

HARTFORD CONSERVATION COMMISSION

This issue of the Hartford Conservation Commission's (HCC) newsletter focuses on something most of us take for granted – FRESH WATER. We examine our use of this vital resource and ways to conserve and protect it. We also offer some facts about a seldom seen forest resident, the flying squirrel. Lastly, we invite you to browse the HCC's web page: <http://www.hartford-vt.org/content/conservation/> where seven of our educational brochures are available.

HCC EVENTS CALENDAR: JOIN US

April 18, Saturday, 10:00 a.m. — noon, **Vernal Pool Walk**, Hartford Town Forest*

April 25–May 2, **Green-Up Hartford Days**, green-up bags available at Municipal Office*

May 2, Saturday, 9:00 a.m. — noon, **Green-Up Day/Arbor Day Celebration**, Lyman Point Park*

HCC green-up bags available, Tree Board/Trees Matter tree and shrub sale

May, Date and time TBA, **Riparian Tree Planting** with the White River Partnership, Lyman Point Park*

June 6, Saturday, 9:00 a.m. — noon, **Trails Day**, Hartford Town Forest*

June 6, Saturday, 9:00 a.m. — noon, **Hartford Hazardous Waste Collection**, Hartford Recycling Center, Rt. 5 South

September 19, Saturday, 10:00 a.m. — noon, **Tree and Invasive Plant ID Walk**, Wildlife Refuge Park*

February 6, 2010, Saturday, 9:00 a.m. — noon, **Snowshoe Hike**, Hartford Town Forest*

First Monday of every month (excluding holidays), 7:00 p.m. **HCC meeting**, Second Floor, Municipal Office

* Please contact Matt Osborn for more information 295-3075

FLYING SQUIRRELS



A resident of Hartford that few of us have ever met, though it is quite common, is the flying squirrel. It is a small, nocturnal mammal that doesn't actually fly but rather glides between trees — as far as 300 feet in a

single glide under favorable conditions. Two species are found in the Northeast, and their ranges overlap in our region. These are the northern flying squirrel, *Glaucomys sabrinus*, and the southern flying squirrel, *Glaucomys volans*.

Where do they live? The northern flying squirrel prefers a forested habitat of mature trees and dense canopy, whereas the southern flying squirrel may select a home from a range of wooded habitats. However, both species search out trees that produce nutritious nuts and seeds or contain cavities for harboring their nests or dens. They do not create these cavities but use natural ones or those abandoned by other animals such as woodpeckers. Rather than hibernating in winter, flying squirrels, with little or no store of excess body fat, gather together in group dens of 6 or more individuals to stay warm.

What do they eat? In our area, the two species consume a similar diet, and it comprises a greater variety of foods than that of other squirrels. Flying squirrels will eat nuts and seeds, fungi, lichen, insects, tree and shrub buds, berries, bark cambium, carrion, and tree sap. They forage mostly in the trees and shrubs around their nests but also on the ground, where they are most vulnerable to predators. When they locate food they either eat it immediately or find a crevice, notch, or cavity in which to store it.

image: Gordon Freeman Northern Flying squirrel

Who are its predators? The great horned owl is one of the flying squirrels most voracious predators. Also, raccoon, fisher, red fox, weasels, mink, bobcat, and the common house cat can prey on flying squirrels. House cats allowed out at night pose an unfortunate threat to flying squirrels.

How do they benefit forest ecosystems? Flying squirrels are "mycophagous" which means that they eat mushrooms and fungi. When foraging on the ground, they often are digging for a particular type of mushroom that appears only under the soil's surface. As with all fungi, these underground mushrooms develop from tiny fungal roots or mycelium that can cover square miles of area. The mycelial web plays a crucial role in our forest ecosystem forming a symbiotic relationship with living plants — trees can't survive without fungi and fungi can't survive without trees. The mycelium filters, absorbs, and transports nutrients and moisture to the forest plants. By eating the mushrooms, the flying squirrels initiate the dispersal of spores. The spores are not destroyed in flying squirrel digestive tracts and are eventually defecated in another location. In time, the spores reach the soil and begin to grow new mycelia benefiting the forest and ultimately producing more hidden mushrooms.

