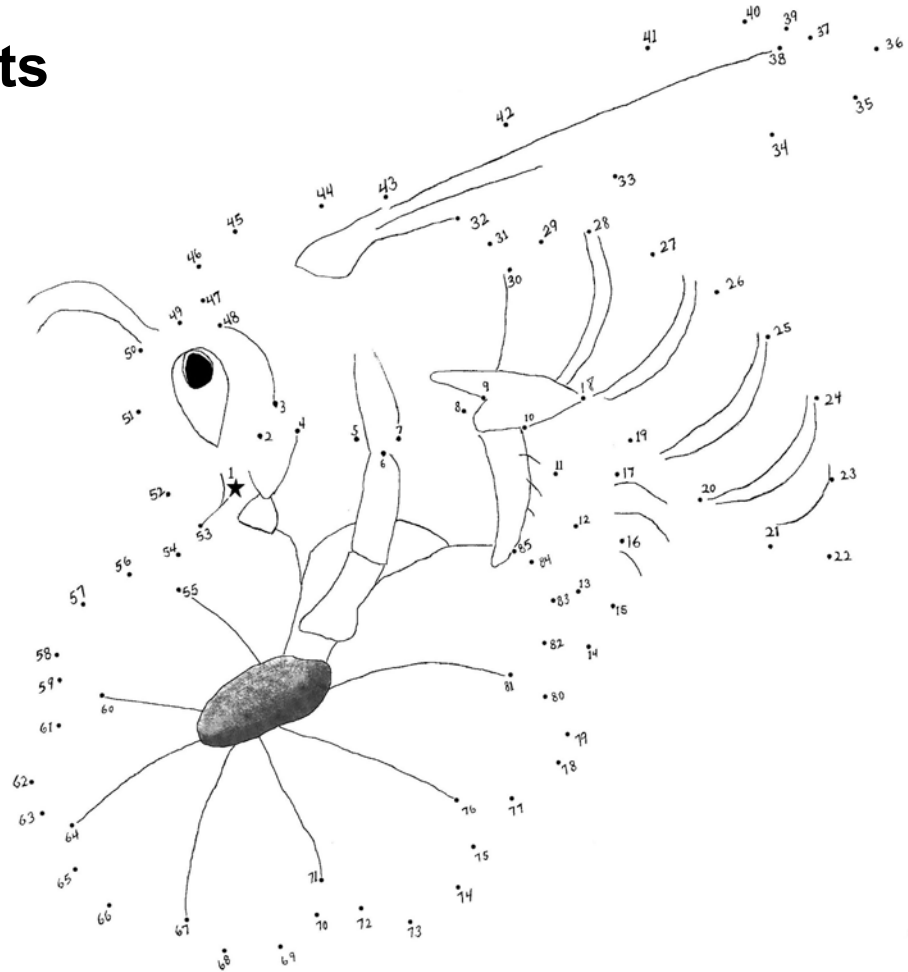
Kids Corner

Connect the Dots

By Kris Keevan, DCR Staff

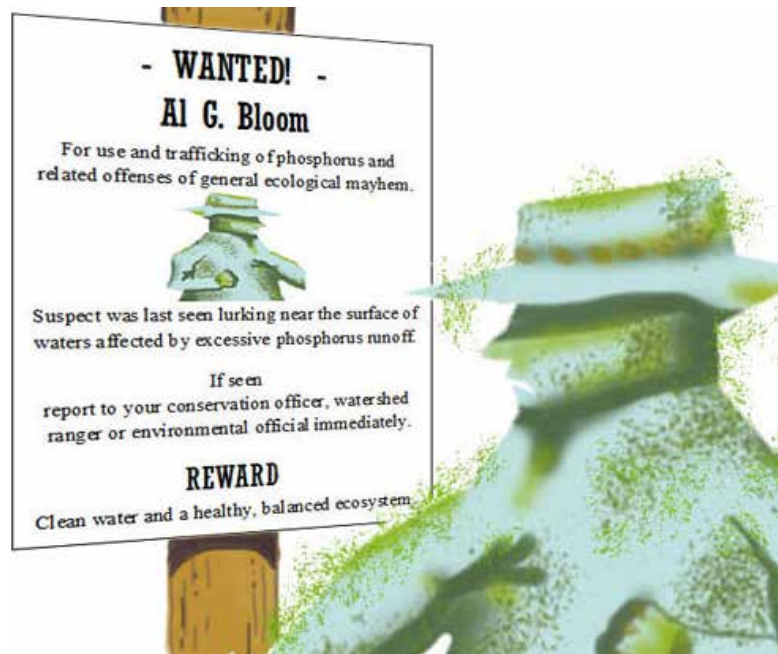
Connecting the dots of this puzzle, numbered 1 to 85, will reveal something related to one of the topics discussed in this issue of *Downstream*.

