

West Arlington Covered Bridge

Batten Kill News



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Newsletter Highlights

More than a year has passed since the last issue of *Batten Kill News* was distributed. It has truly been a busy year for all involved in the various studies conducted over the preceding half dozen years as well as preparing for the work ahead of us. Last October the Batten Kill Watershed Alliance (BKWA) hosted two **Open House Forums** at which results of 12 studies into possible causes of the brown trout population decline were presented. Researchers directly involved in the studies were in attendance to present the results of their work as well as to answer questions one-on-one with the public.

The BKWA, with involvement of state and federal resource agencies, began planning and design of the **Twin Rivers Farm Project** in West Arlington. The project is a trout habitat restoration initiative with the goal of increasing the abundance and survival of brown trout by increasing in-stream trout cover and restoring trees to the river banks. It is hoped the pilot project will encourage landowners along the Batten Kill to become engaged in stream and riparian habitat restoration.

On the ground work at the Twin Rivers Farm site is planned for this September with additional work to take place next spring and summer.

Lastly, the Vermont Fish & Wildlife Department has drafted a 6-year **Interim Trout Management Plan** for the Batten Kill main stem. The proposed plan has recently been released to the public for comment with a public meeting to be held Thursday evening, September 21, 2006 in Manchester. See **Public Meeting Notice** for details.

These and other articles of interest are presented in more detail in this issue of *Batten Kill News*. The first issue of the biannual newsletter was released in 2000 as a means of informing the public and agencies of (1) work being done to investigate causes for the brown trout decline; (2) increase the public's awareness and understanding of the importance of in-stream and riparian habitat to maintaining a healthy river and trout populations; (3) bring attention to habitat restoration activities undertaken in the Batten Kill watershed by conservation organizations and government agencies;

and (4) provide information to the general public and towns to foster improved stewardship of the river corridor.

Over the years we have received positive feedback from newsletter readers, who value it as a source of information concerning the Batten Kill. Furthermore, it is the philosophy of the Vermont Fish & Wildlife Department:

"To carry out our mission in accordance with our beliefs, we must communicate with the public about the economic, educational, and scientific values of fish, wildlife, and their habitats and the outcomes of human interactions with those resources. Because the public's role is important in our work, we encourage citizen participation in our resource management." ~ Vermont Fish & Wildlife Department Strategic Plan, 2001-2005

We hope the newsletter has been a valuable public outreach tool and there continues to be public support to receiving it via postal mail, email, or the department's website. From this point forward, the newsletter will be released annually in late winter in advance of the opening day of the trout fishing season.

Batten Kill Open House Forums

Last October 2005, the BKWA hosted two open houses as a means of disseminating to the public results from a dozen studies undertaken by natural resource agencies, academic institutions, and private consultants. The studies were designed to investigate specific issues identified by the inter-agency Batten Kill Study Team as possible causes for the reduction of brown trout numbers in the Batten Kill since the mid 1990s. (See *Batten Kills News*, Winter/Spring 2005 issue for a listing of the studies). Studies were largely funded by cost-share agreements with the U.S. Forest Service, Green Mountain National Forest (USFS) and through congressional appropriations sponsored by U.S. Senator Jim Jeffords.

The first open house was held Thursday evening, October 27 in Manchester; the other during the



Doug Burnham, VDEC, presents results of Batten Kill water quality study at open house forum.

day on Saturday, October 29 in Arlington. Both sessions were well attended and received by the public.

Study results were presented in poster format for attendees to view at their leisure. Other displays included river simulation to demonstrate fluvial geomorphic processes and computer simulation of adult brown trout movements in the Batten Kill. The principal investigator involved with each

study was present to explain specific details of the work done as well as to respond to questions posed by the public.

In addition to hosting the events, the BKWA provided refreshments. The Vermont Fish & Wildlife Department (VFWD) wants to extend its appreciation to the following participants: Cynthia Browning and Eleanor Hanrahan, BKWA; Shelly Stiles, Bennington County Conservation District; Kristian Omland and Donna Parrish, Vermont Cooperative Fish & Wildlife Research Unit; Scott Wixsom, Steve Roy, Dan McKinley, and Keith Nislow, USFS; Doug Burnham, Mike Kline, and Shannon Hill, Vermont Department of Environmental Conservation; John Field, Field Geology Services; and Chris Bernier, VFWD for their participation and contributions that made the forums a success.