How can we help flying squirrels? Since flying squirrels live in the forest and rely on cavities for nesting and denning, retaining tree snags and rotting stumps along with mature trees as components in our forests is good for flying squirrel populations. You can make nest boxes to increase nesting sites (plans on web site below). Also, keeping house cats indoors is good for all small wildlife species including flying squirrels.

Information was compiled from New England Wildlife: Management of Forested Habitats by Richard M. DeGraaf et. al., Winter World: The Ingenuity of Animal Survival by Bernd Heinrich, and [Flyingsquirrels.com](http://www.flyingsquirrels.com/), <http://www.flyingsquirrels.com/>. We highly recommend visiting the web site's photos, videos, and nest box plans.

WATER CONSERVATION

The fresh water you use in your home comes from a well.

This is true whether you live in a village—Hartford, Quechee, West Hartford, White River Junction, Wilder—or a rural part of town. “Town water” itself comes from three Town-maintained wells. We all depend on a hidden but vital resource known as **groundwater**.

Public health and the health of our **surface waters**, such as streams, ponds, rivers, and lakes, are related to the adequacy and quality of our groundwater supplies. Pollution to our surface waters can create pollution in groundwater and vice versa.

To ensure a sufficient supply of clean fresh water we need to: conserve water by using (withdrawing) no more than we need, protect it from contamination, and maximize recharge of our groundwater.

To Conserve Water Inside Your Home:

- Install water-saving showerheads and low-flow faucet aerators
- Fix water leaks
 - leaky faucet (1 drip /second = 3,000 gallons/year)
 - leaky toilet, can be tested by adding food coloring to tank (average leak = 73,000 gallons/year)
- Turn off the water when brushing your teeth (2 gallons/min. = 2,880 gallons/year)
- Run dishwashers and washing machines with full loads only
- When replacing appliances, look for water-saving models
- Replace old 3.5 or 5 gallon/flush toilets with 1.3 gallon/flush models

These figures represent losses by a single household. When extrapolated for a town with a population exceeding 11,000 people and nearly 6,000 homes, the quantity of water squandered or saved is more than a drop in the bucket!

Water saving ideas from: <http://www.epa.gov/watersense/>

WAYS TO REDUCE WATER CONTAMINATION

- Install a Rain Garden (see HCC page 4 for information).
- Maintain vegetated buffers along edges of water bodies (riparian buffers).
- Reduce the amount of paved and other impervious surfaces in your yard and increase the amount of vegetated area. Select native plants and grasses in your landscaping to reduce the need for watering during dry periods. Reduce lawns and set lawn mower for tallest grass level. Do not over-water your lawn (stop watering before water runs onto pavement or into storm sewer).
- Check autos, boats, motorcycles and other machinery for leaks, and make repairs as soon as possible. Recycle used motor oil and other automotive fluids.
- Use commercial carwashes that do not cause runoff or wash your car on the grass rather than on pavement.
- Sweep up debris rather than using a hose to wash it “away.” Compost or recycle yard wastes when possible.
- When using a water hose, employ an attachment that can adjust and shut off water from the handle rather than at the faucet (running a hose for 5 minutes can use 50 gallons of water).
- Purchase and use nontoxic, biodegradable, recycled, and recyclable products whenever possible.
- Use hazardous substances like paints, solvents, and cleaners in the smallest amounts possible, and follow directions on the label. Store substances properly to avoid leaks. Clean up spills immediately and dispose of the waste safely. Hazardous waste collections for residents are: June 6 (Hartford), and September 26 (Woodstock) call 295-5740
- Use fertilizers and pesticides sparingly. When use is necessary, use them in the recommended quantity. Avoid application when the forecast is for rain. Learn to use Integrated Pest Management (IPM).
- Collect pet waste and dispose of by flushing when possible.
- Have septic system inspected and pumped every 3 to 5 years.
- Do not flush unused pharmaceuticals down the toilet.
- Use Low Impact Development (LID) strategies designed to absorb stormwater runoff (illustrated in these photos and described on the next page).

