



The Land Steward

Preserving open space since 1977

Vol. 1 No. 2 • Summer 2014

Watershed Conservation



Ever wonder where the rain or melted snow goes after it leaves your gutters, your lawn or flows down your street or road? Has your or a friend's well gone dry? Will your water tap go dry?

No matter where you live in Bethel, you live in a watershed. You may ask the following question, *“As long as there is good water coming out of my tap, why should I care about the aquifers in Bethel?”* The following is the first of a four-part series that will address the affects of land use changes within watersheds, highlighting the importance of watershed (and its aquifers) conservation and the role the Bethel Land Trust plays in watershed conservation, i.e. preserving forests, wetlands and fields that absorb rainwater and snowmelt, reducing flooding, filtering contaminants from the environment, while preserving aquifer recharge areas.

Much of rainfall gets absorbed by the ground and by plants, or it evaporates back into the sky, eventually falling as rain or snow. This is known as the hydrologic cycle or water cycle. The hydrologic cycle is the circuit of water movement from the atmosphere to the earth and back to the atmosphere again. *Evaporation* and *precipitation* are two key processes in this cycle. *Transpiration* (when plants give off water into the air), *infiltration* and *percolation* (the downward movement of water into the soil), and *condensation* (when water vapor turns liquid -- the opposite of evaporation), are less familiar processes. The groundwater that supplies our wells and the surface waters that form our lakes, rivers, and oceans are where water is stored between these processes.



Where does the ground water end up? In our watersheds. A simple definition of a watershed is the area of land on which precipitation and snow melt drains to a single lowest point body of water such as a stream, lake, pond, wetland, estuary or underground sources called aquifers and springs, ultimately draining into our oceans (Fig.2). Our local watersheds are our local branch of the global hydrologic cycle.

Our Bethel landscape is made up of four watersheds: **1-Aspetuck River Watershed**, **2-Saugautuck River Watershed**, **3-Sympaug Brook Watershed** and the **4-Wolf Pit Brook Watershed** as well as four aquifers: Sympaug Brook Aquifer, East Swamp Aquifer, Dibble's Brook Aquifer and the Limekiln Brook Aquifer and two surface reservoirs, Eureka and Chestnut Ridge, all of which provides water for all of our citizens. Within our watersheds, water (rain and or snow melt) travels over the surface and across farm fields, forestland, suburban lawns, and our city streets, or it seeps into the soil and travels as ground water giving rise to springs and our aquifers. Watersheds supply your drinking water, water for agriculture and manufacturing, offers opportunities for recreation and provide habitat to numerous plants and animals. In essence, watersheds sustain life.



Approximately 4,000 Bethel homes are served by two public water companies, while the balance of our homes are served by private wells.

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BLT Mission

The mission of the Bethel Land Trust is to conserve land in its natural state and to steward the land so that it is available for walking, contemplation, and enjoyment, and as unspoiled habitat for plants and animals.

The Land Steward is published by the land trust for its members, supporters and collaborating supporters.

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From the President

Don Warfield

Dear friends,

What a beautiful summer we are having! Blooming trees, wildflowers, and chirping birds always cheer me up. It's a lovely time of year.

The Bethel Land Trust is the quintessential community organization working for you. Whether you are a hiker, birder, a photographer, a geo-cacher, a runner or another enthusiast, we offer something for everyone.

We are your friends and neighbors that have come together to create a legacy worthy of our children by preserving all that we value most – the critical natural and cultural resources that create a distinctive sense of space, provide a healthy environment, and make us proud to call Bethel home.

As always, the board is hard at work protecting the natural beauty of Bethel, CT. We've completed an ecological survey of each of our preserves, which will lead to the next phase of our preserve stewardship responsibility, developing a management plan for each preserve.

I hope you will find our Newsletters full of articles demonstrating the value of conservation and what is being done right now to foster it and provide opportunities for all of us to enjoy its fruits.

I would like to give special thanks to **Bethel Power Equipment, True Value of Bethel and Ring's End of Bethel** for providing products and equipment used to enhance the Enchanted Trail and in the production of our preserve signs.

Please donate

Your support of the Bethel Land Trust puts you at the center of our critical conservation mission. Our members are vital partners in permanently protecting our land and water resources for recreation, conservation, and reflection.

Your tax deductible donation can be processed online via our website/PayPal or by sending a check. We need your contribution now to help us fund projects for two of our preserves in order to make them more accessible for you.

We take seriously our responsibility to serve the land trust's mission, our members, and the best interests of the organization. That is always our guiding purpose. Please let us know if you have any questions. We are always happy to keep you informed about what we're doing.

Thank you again for supporting our land trust.

Inspired by Nature?

Submit Your Observations from the Field!