Public Informational Meeting on Proposed Batten Kill Plan

The VFWD has drafted an interim plan for managing trout in the Batten Kill that, if adopted, includes stocking a limited number of sterile rainbow trout into the lower river in Arlington.

The plan places long-term high priority on protecting wild trout and their habitat as well as the need to improve in-stream and riparian habitat. Stocking would be gradually phased out as wild trout populations increase in response to habitat restoration. The plan is available at the VFWD website:

[http://www.vtfishandwildlife.com/library/Reports and Documents/Fish and Wildlife/Trout Management Plan for the Batten Kill.pdf](http://www.vtfishandwildlife.com/library/Reports%20and%20Documents/Fish%20and%20Wildlife/Trout%20Management%20Plan%20for%20the%20Batten%20Kill.pdf)

The public will have an opportunity to provide input about the proposed plan at a public meeting to be held Thursday, September 21 from 7:00 to 9:00 p.m. in Manchester Center at Burr and Burton Academy on Seminary Avenue. The meeting will be in the cafeteria.

For more information contact: Ken Cox, phone 802.885.8828 or email ken.cox@state.vt.us.



Vermont Fish & Wildlife Proposes New Batten Kill Trout Management Plan



After six years of investigating possible causes for the decline of wild brown trout abundance in the famed Batten Kill, the VFWD has released a draft fishery management plan that puts emphasis on restoring wild trout and trout habitat in the river. The plan, if adopted, would also undertake stocking a limited number of sterile rainbow trout to improve angling quality over the time needed to rebuild the wild trout fishery. The complete plan is posted on the VFWD website at

[http://www.vtfishandwildlife.com/library/Reports and Documents/Fish and Wildlife/Trout Management Plan for the Batten Kill.pdf](http://www.vtfishandwildlife.com/library/Reports%20and%20Documents/Fish%20and%20Wildlife/Trout%20Management%20Plan%20for%20the%20Batten%20Kill.pdf)

The VFWD, in cooperation with the USFS, conducted scientific studies of the Batten Kill to assess factors that could account for the brown trout decline. An important finding that came from the studies is the amount of cover habitat in the river necessary to provide trout refuge from environmental and predatory losses is substantially lower than levels reported to be optimal for brown trout. Cover habitat consists of logs, boulders, bank vegetation, and deep pools where trout prefer to rest and keep out of sight of potential threats. Lack of cover makes the river a less hospitable place for trout to live and can reduce their survival as well as the overall capacity of the river to hold fish.

The management goal for the Batten Kill as stated in the plan is:

Sustain wild brook and brown trout population abundance and fish size structure in the Batten Kill and its tributaries supportive of quality fishing and within the ecological carrying capacity of the system.

To accomplish this goal, the plan recognizes the need to protect, restore, and improve trout habitat, including in-stream trout cover and re-establishment of forested riparian buffers. This will require involvement of multiple partners: state and federal government agencies, towns within the watershed, non-governmental organizations, local businesses, and most importantly riparian landowners. Making the levels of improvement needed must also involve private landowners, who control the use and future condition of most of the lands abutting the main stream and tributaries.

Under the proposed plan, wild brook and brown trout populations would continue to be fully protected from angler harvest, i.e. all brook and brown trout caught would need to be immediately released to the river. As now, this would apply to the main stem from the base of Dufresne Pond dam down to the New York state line.

The plan also proposes a limited, short term stocking of sterile trout to improve fishing quality until such time that the wild fishery recovers. Eric Palmer, VFWD Director of Fisheries states, "Stocking trout into the Batten Kill, even for a short time, has caught the attention of anglers on both sides of the issue and appears to have generated the most controversy." The Batten Kill main stem was last stocked in 1975 and has been managed exclusively as a wild trout fishery since then. One exception is that of Dufresne Pond in Manchester which has continued to be stocked annually with yearling brook trout.

Stocking would involve up to 1,000 sterile rainbow trout in Vermont's lower 6.5 miles of the river. As catchable-size wild trout

numbers increase in response to habitat improvements and other factors, stocked trout numbers will be reduced and eventually eliminated. Since release of the draft plan, many anglers have asked: why sterile rainbow trout and not brown or brook trout? The purpose for using sterile rainbow trout is a matter of *minimizing or avoiding potential risks to resident wild populations*, including:

- ❑ Establishment of a third reproducing trout species population.
- ❑ Competition between wild and stocked trout for habitat and mates.
- ❑ Alteration of the genetic composition of wild populations.
- ❑ Inability of anglers to distinguish stocked from wild fish of the same species.