Curb-side rain garden

Photos: David Raphael, Landworks



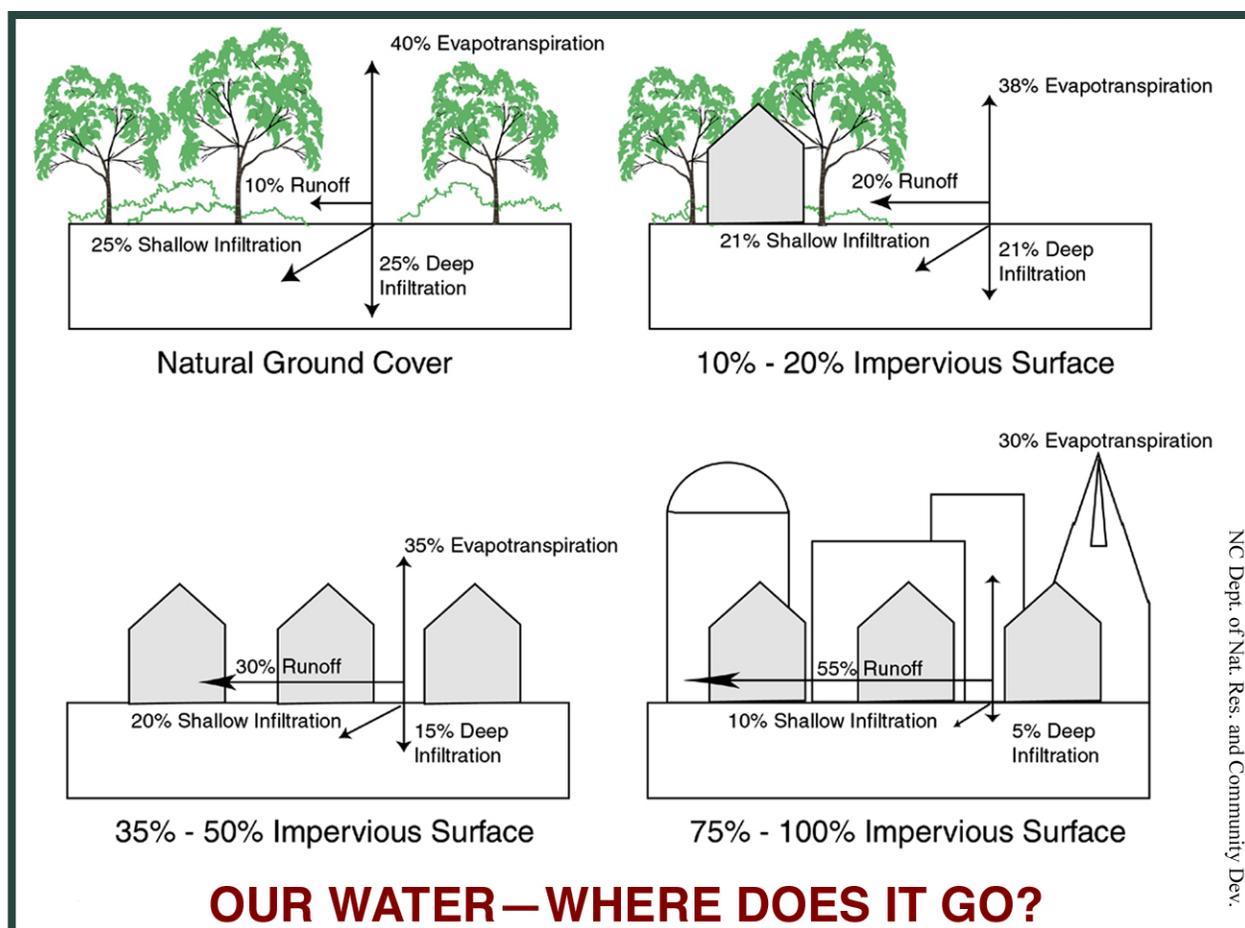
GROUNDWATER RECHARGE AND STORMWATER RUNOFF

What does it mean to recharge groundwater?