Taking a lovely stroll through one of the many Bethel's Nature Preserves or the Enchanted Trail Boardwalk and couldn't resist taking a photo you would like to share? Did you come across a species you can't identify?

We would love to hear about your experience with us and will post photos and experiences on our Facebook site. Email your photos along with a brief description, the preserves you visited and the date to bethel.land.trust.ct@gmail.com. Please limit photo file size to 5MB.





Led National Trail Day Hike June 15, 2014 Franc Preserve

The Bethel Land Trust led a hike exploring the Franc Preserve, Bethel's only town-owned preserve.



Volunteers Welcome!!

DO YOU ENJOY THE EXCITEMENT OF THE OUTDOORS, THE SERENITY OF THE NATURAL WORLD, AND INSPIRING OTHERS TO DISCOVER THE WONDERS AS WELL?

If so, the Bethel Land Trust wants you to become a part of our volunteer team!

WHY VOLUNTEER?

- Meet new people and make new friends
- Network with the community
- Share your time, talents, and energy with others
- Uncover hidden skills and talents
- Increase your self-confidence
- Stay physically active
- Make a difference in your local community
- Share your passion of the nature with others
- Become involved in conservation and education efforts
- Learn more about the animals and/or plants you love
- Directly support the mission of the Bethel Land Trust
- Have fun!!!



Write us, we would like to hear from you.

Corporate Gift Matching Programs

Many larger corporations have programs where they will match employee donations to eligible charities. The Bethel Land Trust qualifies for these matching contributions. If you are an employee or retiree of one of these corporations, remember to follow up and ask for the matching gifts for your recent and future donations. This is a great way to augment your charitable giving and make a significant impact on BLT funds.

A CLOSER LOOK

The Missing Magic~ Roberta Warfield

Is there one creature that symbolizes summer for you? Perhaps it's the hummingbird or the goldfinch in his summer splendor. Maybe it's the chipmunk or groundhog that awakens from hibernation to entertain you by scampering around your back yard.

For me, the iconic symbol of summer is the **firefly aka lightning bug**, that most magical of insects. These winged beetles use bioluminescence to attract mates or prey. The chemically produced light may be yellow, green or pale red. Sadly, for the past several years, these mysterious creatures have been dwindling in numbers all over the world.

No one knows exactly why the firefly is disappearing, but scientists believe that human encroachment on habitat and increased light pollution from development and traffic are the two main factors.

Here are a few suggestions for bringing back the summer sparkler.

- Turn off exterior and garden lights, and close your blinds at night. This will enable fireflies to find mates and breed.
- Leave some natural litter around your trees to give firefly larvae a place to grow.
- Create a water feature. Most fireflies thrive around standing water and marshy areas, including ponds, streams and rivers.
- Avoid pesticides when fireflies are active.
- Promote the conservation of wetlands and forested areas where fireflies have abundant sources of food.



Watershed Conservation – continued from P.1

How does a watershed function?

A watershed has five important functions:

- It collects water from rainfall, snow melt and fog;
- It stores water of various amounts and for different times;
- It releases water as runoff;
- It provides diverse sites for chemical reactions to take place; and
- It provides habitat for flora and fauna that constitutes the biological elements of ecosystems.



The first three functions are physical in nature and are termed *hydrologic* functions. The last two are the *ecological* functions.

The impact of development – Human activities affect all the functions of a watershed. As our town grows and develops, streams, wetlands and hillsides are modified with roads, houses, commercial and industrial buildings that cannot absorb rainfall and snowmelt as natural landscape does substantially changing our ecosystem. What was once was a “natural watershed” is being replaced by can be called an “**urban watershed**”, (urban and downtown areas, city neighborhoods, commercial and industrial areas) in which the habitat components to sustain native fish and wildlife populations, clean air and water, aesthetics and adequate recreational opportunities are being destroyed.

Benefits of a healthy watershed and **our land preserves** provide habitat for mammals, fish, amphibians, birds, and insects as well as stream corridors, which provide a key connection across the landscape for animals, and birds. Aside from the reduced costs of restoring impaired waters, there are many other economic benefits to protecting and conserving healthy watersheds. They preserve water-based recreation opportunities such as fishing and boating and contribute to tourism (e.g., hiking and birding). Vulnerability to floods, fires, and other natural disasters is minimized, thereby reducing costs to communities. Similarly, by protecting aquifer recharge zones and surface water sources, costs of drinking water treatment may be reduced.

While there is a direct connection between activities that occur within our watersheds and drinking water, it is not particularly visible. The Fall Newsletter will address one major component of our watershed, forestland conservation. In the meantime additional information regarding Bethel's watersheds and aquifers can be found on the Internet:

<http://www.hvceo.org/water/WATERBETHELMAIN.php> and <http://www.bethel-ct.gov/content/117/262/303/375.aspx>

Did you know that our Walnut Hill Meadow Preserve is upstream and up hill from the well field which serves Stony Hill providing protection for this important aquifer or that the Joyce Dixon preserve serves to protect the potential aquifer off Kristy Drive?

