

## Erosion control work starting this spring

### Northern River Assessment moves to engineering solutions

WITH the aim of aiding communities and landowners in addressing river-bank erosion with solutions that will last, and improving their ability to prevent erosion in the future, CRJC has been working to better understand the relationships between land use practices, natural river flow patterns, and erosion.

Recently, much of this work is through the Northern River Assessment, a study conducted by John Field, Ph.D., a fluvial geomorphologist based in Farmington, Maine. Local research assistance is from planner Deborah Noble of Concord, Vt.

Using aerial photographs and old topo-

graphic maps, Field and Noble determined that more than a third of the river's upper 85 miles had been artificially straightened in the late 1800s, probably to facilitate log drives and other commercial or industrial uses. Similarly, they found that portions of major tributaries had been straightened.

Field also studied other factors, such as dam building, dam breaching, and artificially confining river walls on the tributaries and on the Connecticut itself. He concluded that while these factors may be decades and even a century old, their effects are still being felt today. Understanding the interrelationship

*continued on page 4*

### Inside

Changing faces .....	2
Progress on the Plan .....	3
Lead sinker ban .....	3
Dwarf wedgemussels .....	5
New floodplain maps.....	6
Calendar .....	8
Bald eagle status .....	8
Loons' new tunes.....	8

## Causes, effects of Cold River flood examined

FLOODING on the Cold River last fall left seven people dead and millions of dollars of damage in the town of Alstead. Heavy rains that drenched the state starting on Oct. 7 flooded many other areas and inflicted significant property damage. But Alstead in particular was devastated. CRJC commissioners called on David Wunsch, New Hampshire's State Geologist, and Ted Walsh, with the N.H. Department of Environmental Services, to understand the causes and implications of the flood. Wunsch focused on the following factors:

- **Topography.** Warren Brook is a tributary of the Cold River. Major downstream damage occurred when a culvert on it — at Cooper Hill Road — washed out. The topography of the area contributed to the culvert's failure. The Warren Brook watershed has a steep valley and a round elongation ratio, meaning that

*continued on page 6*



**AFTER THE FLOOD**—Warren Brook, formerly a bucolic woodland stream, is completely transformed by flooding last fall. This photo from the N.H. Department of Environmental Services shows gravel and glacial till exposed in the brook's washed out banks.

## CRJC Commissioners

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# Changing faces at CRJC, river subcommittees

THE Connecticut River Joint Commissions elected new officers at their annual meeting in April. **Gayle Ottmann** of Quechee, Vt., was elected president. Ottmann is the executive director of the Hartford Area Chamber of Commerce and is a member of the Hartford Board of Selectmen. She also serves on the steering committee of the Connecticut River Byway Council.

**Cleve Kapala** of Hopkinton, N.H., will serve as vice president. Kapala is the director of government affairs and relicensing for TransCanada, owner of hydro-electric facilities on the Connecticut River. **George Watkins** of Walpole, N.H., was elected secretary. Watkins is also a board member of the Connecticut River Watershed Council. **Gary Moore** of Bradford, Vt., will serve as treasurer. Moore is a former commissioner of the Vermont Department of Fish & Wildlife.

The N.H. Connecticut River Valley Resource Commission elected Kapala as its chair and Watkins as secretary/treasurer. **Nancy Franklin**, who owns Riverview Farm, an orchard in Plainfield, N.H., was elected vice chair.

The Vermont Connecticut River Watershed Advisory Commission elected Ottmann as its chair and Moore as secretary/treasurer. Beverly Major of Putney, Vt., who has long experience in sheep farming, was elected vice chair.

**Robert Harcke** of Westmoreland, Vt., has been appointed by the Southwest Regional Planning Commission to represent it on the Connecticut River Valley Resource Commission. Harcke is the chief executive officer of Continental Cable Company in Hinsdale, N.H., a business that he founded in 1969.

The **Upper Valley Local River Subcommittee** reluctantly said good-bye to Lyme's **Freda Swan** and Lebanon's **Susan Almy**. As the subcommittee's first chair,

Freda took on the responsibility for drafting that region's first Connecticut River Corridor Management Plan. Susan's perspective as a state legislator has been much valued.