Have fun!



And another thing...

By J. Taylor



"Curses, they're on to me!"

For more information about...

Watershed Advisory Committees
Quabbin Watershed Advisory Committee (QWAC) and Ware River Watershed Advisory Committee (WRWAC)
www.mass.gov/eea/agencies/dcr/water-res-protection/watershed-mgmt/watershed-advisory-committees.html
Water Supply Citizens Advisory Committee (WSCAC)
www.mwra.state.ma.us/02org/html/wscac.htm
MWRA Advisory Board
<http://mwradvisoryboard.com>

Phosphorous Regulations
DCR Division of Water Supply Protection
www.mass.gov/eea/docs/dcr/watersupply/watershed/dwspphosphorousbrochure.pdf
MA Department of Agricultural Resources
www.mass.gov/eea/docs/agr/pesticides/docs/plant-nutrient-regs-turf-and-lawns-factsheet.pdf

Honeybees and Pollinators
State Apiary Program
www.mass.gov/eea/agencies/agr/farm-products/apiary/
National Pollinator Week
www.mass.gov/eea/pr-2016/massachusetts-pollinator-week.html; www.pollinator.org

DWSP/Wachusett Wins Source Protection Award

Joel Zimmerman, DCR/DWSP Planner

For more than 35 years, the first week of May has been celebrated as Drinking Water Week. National, regional, and state-wide organizations use the opportunity to publicize the importance of drinking water supplies and recognize the agencies and people that provide this essential service to daily life.

As part of the 2016 Massachusetts festivities, the state Department of Environmental Protection honored DCR's Division of Water Supply Protection's Wachusett Reservoir staff with a Source Water Protection Award. Yvette dePeiza, Program Director of DEP's Drinking Water Program, noted several worthy components of DCR's watershed protection program, including, "working with farmers and the public to reduce impacts from domestic animals; conducting an impressive



DCR's Wachusett Watershed team proudly accept a Source Protection Award at the May 3, 2016 Drinking Water week ceremony. L-R: DEP Commissioner Martin Suuberg; DCR staff Pat Austin, Larry Pistrang, Jonathan Yeo, Derek Liimatainen, Greg Buzzell, Dan Clark, and Scott Murphy.

water quality monitoring program in the watershed; and partnering with, educating, and training municipal officials and staff in the towns within the watershed to protect Wachusett Reservoir." DePeiza went on to say, "It is no easy task to keep up with the ever-evolving federal and state drinking water regulations. While most systems

strive just to comply with the regulations, [the Wachusett staff have] put forth an extra effort for many years."

DCR is appreciative of the award and will continue to fulfill its legislative mandate to provide "pure water" to the MA Water Resources Authority for treatment and distribution to over 2 million people. 💧

downstream

Department of Conservation and Recreation
Division of Water Supply Protection
Office of Watershed Management
180 Beaman Street
West Boylston, MA 01583
(508) 792-7806 ex. 363

Downstream is produced twice a year by the Massachusetts Department of Conservation and Recreation, Division of Water Supply Protection. It includes articles of interest to the Watershed System communities. Our goal is to inform the public about watershed protection issues and activities, provide a conduit for public input and promote environmentally responsible land management practices.

Governor: Charles E. Baker
Lt. Governor: Karyn D. Polito
EOEEA Secretary: Matthew A. Beaton
DCR Commissioner: Leo Roy
DWSP Director: Jonathan L. Yeo
Downstream Editor: James E. Taylor