Under the proposed plan, stocked rainbow will be allowed to be harvested pursuant to Vermont's general angling regulations (daily 6 fish per angler; no minimum size limit).

"The department wants to gather more public input before making a decision whether or not to follow through with this part of the proposed plan. In the long run, habitat improvement appears to be what will benefit the wild fishery most and is what we hope the public will recognize as common ground," says Palmer.

The VFWD is currently taking public comments on the proposed plan and has scheduled a public hearing for **September 21** in Manchester. See hearing announcement in this issue. Comments also may be submitted in writing or email to Ken Cox, Vermont Fish & Wildlife Department, 100 Mineral Street, Suite 302, Springfield, VT 05156, or email ken.cox@state.vt.us.

Twin Rivers Farm Project

On the lower Batten Kill in West Arlington immediately upstream from where the Green River enters is a half mile long stretch of river that is the focus of a multiple-year pilot trout habitat improvement project. A recent assessment of trout cover in the Batten Kill found this critical component of trout habitat to be well below levels considered optimal for brown trout. Inadequate cover can reduce trout survival by increasing their vulnerability to environmental stresses and predation. This September, in excess of 1,300 feet of river will be treated by the installation of 20 large woody debris structures consisting of combinations of logs and root wads anchored to the river bed and banks. In addition, boulders will be placed on the bed of the treated pool section. Trout cover is projected to increase overall 15 fold from the current 0.6 to 9 percent. The greatest improvement will occur in the pool section of the treatment area, where cover is projected to increase from slightly over 1 to about 23 percent.

The VFWD, with assistance of the USFS, began assessing trout populations inhabiting the project area last summer and will repeat sampling this summer to establish baseline estimates of fish abundance prior to habitat improvement. Populations will continue to be evaluated for several more years to observe how trout respond to greater available cover.

The project involves many cooperators committed to trout habitat restoration in the Batten Kill. The following are

contributing to the effort by providing funds and/or services: landowners, Dr. and Mrs. William Lesko; Howard Kopelson and Maxine Kaplan; and Timothy and Elizabeth Peters; The Batten Kill Watershed Alliance; Southwest Vermont Chapter and several out-of-state chapters of Trout Unlimited; the Orvis Company; the National Fish & Wildlife Foundation; the River Network, the U.S. Department of Agriculture, USFS and Natural Resource Conservation Service; the Bennington County Conservation District; Mark Riley, Vermont Forest & Field of Poultney; and the VFWD.

Other Habitat Restoration Projects Completed in 2005-2006

Manchester Bank Slide ~ Scott Wixsom, USFS

The large slumping sand bank adjacent to the Manchester wastewater treatment plant has been in existence and actively eroding into the Batten Kill for at least 25 years. With contributions from the BKWA and the Orvis Company, the USFS fisheries crew installed tree revetments at the

(Continued on page 6)



Sand bank stabilization in Manchester.

Controlling Beaver Damage

Trees growing on stream banks all too often fall victim to beavers acquiring food and construction materials for dams and lodges. This can be particularly problematic in situations where wooded riparian strips along water courses are narrow or replanting trees on banks lacking adequate woody vegetation is desired.

Beaver is an example of both a keystone species as well as an ecosystem engineer. A keystone species is one that has a disproportionate effect on its environment relative to the small number (biomass) of animals their population represents. As such, its presence has a significant influence on species composition and the appearance of the ecosystem that beavers inhabit. And, as an ecosystem engineer, beaver affect directly or indirectly resource availability by transforming stream habitat to pond or swamp habitat.

The natural behavior and tendencies of beavers to survive sometimes conflict with human interests and values, such as when agricultural or timberlands are flooded, culvert are dammed, or they feed on vegetation needed for other uses. So what to do?

Decreasing pelt values in the last decade and a half resulted in a corresponding reduction in trapping pressure. In Vermont, this enabled beaver populations to increase dramatically. When appropriate or desired, problem beavers may be removed by lethal means (trapping or shooting) any time of the year providing the local game warden is first contacted and gives permission. However, removal of nuisance beaver during

the normal trapping season is always preferable to reduce costs and avoid waste of renewable resource.

Non-lethal damage control options include: (1) rigid wire beaver guards; (2) painting tree trunks; (3) low fencing; and (4) electric fencing.