The **Mt. Ascutney Local River Subcommittee** will greatly miss the late **Frank Anthony**, who with his wife, **Susan**, represented Windsor. A writer and poet, Frank was a member of his town's development review board who appreciated the town's long and storied relationship with the Connecticut River.

The subcommittee welcomes **Dr. Allan Berggren**, Claremont's newly appointed representative. A member of the city's conservation commission, he has also been active with the Connecticut River Byway Council and the Upper Valley Trails Alliance.

Mt. Ascutney Subcommittee also welcomes **Jabez Hammond** as Cornish's new representative. Jabe's family owns North Star Canoe Livery and a fine farm on the banks of the Connecticut River. Jabe manages the canoe outfitter business.

The **Wantastiquet Subcommittee** will greatly miss **Jim Grandy** of Westminster, Vt., who has recently stepped down. Jim is much appreciated for his dedication to the river and his energetic pursuit of a public river access for his town.

There are seats at local river subcommittees open for residents from the following towns: Clarksville, Stewartstown, Lyme, and Walpole, N.H., and and Canaan, Lemington, Waterford, Ryegate, Bradford, Hartland, Weathersfield, Brattleboro, and Vernon, Vt.

Citizens interested in joining their local river subcommittee should contact their board of selectmen. For more information on the subcommittees themselves, contact Adair Mulligan, CRJC's conservation director, at [adair.mulligan@crjc.org](mailto:adair.mulligan@crjc.org) or 603-795-2104. 🌿

## Watershed ecology courses

The Environmental Education Institute holds undergraduate and graduate-level courses on watershed ecology for science educators and community leaders. The Institute is sponsored by the N.H. Fish & Game Dept. and UNH Cooperative Extension.

Classes are July 24 to 28 and July 31 to Aug. 4 from 8:30 a.m. to 3:30 p.m. at Bow High School in Bow, N.H. For more information contact Judy Tumosa at N.H. Fish and Game, 603-271-0456 or [judy.tumosa@wildlife.state.nh.us](mailto:judy.tumosa@wildlife.state.nh.us).

## Fish and wildlife plans move ahead

New Hampshire's Wildlife Action Plan, which just received federal approval, presents a conservation strategy for the state's fish, wildlife and habitats. The plan, including many state and regional maps, may be viewed at [www.wildlife.state.nh.us](http://www.wildlife.state.nh.us).

A National Fish Habitat Action Plan was publicly unveiled in April. The plan addresses the loss of fish habitat, including that of the brook trout and other species found in the Connecticut River watershed. The plan may be downloaded from [www.fishhabitat.org](http://www.fishhabitat.org).

# Every Drop Counts

## Progress on the Connecticut River Corridor Management Plan

THIS spring the Commissions will release their Riverwide Overview for the extensively updated Recreation Plan for the Connecticut River Valley, following completion of a year of revision by the local river subcommittees. Many comments were received and incorporated when a draft of the plan was circulated earlier this year. Meanwhile, progress on many fronts continues throughout the valley.

- **Springfield, Vt.**, is creating a pocket park in town that offers excellent views of the Black River and its cascading waterfalls. The project is by Springfield On The Move and many generous residents.
- The **Newbury Conservation Commission** and the **Wells River Watershed Council** sponsored a public information meeting on fluvial erosion hazard mapping.
- The **Northwoods Stewardship Center** and Bill Schomburg of the **Headwaters Sub-**

**committee** are assisting the **New Hampshire Department of Transportation** with design of a public fishing and cartop boat access at the restored Stratford-Maidstone Bridge. The much-needed and long-awaited access is due to be installed this summer.

- **The Upper Valley Land Trust** has recently protected key riverfront farmland in Claremont and Bath, N.H., and is working on similar projects in the region.
- The Vermont Chapter of **The Nature Conservancy** has protected a remnant silver maple floodplain forest in Maidstone.
- Citizens on the Israel and Ammonoosuc rivers in New Hampshire's North Country have completed their first year of water quality monitoring, as have others on Vermont's Stevens River.
- **Lancaster** decided to retain its town forest as public land into the future, and has earned \$88,000 through timber sales. ♻️

## SMALL WONDERS

*The Vermont Institute of Natural Science (VINS) has a new nature education curriculum guide for children ages 3 to 6. For more information, contact VINS at 802-229-6206 or check [www.vinsweb.org](http://www.vinsweb.org)*

## States ban lead sinker sales

BOTH New Hampshire and Vermont have moved to rid their waters of lead sinkers, which are a leading cause of death in loons.