Recharge is the process by which groundwater is replenished. Groundwater is recharged when precipitation (rainfall and snowmelt), also known as stormwater, infiltrates through soil layers and reaches underground reservoirs known as aquifers. In an ideal situation, all precipitation that is not taken up by plants or released as water vapor into the air (evapotranspiration) would be retained within the soils long enough to be pulled by gravity into fissures in the rock where groundwater collects.

Our area receives plentiful rain and snow. Why be concerned about groundwater recharge?

For generations, we have been adding water-shedding surfaces and structures (collectively described as impervious surfaces) such as roads, parking lots, driveways, sidewalks, rooftops, and storm sewers. Good at shedding water, impervious surfaces often send stormwater off-site and into surface waters rather than retaining it long enough for infiltration to recharge groundwater. In a natural environment, about 50% of the stormwater infiltrates the soil and 10% runs off. However, as illustrated below, when the amount of impervious surface increases, infiltration decreases and runoff increases.



What is stormwater runoff?

Stormwater runoff is water from rain or melting snow that does not soak into the ground. It flows from rooftops, across paved areas and bare soil. As it flows, stormwater runoff collects and transports the following unsavory stew to our rivers and streams:

- sediment
- pesticides
- fertilizers
- animal waste
- oil, grease, gasoline
- antifreeze
- road salt
- yard waste
- trash

Stormwater runoff is the most common cause of surface water contamination

LOW IMPACT DEVELOPMENT (LID)

New approaches make stormwater an asset rather than a liability

Design tools known as Low Impact Development (LID) use strategies that mimic natural hydrological processes—infiltration, recharge, retention—and incorporate attractive landscape measures to minimize runoff and maximize infiltration, while enhancing natural beauty and livability (see photos at left). Equally important, these techniques for improving water quality and living environments are frequently LESS costly than traditional designs.

Benefits of LID:

- Reduces pollution in runoff
- Reduces flooding and protects property
- Protects drinking water supplies
- Protects fish and wildlife habitat from high flows
- Preserves and restores trees and other vegetation
- Maintains stream flows and water levels in wetlands
- Reduces building costs for stormwater management
- Results in more attractive neighborhoods

LID Site Planning and Design Elements:

- Design for the terrain
- Limit land disturbance activities
- Reduce and disconnect impervious areas
- Preserve and utilize natural drainage systems
- Maintain pre-development vegetation
- Provide setbacks and vegetative buffers
- Minimize alteration and creation of steep slopes

BUILD A RAIN GARDEN

A rain garden is a bowl-shaped garden designed to capture and absorb rainfall and snowmelt (collectively referred to as “stormwater”).

When stormwater is captured by a rain garden, it soaks into the ground and recharges the groundwater at a rate 30% greater than that of a typical lawn.

Ultimately, if we all work together to create landscape features that absorb the stormwater, we can replenish our groundwater and help keep it pollution free.

Benefits of a Rain Garden:

- Easy to install and maintain
- Recharges groundwater
- Helps reduce flash flooding
- Provides wildlife habitat
- Improves water quality

Image/text drawn from the Vermont Rain Garden Manual

Rain Garden Manual

An excellent 20-page step-by-step guide for making your own rain garden has been produced by the Winooski Natural Resources Conservation District and UVM Extension Lake Champlain Sea.

