



# The Land Steward

Preserving open space since 1977

Vol. 2 No.1 Summer 2015

## Watershed Conservation - Forests

**“With the disappearance of the forest, all is changed.”  
Man and Nature, George Perkins Marsh, 1864**

Have you ever wondered about the role of trees and forest in our community? Are we a forest-dependent species? The term "forest-dependent species" is usually applied to plants or animals with specialized, habitat requirements (e.g., the Pileated Woodpecker, bear, beaver, etc.). We too are dependent on forests for our survival. Within our town's four watersheds, every faucet is ultimately connected to a forest. On pages 4 and 5, we will explore the function/benefits of our forestlands and the importance of watershed/forest conservation. (Continued on page 4)

### Nature Deficit Disorder

Let's now turn to an equally important topic, nature deficit order. What is it? Richard Louv in his books coined the term **nature deficit disorder**. It refers to a hypothesis that human beings, especially children, are spending less time outdoors, resulting in a wide range of behavioral problems. **Nature-deficit disorder is not a formal diagnosis, but a way to describe the psychological, physical and cognitive costs of human alienation from nature, particularly for children in their vulnerable developing years.** Catching a bug, lying in the tall grass listening to a choir of crickets or the peeps of the Spring peepers seems to have been replaced by a variety of electronic goodies (computers, video games and television providing our youth with more and more reasons to stay inside, to an estimated tune of 60 hours a week enjoying their electronic media. Over the last 50 years or so, obesity, anxiety, depression, feelings of helplessness, and narcissism have increased sharply in children, adolescents, and young adults. (Continued on page 3)

As noted wildlife artist and conservationist Robert Bateman observed, **“If you can't name things, how can you love them? And if you don't love them, then you're not going to care a hoot about protecting them or voting for issues that would protect them”.**



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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 for people, 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,

When you grow up experiencing our four seasons, you begin to notice and appreciate the seasonal ebb and flow of life around you. Winter is peaceful and quiet; critters that don't migrate stay hunkered down in warm dens, waiting for the spring (Humans included!). As we say good bye (or good riddance) to our winter for another season, spring is a welcome awakening; as the snow melts away and leaves begin to bud on the trees, life reappears and prepares for a new year.

During the days of our snowstorms, the Board of Directors worked diligently on this year's annual work plan. No rest for the weary as the responsibility of land conservation and its stewardship never ends.

So, what is in store for this year?

- You will be seeing our land trust members installing signs on many of our preserves to identify their locations.
- As part of our Stewardship Program, volunteers will be out removing invasive shrubs and vines from selected preserves.
- We are embarking on an educational program, developing and installing nature interpretive signs. Three have already been designed and ordered. We are currently applying for a grant for nine additional signs.

**The purpose of conservation: "The greatest good to the greatest number of people for the longest time"**

**Gifford Pinchot, US Forest Service**

I have a growing sense that our Land Trust message about the importance of land conservation in Bethel is becoming clearer, resonating throughout the town as witness when our town residents voted in favor of purchasing two ecological sensitive parcels of land. It is safe to say that the conservation of land, water and other natural resources is a priority in our community. In order to protect what our fellow Bethelites value, requires some type of conservation management plan. The next step for these two purchases should be for the preserve administrators to develop individual **conservation management plans** to protect their ecological importance and to mitigate the existing invasive plants. A conservation plan is the vision for the ecological health of these parcels as well as educational and recreational possibilities. A conservation plan typically include a natural resources inventory, a description of important features and an action plan to protect these features over a long period of time.

**Our Partnerships**

I am pleased to announce that we are a member of the Northern Fairfield County Partnership, the Fairfield County Regional Partnership and the Hudson to Housatonic (H2H) Conservation Initiative. We are an inter-state collaboration of more than two dozen local and regional conservation organizations and municipal partners across southwestern Connecticut, Westchester and southeastern Putnam Counties in New York State, engaging landowners identified as pivotal in the battle to protect imperiled streams, drinking water reservoirs, and plant and wildlife habitat. Collaboratively to sustain the region's fields, forests, water, and wildlife habitat.