Starting Jan. 1 of this year, New Hampshire banned the sale of sinkers weighing 1 ounce or less and jigs less than 1 inch long. The use of this lead tackle has been prohibited on all fresh waters in the state since 2005.

Also starting Jan. 1 of this year, Vermont made it illegal to sell lead sinkers ½ ounce or less. In 2007 it will be illegal for anyone to use a lead sinker ½ ounce or less on any Vermont waters.

For years, wildlife specialists have encouraged anglers to safely dispose of old lead sinkers and jigs because of the health hazard lead tackle presents for loons and other wildlife. Loons that eat lead sinkers or jigs usually die within a matter of weeks.

The Vermont Fish & Wildlife Department notes that since 1989, 60 percent of analyzed loon deaths in Vermont were directly related to lead ingestion, entanglement with fishing line, or other impacts with fishing gear; 19 of 38 (50 percent) of adult loons died of lead poisoning from ingesting lead sinkers.

In New England, from 1985-2005, over 176 of 381 (46 percent) of adult loons died from lead fishing gear.

Anglers and store owners can find many

effective new alternatives to lead tackle that are now available. Find out more about inexpensive alternatives to lead tackle, offering technical benefits to the angler while keeping the region's waterways lead-free, by visiting [www.wildlife.state.nh.us/Fishing/nonlead\\_fish\\_tackle.htm](http://www.wildlife.state.nh.us/Fishing/nonlead_fish_tackle.htm), or [www.vtfishandwildlife.com/Get\\_the\\_lead\\_out\\_index.cfm](http://www.vtfishandwildlife.com/Get_the_lead_out_index.cfm).

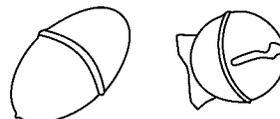
Retailers should review their inventory — and freshwater anglers should check over their tackle boxes — and remove illegal lead sinkers and jigs. Dispose of them safely at:

- N.H. Fish and Game offices (Concord, Durham, Keene, Lancaster and New Hampton) and state fish hatcheries (for locations, call 603-271-3211).
  - Household Hazardous Waste Collections, held throughout the state. Call the N.H. Department of Environmental Services at (603) 271-2047, or visit: [www.des.state.nh.us/hhw](http://www.des.state.nh.us/hhw).
  - The Loon Preservation Committee's visitor center on Lee's Mills Road in Moultonborough; visit [www.loon.org](http://www.loon.org).
- In Vermont, see [www.vtfishandwildlife.com/get\\_the\\_lead\\_out\\_disposal.cfm](http://www.vtfishandwildlife.com/get_the_lead_out_disposal.cfm). ♻️

## JOIN THE OPENING OF THE NORTHERN FOREST CANOE TRAIL

The trail, which runs from Fort Kent, Me. to Old Forge, N.Y. officially opens in New Hampshire June 3, in Groveton on the bank of the Connecticut. Everyone is invited to bring a canoe. Dedicate the new kiosk and go for a paddle!

For more information see [www.NorthernForestCanoeTrail.org](http://www.NorthernForestCanoeTrail.org).



## BIG SPLASH RIVER AND MUSIC FESTIVAL

Enjoy music, art, boating, exhibits and demonstrations, food, children's environmental and art exhibits, and watershed-related crafts, games and music.

Saturday June 3  
Wilder Picnic Area  
Wilder, Vt.  
10:30 a.m. – 6:30 p.m.

## HERRICK'S COVE WILDLIFE FESTIVAL

See a bald eagle, build a bird feeder, learn about butterflies and enjoy other activities and programs. The day begins at 7:30 with a bird walk (meet at the boat ramp) and programs start at 10 a.m.

Sunday, May 7  
Rockingham, Vt.  
For more information see [www.audubon.org/chapter/vt](http://www.audubon.org/chapter/vt), and click on Ascutney Mountain Audubon.

## Northern River Assessment

*continued from page 1*

among them is key to understanding the river's dynamics and in designing lasting solutions to erosion problems.