Beaver guards are constructed of rigid hardware cloth or 2" by 4" welded wire fencing (not chicken wire) wrapped around the base of the tree trunk and extending to a height of at least four feet. The guard should not be wrapped snugly around the trunk but sized six inches greater in diameter to allow for additional tree growth. Cages can be anchored to the ground with stakes. This method is most appropriate when protecting a small number of selected individual trees or shrubs but may be too costly to protect large areas.

Beaver gnawing may also be deterred by coating the tree trunk with a mixture of paint and sand. The ratio is 8 ounces of mason sand added to one quart of latex or oil-based paint. Stir frequently to keep sand in suspension and paint the trunk to a height of four feet. Paint can be clear or color-coded to match the trees. Avoid painting young trees less than six feet in height as paint may be harmful to them.

Low fencing can be used to protect groups of trees and does not require the entire vegetated area to be

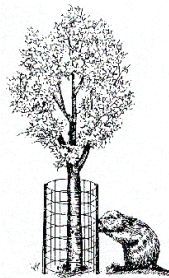
enclosed. Beavers dislike being separated from the water they inhabit.

An electric fence serves the same purpose as a low fence. It may be the best option for protecting large areas of dense vegetation. The fence consists of a single strand of wire placed not higher than six inches above the ground. The equipment is the same as that used by farmers to keep cattle within field boundaries. Solar generators or battery packs may be used as the power source.

A Vermont Agency of Natural Resources document titled "*Best Management Practices for Resolving Human-Beaver Conflicts in Vermont*" (dated August 2002) outlines practices and steps for managing a wide range of problem situations that result from beaver activity. It also brings the legal and regulatory framework related to beaver management. A copy may be printed from the VFWD website at

[http://www.vtfishandwildlife.com/library/Factsheets/Fish and Wildlife/Best Management Practices for Human-Beaver Conflicts.pdf](http://www.vtfishandwildlife.com/library/Factsheets/Fish%20and%20Wildlife/Best%20Management%20Practices%20for%20Human-Beaver%20Conflicts.pdf)

Additional information and assistance may be obtained by contacting the office of the VFWD serving your area or contacting the central office at 802.241.3700.



New Fish Possession Law: Protecting Fish Health & Vermont Fisheries

Last year in response to the increasing threat of spreading fish species and associated fish diseases and parasites into waters of the state, the Vermont Fish & Wildlife Board revised the fish possession law, which now reads as follows:

No person shall have live fish in their possession that are transported in a manner which attempts to keep them alive when leaving waters of the state [10 V.S.A. Sect. 1251 (13)] except as follows:

- Those species allowed to be possessed and used as live fish for bait;

- The person has been issued a scientific collection permit by the Commissioner;
- The person has been issued a fish transportation permit by the Commissioner;
- The person has been issued a breeder permit or fish importation permit by the Commissioner.

As an example of the threat live fish movement poses to our fisheries, between 1998 and 2002 two pathogens of trout were discovered in the Batten Kill: bacterial kidney disease and

whirling disease. Whirling disease is of particular concern to VFWD, since it has the potential to cause high mortality in brook and rainbow trout. Transporting any live fish from the Batten Kill, or any other water body for that matter, to be released into other waters can introduce disease and reduce the health of fish populations. Furthermore, the introduction of disease-free fish, even those species that are native to the state, are a threat to fish populations and the ecological balance of our waters. Moving live fish is now illegal in Vermont unless a permit to do so has been issued by the Commissioner.

Twin Rivers Farm Project *(cont. from page 4)*



Fish cover habitat construction in Manchester.

base of the slide as well as several large woody debris clusters to increase trout cover within the project site. The river bank opposite the slide is owned by the Orvis Company and was planted with 30 trees.

USFS Richville Property ~ Scott Wixsom, USFS

In 2002, the USFS purchased a 40-acre parcel off the Richville Road in Manchester. The land, until recently, was tilled for corn resulting in a narrow strip of trees remaining between the river and cropland. Since 2005, the USFS has made improvements to the property including expanding the width of the riparian buffer, planting 60 trees within the buffer, stream bank stabilization, and provision for off-road parking.

Sunderland Inn ~ Doug Lyons, SWCTU

On Saturday, April 22, nine members of the Southwest Chapter of Trout Unlimited (SWCTU) along with nine students from St. Michael's

College Fly Fishing Club joined forces to assist Alan and Judy Edmunds, proprietors of the Sunderland Inn on VT Route 7A, with replanting 600 feet of Batten Kill stream bank abutting the inn property. The Edmunds purchased the thirty 14+ foot tall trees, and SWCTU with assistance of the BKWA contributed supplies, such as beaver guards. Despite the gloomy weather, everyone had an enjoyable time, made a tangible contribution to the river, and learned from the experience. In addition to the tree plantings, the Edmunds will maintain a sizeable naturally-vegetated riparian buffer along the river.