## Nature Deficit Disorder (continued from page 1)

While our schools have playgrounds and a bit of outdoor play time, the playtime is somewhat structured with hardtops replacing woods, meadows, ponds, etc.

Following is a summary of the many benefits that regular play in nature has for children – extracted from 'Benefits for Children of Play in Nature' by Randy White (Jun 11, 2015):

- Children with symptoms of Attention Deficit Hyperactivity Disorder (ADHD) are better able to concentrate after contact with nature (Taylor et al. 2001).
- Children with views of and contact with nature score higher on tests of concentration and self-discipline. The greener, the better the scores (Wells 2000, Taylor et al. 2002).
- Children who play regularly in natural environments show more advanced motor fitness, including coordination, balance and agility, and they are sick less often (Grahn, et al. 1997, Fjortoft & Sageie 2001).
- When children play in natural environments, their play is more diverse with imaginative and creative play that fosters language and collaborative skills (Moore & Wong 1997, Taylor, et al. 1998, Fjortoft 2000).
- Exposure to natural environments improves children's cognitive development by improving their awareness, reasoning and observational skills (Pyle 2002).
- Nature buffers the impact of life's stresses on children and helps them deal with adversity. The greater the amount of nature exposure, the greater the benefits (Wells & Evans 2003).
- Play in a diverse natural environment reduces or eliminates bullying (Malone & Tranter 2003).
- Nature helps children develop powers of observation and creativity and instills a sense of peace and being at one with the world (Crain 2001).
- Early experiences with the natural world have been positively linked with the development of imagination and the sense of wonder (Cobb 1977, Louv 1991). Wonder is an important motivator for lifelong learning (Wilson 1997).
- Children who play in nature have more positive feelings about each other (Moore 1996).
- Outdoor environments are important to children's development of independence and autonomy (Bartlett 1996).

**Everyone, from our town government to organizations and families, has a role to play in connecting children to nature.**

## The Sounds of Spring/Summer

By Roberta Warfield

One of the first sounds of spring all along the east coast is the chorus of spring peepers – the mating call of Connecticut's smallest frog. This high-pitched call can be heard soon after ice melts on the wetlands and continues through the breeding season, between March and June. They are frequently found in groups of several hundred individuals, and their chorus can be heard from one or two miles away.

As we all have experienced, these tiny frogs (less than 1.5 inches, weighing around .15 ounces) are mostly heard, but not seen. They hide in dense plants, eating nocturnally in low vegetation, primarily on flies, beetles, ants and spiders.

Peepers live primarily in forests, near wetlands. As amphibians, peepers require marshes, ponds or swamps for their eggs and tadpoles.

As seen in the picture below, peepers are tan or brown, with a dark x-shaped marking on their backs. Males are smaller than females, and have a vocal sac, which expands and contracts to create the distinct peeping call.

We may enjoy the peeper chorus so long as the weather is above freezing. During the winter, peepers will hibernate under logs or loose bark on trees, to awaken the next spring in search of mates.