Early in 2006, CRJC presented each of the 16 towns in the Northern River Assessment study area (Dalton and Lunenburg north to Pittsburg) with detailed, custom-made erosion maps for their towns, along with brochures describing management techniques for addressing erosion problems. These maps will enable town officials and landowners to identify areas especially susceptible to erosion, and riverbanks where buffers are needed.

The assessment has focused on several hotspots in the region. Following is a summary of last year's research.

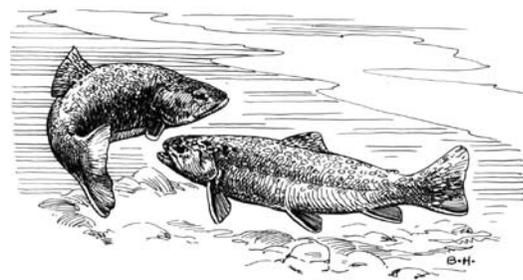
### Northumberland Cemetery

Working under matching grants to CRJC from the N.H. Department of Environmental Services (DES) and the Upper Connecticut River Mitigation and Enhancement Fund (M&E), Field discovered that the natural breaching in the 1980s of the Wyoming Dam is the primary cause of erosion threatening the Northumberland Cemetery, more than three miles upstream. In the past few months, the town has had to move several burials away from the disintegrating riverbank. More graves are in peril.

Changes at the dam caused the river to move faster and at a greater slope, causing it to erode down into its bed, setting off slumping of high steep banks that are naturally susceptible to erosion and collapse when undermined. Field concluded that the river is still responding to the dam breach over 20 years ago.

Also contributing to troubles at the site are difficult soil conditions and an upstream gravel bar, probably resulting from the 1969 breach of a dam on Nash Stream, which flows into the tributary Upper Ammonoosuc River. The gravel bar directs the river's current against the cemetery riverbank. Finding the right solution for the problem, now that the cause is understood, is the task for the coming year. This will likely be an engineered log jam at the base of the cemetery bank to buttress the bank from further failure and improve fish habitat. Detailed surveying and engineering need to be done before the project can be built.

Northumberland residents voted at town meeting to appropriate \$10,000 toward the engineering project. CRJC greatly appreciates the cooperation of the town of Northumberland in approaching this difficult problem. The N.H. DES has pledged funds toward the



engineering study, and additional fund raising is underway.

### North Side Road, Stark

Field focused on the North Side Road in Stark, N.H., where erosion along the Upper Ammonoosuc River is eating into the bank and necessitating emergency road repairs. Field determined that high amounts of sediment from tributary Mill Brook are creating a large gravel bar in the Upper Ammonoosuc at this site. Flow diverted around the gravel bar is eroding the bank. CRJC has won funding from DES and M&E to engineer habitat restoration on Mill Brook to capture this sediment before it can cause erosion downstream. An additional benefit of this work will be restoring better water quality for trout, which seek the cooler Mill Brook in the summer.

### Colebrook Business Park

Upstream in Colebrook, Field found that the Mohawk River is constrained by everything from bedrock and glacial outwash terraces to rock riprap and concrete walls. More than half of its length has been artificially straightened, partly in an attempt to reduce ice jams in the town center. These factors have caused the Mohawk to deliver excess sediment to the Connecticut. This sediment has created large gravel bars that are diverting the natural flow, causing severe bank erosion at the Colebrook Business Park. With funding from DES and M&E, CRJC will look at the feasibility of opening up old side channels on town-owned land near the mouth of the Mohawk in order to capture this sediment before it can reach the mainstem.

Designs and permitting for a bioengineering project at the Colebrook Business Park are now complete, and the construction of "root-rap" to stabilize the bank and the planting of a riparian buffer will start this spring.

Continuing efforts at the business park and cemetery will demonstrate the value of understanding upstream causes of downstream erosion, and encourage others to implement projects in other parts of the river where there are similar erosion problems.

The National Oceanographic and Atmospheric Administration also provides funding for this work. 🌊

# Dwarf wedgemussels on the edge?

THE upper Connecticut River supports the largest known population of dwarf wedgemussels in the world. The dwarf wedgemussel (*Alasmidonta heterodon*) is a freshwater bivalve that spends most of its life partially buried in the bottom of rivers, with just the posterior end of the body visible from above. Individuals are usually not more than 1.5 inches long and are olive-brown or black. Their lifespan is less than 15 years.