The Manual Includes:

- Choosing a location
- Designing a rain garden
- Sizing a rain garden
- Plant list and plans
- Installing a rain garden
- Care and maintenance
- How-to diagrams and photos

To get your copy of The Vermont Rain Garden Manual and the companion Plant List, either:

- 1). download it **FREE OF CHARGE** from the following web site: www.vacd.org/winooski/winooski_raingarden.shtml or,
- 2). order a full color manual for \$5 each (checks made payable to WNRCD and mailed to: Ashley Lidman, WNRCD, 1193 S. Brownell Rd, Suite 35, Williston, VT 05495).

Rain Garden Questions:

Does a rain garden form a pond?

No. After most storms a properly constructed rain garden will absorb water within a period of 24 hours and not more than 48 hours for larger storms depending on the soil type.

Do mosquitoes breed in rain gardens?

No. Mosquitoes require 7-12 days of standing water to lay and hatch eggs. Standing water will only last a few hours after most storms.

Do they require maintenance?

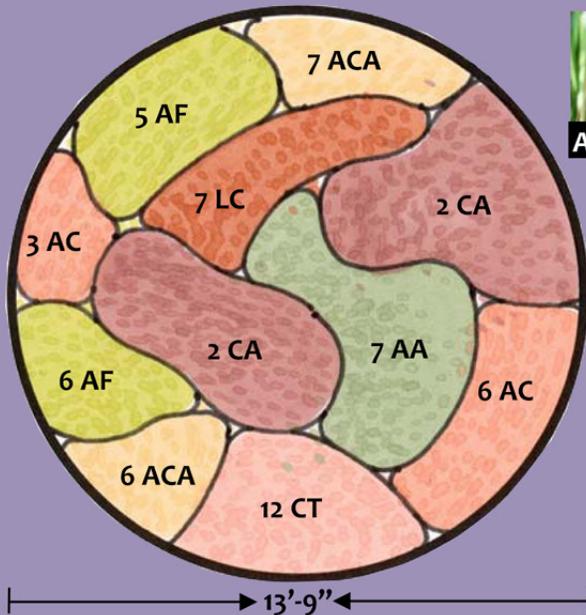
Like any garden, diligent weeding and watering will be needed in the first two years. As the garden matures, maintenance requirements will lessen. Plants may need to be thinned after a few years.

How much does a rain garden cost?

The cost varies depending on who does the work, the size, where the plants come from, and the planting density. If you purchase plants and materials but do all the labor yourself, the cost will be roughly \$4-\$6 per square foot. If you hire a professional to design and install the garden, it will cost roughly \$10-\$14 per square foot.

The Native Woodland & Wildlife Garden - Part Shade

Abr	Qty	Botanical Name	Common Name	Height	Spread	S. Interest	Spacing	Install Size
AA	7	<i>Acorus americanus</i>	Sweet Flag	3'	1.5-2'	Sp, Su, Fall	22"	1 Gallon
AC	7	<i>Anemone canadensis</i>	Windflower	1-2'	2-2.5'	Spring	22-30"	1 Gallon
ACA	13	<i>Aquilegia canadensis</i>	Columbine	2-3'	1-1.5'	Spring	15-22"	1 Gallon
AF	11	<i>Athyrium filix-femina</i>	Lady Fern	2-3'	1-1.5'	Sp, Summer	22"	1 Gallon
CT	12	<i>Caulophyllum thalictroides</i>	Blue Cohosh	1-2'	0.5-1'	Summer	22"	1 Gallon
CA	4	<i>Cornus sericea 'Arctic Fire'</i>	Red Osier Dogwood	3-4'	3-4'	Sp, Su, Fall	4-5'	2-3 Gallon
LC	7	<i>Lobelia cardinalis</i>	Cardinal Flower	2-4'	1-2'	Summer	22"	1 Gallon



Sizing Chart			
Sq Ft	Qty of Diff. Species	Total Plant Qty	Ex. Garden Dimensions
50	3	20	8' Diameter
100	5	41	11'-4" Diameter
150	7	61	13'-9" Diameter
200	7	82	16' Diameter
250	7	103	17'-10" Diameter