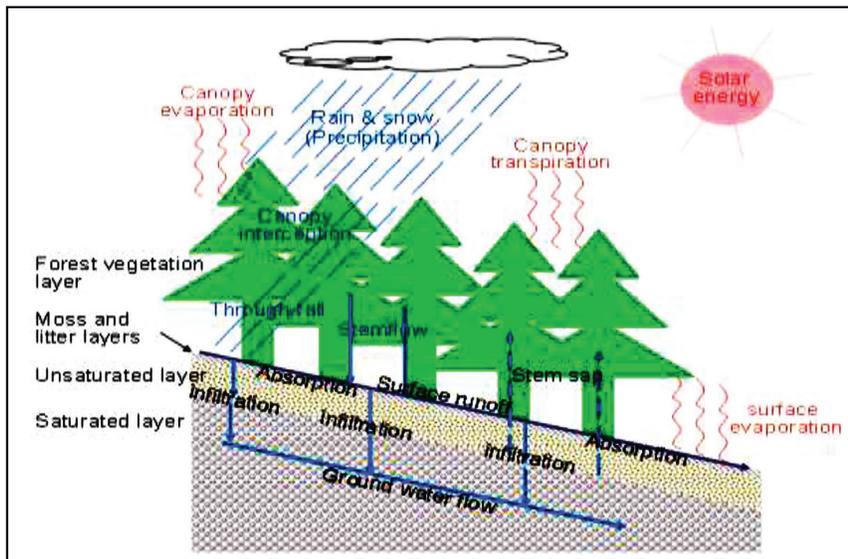
# Watershed Conservation - Forest

**The Eight Hydrolic Functions of Forest and Trees** by Joseph Horgan and Diane Cameron, 2011, Maintaining Pre-development Hydrology.

**Interception:** Tree and shrub leaves *intercept* water from rain, snow and fog. The impact of millions of raindrops can quickly wash away soil resulting in erosion. Forest trees, even during the winter, when the leaves have fallen for the trees, can help prevent erosion by acting like a giant umbrella that blocks or slows down the falling raindrops before they impact the soil. This is called interception.

**Leaf litter absorption:** The duff (dead leaf) layer stores and transmits water and protects the underlying soil from erosion; it is estimated to absorb 2 to 4% of annual precipitation.

**Soil Infiltration:** Even during the winter a forest will intercept a lot of rain or snow, allowing the water to slowly *infiltrate* into the soil, instead of hitting the ground and becoming runoff. Native soils with ample organic layers are the “sponges” of healthy ecosystems; their pore spaces store water and infiltrate it vertically and laterally, interact with root and fungi systems. 80 to 95% of annual precipitation in forests is captured via soil infiltration. Soil infiltration helps recharge of aquifers by allowing more precipitation as opposed to rapidly run off the land to a downslope area.



**Interception Water Cycle - Water Cycling in Forest** from [free-stock-illustration.com](http://free-stock-illustration.com)

**Evapotranspiration:** Trees and forests absorb and use tremendous amounts of water for growth, thereby consuming storm water. A single mature oak tree can consume (transpire) over 40,000 gallons of water in a year. CT receives an average of 50" of precipitation annually of which approximately 50% of the annual rainfall is taken up by trees through evapotranspiration (movement of water from the ground through the tree and leaves, evaporating back into the environment). That *evapotranspiration* also serves to cool and modify surrounding summer temperatures. If the forest is removed or harvested, evaporation drops to 14 inches vs 25, and stream flow increases to receive 36 inches of the annual 50 inches of precipitation. So, just the removal of forests can have an impact on streams in the watershed.

**Hydraulic Lift/ Redistribution:** Tree roots lift groundwater from deeper layers and bring it closer to the surface, where it can be used by other plants as well as the trees themselves.

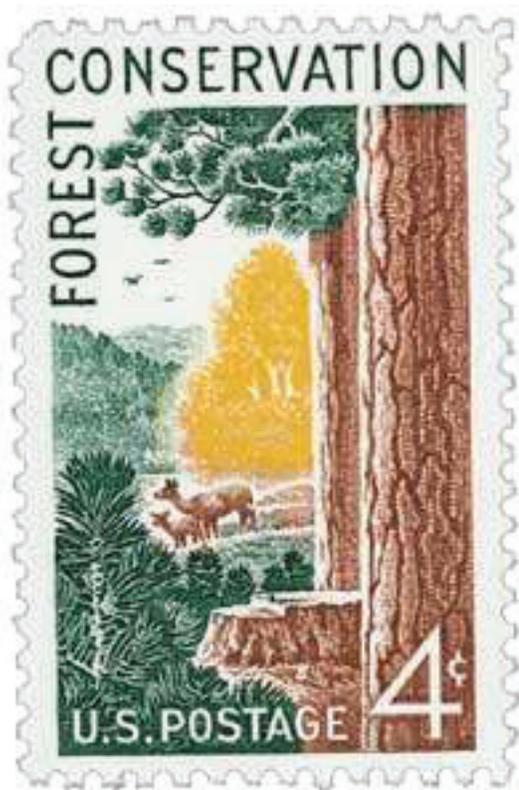
**Groundwater Recharge:** Recharge refers to replenishment of both groundwater (aquifer) levels and dry weather stream flows. Tree roots in symbiosis with fungi enlarge fissures in bedrock, increasing porosity and groundwater recharge.