Historically, the dwarf wedgemussel occurred throughout much of the mainstem Connecticut River from northern Connecticut to Columbia, N.H. In 1983, malacologist Arthur Clarke surveyed 19 sites on the mainstem Connecticut River between Brattleboro and northern New Hampshire and found mussels at only 13 sites. He found no mussels at all in the 100-mile portion between the First Connecticut Lake and Lake Francis downstream to the mouth of the Ammonoosuc River. From Hartland, Vt., to the Massachusetts border, Clarke stated the fauna had been reduced to a single species, the eastern elliptio.

The dwarf wedgemussel was declared federally endangered in 1990. Federal listing provided more funding for professional surveys, and surveyors began to find dwarf wedgemussels throughout much of the upper Connecticut River. New information suggests that dwarf wedgemussel populations are more stable than previously thought, yet they are absent from almost 100 miles of former habitat and they had not been seen in the middle portion of the upper Connecticut River (a nearly 40-mile reach between Norwich and Barnet, Vt.) in at least 27 years.

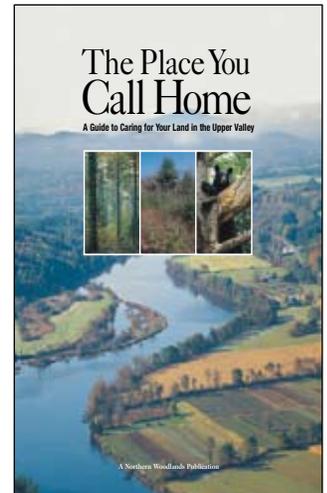
Scientists attribute the decline of freshwater mussels to factors such as alteration of natural hydrology, dams, point and non-point

source pollution, and invasive species. All of these are prevalent in the upper Connecticut River watershed, although water quality has improved dramatically since the passage of the Clean Water Act in 1972. Scientists are optimistic that ecosystem quality will continue to improve in the Connecticut River and elsewhere, and that aquatic wildlife can now begin the long recovery process. Hopefully, existing population clusters of the dwarf wedgemussel will provide a source of colonizers for the entire river as environmental conditions improve, and the species will reclaim ancestral habitat.

With funding from the Vermont Department of Fish and Wildlife, environmental consultant Ethan Nedeau (consulting firm Biodrawiversity [www.biodrawiversity.com/](http://www.biodrawiversity.com/)), surveyed 15 sites on the mainstem Connecticut River in the summer of 2005. The primary objective was to determine new southern and northern range limits of the dwarf wedgemussel, focusing efforts on the river between Norwich and Barnet, Vt. He found eight mussel species in all, and dwarf wedgemussel in Newbury, Vt., where the species had not been documented in 27 years. From this study and other data gathered by Nedeau, the dwarf wedgemussel is now known to exist in a 120-mile reach of the upper Connecticut River between Rockingham and Guildhall, Vt.

According to Nedeau, dwarf wedgemussels and other state-listed species strongly influence environmental permitting and other land-use and water-use decisions, and they are often cited as justification for land and water protection programs. Surveys are essential for documenting populations, which can open the door to a suite of conservation and management actions. Surveys conducted near structures that may require periodic maintenance (such as bridges and dams), in advance of potential riverbank stabilization projects, and near pollution sources will help managers protect the species. Additional surveys are planned for 2006, with funding from the U.S. Fish and Wildlife Service, the Vermont Chapter of The Nature Conservancy, and the New Hampshire Fish and Game Department.

To learn more about freshwater mussels that occur in the Connecticut River watershed, visit an on-line field guide produced by the Connecticut Department of Environmental Protection: [www.dep.state.ct.us/burnatr/wildlife/learn/fwmusl/fwmusl.htm](http://www.dep.state.ct.us/burnatr/wildlife/learn/fwmusl/fwmusl.htm). 🍀



*The Place You Call Home: A Guide to Caring for Your Land in the Upper Valley* provides landowners with information about the plants, animals, trees, insects, and the systems within which they exist, specifically tailored to the natural communities of the Upper Valley. It offers landowners information about forest management and wildlife habitat, and contact information for people who can assist them.