***** UPCOMING EVENTS *****

BETHEL LIBRARY PRESENTATION – On **September 29th from 6:30 PM – 7:30 PM**, as part of the Bethel Adult Educational Services program, Vincent Nero, a Land Trust Director, will be presenting a PowerPoint presentation, “**Discover the Bethel Land Trust**”. The presentation will cover the history of our land trust, its mission, goals and challenges while highlighting some of our preserves. The library's adult education services program is well attended so registration is required.

BETHEL LIBRARY ART PRESENTATION – During October, the Bethel Library will be hosting an exhibition of Janet P. Miller's art work. Janet's husband, John, donated a 10+ acre parcel of land to the Bethel Land Trust last year in Janet's name. As can be seen from her artwork, Janet was a lover of nature.

Do you know what is invading your backyard?

Most plants, whether they are native or non-native, grow and limit their development to the site on which they are planted. Although many of our beautiful ornamental plants and the majority of our fruits and vegetables are not native to the United States, neither are they invasive. However, a small number of non-native plant species have become invasive. They disperse to other locations and thrive there. In natural areas, they establish themselves at the expense of native plants. They also detract from the aesthetic appearance of managed landscapes and hamper the growth and harvest of crops in cultivated agricultural areas. In either case, this disruption has a negative impact.

How can you control invasives on your property?

There are two basic approaches that can be used to control invasive plants: *mechanical* and *chemical*. The best strategy will depend on the type of invasive and the extent of the infestation.

Mechanical controls, including pulling, digging, cutting, mowing and shading, should be used as a first line of defense. They are excellent for new or small infestations, cause minimal environmental impact, and for the most part only require basic gardening tools.

In general, plants are cut or mowed to ground level, then the roots are dug up. Be sure to bag all plant material and put it in the trash as many invasives can regrow from pieces and parts. In areas with direct sunlight, black plastic can be anchored over the cut plants to prevent re-sprouting and help kill the roots. For best results, leave the plastic in place for 4 to 6 weeks while the weather is hot. Invasives that spread by seed are best cut, pulled, mowed or shaded during flowering or before seeds are set.

Chemical control entails the use of herbicides applied to foliage, cut stumps, or basal bark. Herbicides can be very effective, but it is essential to apply them as directed. It is also very important to inform yourself about the potential health and environmental risks of herbicides prior to their use. In some cases applying herbicides can require a permit, for example if used over or near water.

Due to space considerations, we will deal with two invasive plants that are prevalent in Bethel.

JAPANESE BARBERRY is a dense, deciduous, spiny shrub that grows 2 to 8 ft. high. The branches are brown, deeply grooved, and somewhat zigzag in form and bear a single very sharp spine at each node. The fruits are bright red berries borne on narrow stalks. They mature during late summer and fall and persist through the winter.



ECOLOGICAL THREAT Japanese barberry forms dense stands in natural habitats including canopy forests, open woodlands, wetlands, pastures, and meadows and alters soil pH, nitrogen levels, and biological activity in the soil. Once established, barberry displaces native plants and reduces wildlife habitat and forage. White-tailed deer apparently avoid browsing barberry, preferring to feed on native plants, giving barberry a competitive advantage.

ORIENTAL BITTERSWEET is a high-climbing woody vine that can grow 60' or longer and is found in forested areas, field and forest margins, meadows, right-of-ways, fence rows, along waterways and in residential landscapes. This plant thrives in a range of soil types and light levels from full sun to shade. It reproduces by both seeds (eaten and dispersed by birds and mammals) and rhizomes.



ECOLOGICAL THREAT Oriental bittersweet vines wrap around trees and other supports resulting in girdled and smothered trees and shrubs. In addition, the added weight of the vines covered with ice and snow can break trees and shrubs.



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Preserving Bethel Open Space Since 1977

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Please consider becoming a member or making a contribution.

The Bethel Land Trust is a 501 (c) (3) nonprofit organization, and gifts are fully tax-deductible.

For Gift Memberships, Tributes, Land and In-Kind donations, please visit our website; bethellandtrust.org

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- Other (Please Specify) _____

100% of all donations go to support your local Land Trust and our efforts to maintain and protect your local environment.

Please make your check payable to: Bethel Land Trust
 Mail this form and your contribution to: Bethel Land Trust, P.O. Box 332, Bethel, CT 06801
 OR you may go to our website and donate through that portal: www.bethellandtrust.org

THANK YOU FOR YOUR SUPPORT