## *Volunteers installing new signs at the Cross Hill Nature Preserve.*



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](http://bethellandtrust.org)



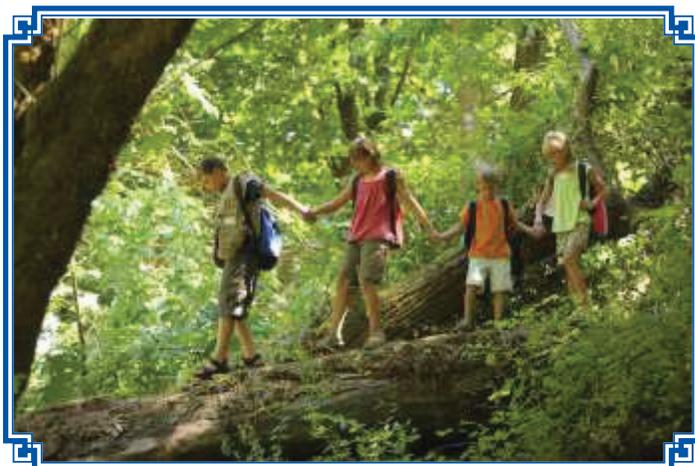
**Air-cleansing:** Clean air is important for all life on earth. Air pollution has been related to a range of adverse health and environmental effects such as respiratory infections and acid rain. Think “ozone alert” and its associated economic harm – missed school days, hospital stays and emergency room visits due to respiratory health problems.

Trees absorb CO<sub>2</sub> through photosynthesis to produce oxygen for us to breathe, and intercept air borne particles on leaf surfaces. They also play a critical role in capturing the six common air pollutants and toxic gases: ground-level ozone, particulate matter, carbon monoxide, nitrogen oxides, sulfur dioxide and lead. These pollutants come from dust, pollen, ash, motor vehicles, power plants and other industrial sources. By saving our forests we can help minimize the problem of air pollution.

**Heat:** It is important to have urban forests because buildings, streets and paved surfaces store heat from the sun — especially during the summer. Due to the loss of trees, temperatures in the city are higher than the surrounding countryside, resulting in an event called the Urban Heat Island (UHI) effect. Shade from trees can slow the deterioration of street pavement and reduce energy demands for air conditioning, which in return decreases air pollution and greenhouse gas emissions.

## Effects of our deforestation

As we replace our woods with roads, parking lots, driveways, homes, patios, and even grass, we immediately have impact on our Bethel watersheds. With the increased amount of impervious surfaces, water runs off the land, traveling on the surface towards the streams. As this ‘storm water runoff’ travels to the streams it collects pollutants and increases speed. The changes to the landscape, not only increase the volume of water that goes to the stream, it also shortens the amount of time it takes the water to get to the stream. These increased or peak flows cause water to move quickly to the streams. This leads to flooding, stream bank erosion, widening of streams, sediment deposited in streams, a loss of fish habitat, and decline in water quality. As it flows over the land surface, storm water picks up potential pollutants that may include sediment, nutrients (from lawn fertilizers), bacteria (from animal and human waste), pesticides (from lawn and garden chemicals), metals (from rooftops and roadways), and petroleum by-products (from leaking vehicles). Pollution originating over a large land area without a single point of origin and generally carried by storm water is considered non-point pollution. In contrast, point sources of pollution originate from a single point, such as a municipal or industrial discharge pipe. Polluted storm water runoff can be harmful to plants, animals and people.



# SUMMER NEWSLETTER 2015



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

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**THANK YOU FOR YOUR SUPPORT**