For more information, contact Northern Woodlands magazine at 802-439-6292 or see [www.northernwoodlands.org](http://www.northernwoodlands.org).

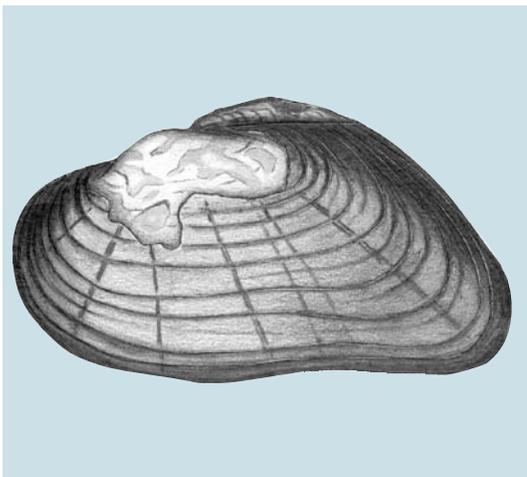


Illustration: Ethan Nedeau

## Cold River

continued from page 1

its shape is roughly circular. With this shape, the tributaries that collect flood water from the basin are approximately equal in length, so accumulating flood waters would have the same distance to travel and would empty into the main stem of the river at approximately the same time, which causes a high discharge rate within a short time span. In contrast, a river or stream basin with a long or elliptical shape (see diagram below) tends to accumulate discharge at a more even rate because the tributaries in a narrow area of the basin can discharge to the main stem relatively quickly (i.e., a short travel distance) whereas a tributary in a wider portion of the same basin would have a longer travel time, so the cumulative recharge to the main stem is somewhat averaged out, and the peak discharge tends to be lower.

- **Bedrock geology.** Compounding the situation in Alstead is a geologic fault cutting across the Warren Brook drainage in the vicinity of the Cooper Hill Road culvert. The abrupt change in bedrock type caused by the fault probably created the small plateau directly upstream of the culvert's location, even though the surrounding area is generally steeply drained. The plateau area allowed a large volume of water to back up behind the culvert, which eventually gave way.

- **Surficial geology.** The valley walls at Warren Brook are lined with glacial till, which contains a high amount of clay, so it doesn't

absorb water easily. Till is also resistant to erosion. These characteristics allowed rainwater to be focused down the valley and travel at a high velocity. Rather than creating a conventional flood, the conditions in Warren Brook led to wall of water focused in a natural flume that tore out roads, carried away homes and cars, broke down a bridge, and extinguished seven lives.

Wunsch wants to analyze surficial geology maps and see how damage correlates to geologic conditions, and perhaps convey this information as a tool for emergency management. For example, early reconnaissance of the area seems to show that areas along the stream channel that are mapped as sand and gravel, or stream alluvium, seemed to correlate with areas that experienced higher rates of erosion. Thus, geologic maps could be used to anticipate areas that would experience the most damage in future floods.

Data on elongation ratios, wetlands storage, and surficial geology are available and could be used to predict potential high damage or erosion areas as the result of a dam breach or flooded culvert in other areas of the state. Wunsch added that many culverts around the state might be undersized if storm severity increases, or volume of runoff increases as a result of land-use changes, or changes in storm tracks as a result of climate change.

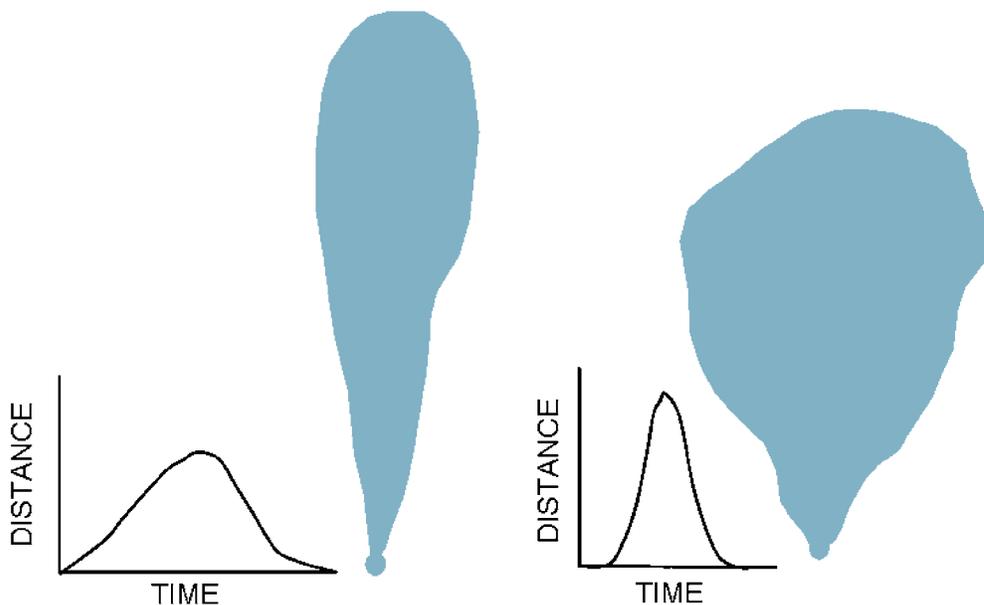
Wunsch also discussed the state's geological mapping program, which is coordinated by his bureau, the New Hampshire Geological Survey. The state has made significant progress in mapping the state's surficial geology at

## NEW FLOOD-PLAIN MAPS

The Federal Emergency Management Agency (FEMA) has embarked on a major effort to upgrade its floodplain maps with the latest information from river science and mapping technology. According to FEMA, the new maps are far more accurate than previous versions. In the Connecticut River basin, Windham and Windsor counties of Vermont have recently been done, and Cheshire and Sullivan counties in New Hampshire.

FEMA floodplain maps, the basis for eligibility for federal flood insurance, must be translated into local community zoning ordinances before property owners qualify for insurance. FEMA also offers an incentive of reduced flood insurance rates to people in communities that adopt ordinances more strict than the basic FEMA requirements. The updates are done county by county.

FEMA has a new publication, "Reducing Damage from Localized Flooding: A Guide for Communities." Call 1-800-480-2520 to order.



The **elongation ratio** is the ratio of the diameter of a circle of area equal to that of the basin, to the length of the basin, according to the N.H. Geologic Survey, which provided this diagram. The Warren Brook watershed's shape is like that of the right-hand figure. With a steep elongation ratio, accumulating flood waters emptied into the Cold River at roughly the same time, causing a wall of water that blew out a culvert and led to devastation downstream.



Photo: New Hampshire Dept. of Environmental Services

*Specific topographic and geological features helped create a devastating flood. Understanding them may help emergency planning in other regions.*

Shallow bedrock in the stream channel, exposed after the flood, may have accentuated the flooding because the water could not erode the channel downward, according to geologists.

the 1:24,000 scale, which represents geology of quadrangle-sized areas at a high level of detail.

For example, he told CRJC that the new surficial maps that are available for some areas show more detail than the state’s stratified drift aquifer maps. Wunsch indicated that the drift aquifer maps are valuable sources of information, but they were not intended to be used as quantitative planning tools as their boundaries are not always accurate. Wunsch said using both maps to complement each other would be the most appropriate. In addition, he said he is interested in partnering with towns, conservation commissions, or other like groups to upgrade aquifer maps in areas of need.

Geological maps and reports that are available from the state can be found at: <http://des.nh.gov/geo1link.htm>. For more information about digital data for land-use planning, or hazard reduction or mitigation can contact the State Geologist at 271-6482, or e-mail: [geology@des.state.nh.us](mailto:geology@des.state.nh.us).

Ted Walsh, who administers the volunteer river assessment program for DES, focused on the impact of the Alstead flood on water quality. DES had gauging stations in the Cold River and a biomonitoring station in the Warren Brook, allowing it to get good “before” and “after” data. The Cold River Local Advisory Committee (LAC) has monitored the river. Walsh reported on the following areas:

- **VOCs:** while gasoline, oil, and other contaminants containing volatile organic

compounds undoubtedly entered the river, since dozens of cars were washed away, as well as homes, levels were quickly diluted by the volume of water and were below determinable limits. However, it may be assumed that contaminants were washed into the Connecticut River.

- **Bacteria, E. coli:** Levels were actually higher in September, before the floods, perhaps because low rain amounts had not carried bacteria into and then down streams. There was a spike in levels when it did rain before the flood, and not much in the flood event itself, as bacteria hadn’t time to build up again to high levels before being swept away.
- **pH:** decreased, as rainwater is acidic.
- **Chloride:** no change.
- **Conductivity:** significantly lower, because of low ionic content of rainwater.
- **Nutrients/total phosphorous:** huge increase from runoff from farms and failed septic systems. Levels will be monitored this spring and summer.
- **Turbidity:** increased markedly from very low base levels, because of destruction of banks and riparian buffers, and heavy equipment in the river.

DES, working with the Cold River LAC, will continue to monitor the river this year, with particular attention to temperature and other physical and biological indicators, according to Walsh. “We’ll be looking to see if and how the river changes in response to the flood events,” he said. 🌿

*Local officials should consider a culvert survey to identify potentially undersized culverts to help avert such a disaster in their towns. In Vermont, the Two Rivers Ottauquechee Regional Planning Commission has just completed one for the Ompompanoosuc drainage.*

## Calendar

For the most current information,  
visit [www.crjc.org/calendar1.htm](http://www.crjc.org/calendar1.htm)

### MAY

- 15 Upper Valley Subcommittee,  
Bicentennial Bldg, Thetford Hill,  
7–9 pm
- 16 Wantastiquet Subcommittee,  
Westmoreland Town Hall, 7–9 pm
- 30 (Tuesday) — CRJC meeting,  
12:30 pm, location TBA

### JUNE

- 8 Headwaters Subcommittee, Columbia  
Town Hall, 7–9 pm
- 13 Mt. Ascutney Subcommittee, Windsor  
Connection Resource Center, 7–9 pm
- 22 Riverbend Subcommittee, Littleton  
Community House, 7–9 pm
- 26 CRJC meeting, 12:30 pm, location TBA

### JULY

- 31 CRJC meeting, 12:30 pm,  
location TBA

# River Ripples



## Changing status for bald eagles?

**I**N Vermont, the last documented breeding pair of eagles was at Lake Bomoseen in Rutland County in the 1940s. But this year, observers are closely watching a pair in Rockingham which is incubating eggs. If all goes well, Vermont may be celebrating eaglets this spring. Observers report that this pair began incubation on March 5. You can watch another Connecticut River pair (downriver in Massachusetts) via a Northeast Utilities live Web cam at [www.nu.com/eagles/default.asp](http://www.nu.com/eagles/default.asp).

In February, the U.S. Fish & Wildlife Service began the first step towards taking the bald eagle off the federal endangered and threatened species list. Over 7,000 known nesting pairs now live in the lower 48 states. The most critical factor in the recovery of the bald eagle was a federal ban on the use of the pesticide DDT in the U.S. in 1972. The eagle was listed under the Endangered Species Act, which allowed for its habitat protection, including nesting sites and summer and winter roost sites. States, private landowners and others played a vital role in restoring eagles, including purchasing and protecting important habitat, reintroducing the bald eagle back into the wild, and making extensive efforts to educate the public.

In New Hampshire, bald eagles will remain endangered at the state level even if their federal status changes, according to John Kanter, coordinator of the Fish and Game Department's Nongame and Endangered Wildlife Program. In 2005, New Hampshire had nine nesting pairs of bald eagles that fledged a total of 11 chicks, the second straight year of fledgling success for the state (11 chicks fledged in 2004, up from five in 2003 and just one in 2002).

## Research reveals loons sing a new tune

**A** STUDY from Cornell University finds that male loons change their calls when they take over a new territory — to yodels very different from those made by the rival they just moved out. Yodels of male loons are unique from bird to bird. But the study found that of 13 loons that changed territories, 12 substantially altered their tunes within two years. The yodels changed in ways to increase their difference from those of the former territorial males. Scientists don't know whether other bird species also alter their songs when they change territories.

The study also found that as loon nesting habitat is lost to shorefront development, the birds are becoming more aggressive in seeking and defending nesting platforms that have been provided for them in place of their natural habitat. The researchers recommend coordinating where and how many platforms are put out on a lake.

The study, published in March in the international publication *Animal Behavior*, received support from the New Hampshire Charitable Foundation.

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