Trout Cover: What is it and why is it important?

Cover is one of the essential components of trout habitat. It has been defined as any stream bank or channel feature “that allows trout to avoid the impact of the elements or enemies” (Binns and Eiserman 1979). Cover comes in many forms, such as overhanging bank vegetation, undercut stream banks, large wood, boulders, aquatic vegetation, deep pools, and surface water turbulence. And, it occurs in streams as a result of fluvial geomorphic processes, interaction with riparian vegetation, and stream flow (Wesche et al. 1987). This interaction of the stream and its riparian ecosystem is critical to cover availability and maintenance and, from a stream management perspective, the two should not be viewed as being separate from one another. The presence and composition of riparian vegetation influence channel forming processes, sediment and chemical inputs affecting water quality, and in-stream fish cover. For example, many of the large trees growing on stream banks and left to natural processes will eventually fall into the stream channel creating cover for trout. Without adequate in-stream cover, trout are vulnerable to increased physiological stress associated with environmental extremes (flood and drought events, winter) as well as increased predation. Bank vegetation and forest canopy over the stream channel serve other important functions necessary to maintaining optimal trout habitat, including shading and cool water temperature maintenance and a source of terrestrial invertebrates, a seasonally important food for trout.

The retention and restoration of vegetated riparian buffers between developed lands and streams is critically important to maintaining quality habitat for trout and other aquatic biota. All too often stream banks are stripped of vegetation to make room for land development, remove “obstacles” to water-based navigation, or simply to “enhance” the view of the stream or landscape aesthetics. Unfortunately, the cost of these activities to stream environmental health can be significant, although the real impacts may not be immediately obvious.

Recommended actions that stream bank landowners should consider:

- If the banks are naturally vegetated, refrain from removing or thinning existing trees, shrubs, etc. Today’s saplings are tomorrow’s trees and fish cover.

- Leave an unmowed strip of land (preferably at least 50 feet in width) between lawns (including other developed lands) and the top of the stream bank.
- Replant riparian buffers with native trees and shrubs.
- Retain dead and unhealthy trees within the buffer to the extent possible. Tree snags have many wildlife values (e.g., potential nest cavities) and eventually some will be recruited to the stream and serve as fish cover.

Landowners need not forfeit their enjoyment of the stream or adjacent lands by maintaining or restoring vegetated buffers. Access to the water can be provided just as well by a narrow walking path as an extensively mowed lawn, and it doesn’t require the routine labor commitment to keep it up.

There are a number of state and federal natural resource agencies that can provide technical assistance to landowners interested in exercising best management practices in riparian areas. Also valuable information is available via the internet. For example, the Connecticut River Joint Commission website is an excellent starting point. See their website at:

<http://www.crjc.org/riparianbuffers.htm#backyard>

References:

- Binns, N. A., and F. M. Eiserman. 1979. Quantification of fluvial trout habitat in Wyoming. *Transactions of the American Fisheries Society* 108:215-228.
- Wesche, T. A., C. M. Goertler, and C. B. Frye. 1987. Contribution of riparian trout cover in small streams. *North American Journal of Fisheries Management* 7:151-153.

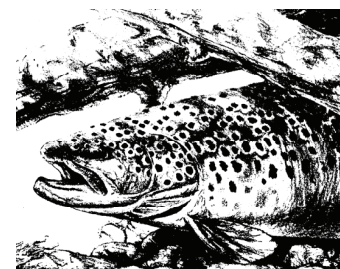


Illustration by Mike Stidham

Check Out These Web Sites



VT Agency of Natural Resources
<http://www.anr.state.vt.us/>



Batten Kill Conservancy-New York
<http://www.battenkillconservancy.net/>



Southwest VT Chapter of Trout Unlimited
<http://www.tuswvt.org/>



VT Fish & Wildlife Department
<http://www.vtfishandwildlife.com/>



U.S. Forest Service
<http://www.fs.fed.us/>



Batten Kill Watershed Alliance
<http://www.battenkillalliance.org/>

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PHOTO CREDITS

Page 1— Ken Cox, VFWD

Page 2 (top) — Chris Alexopoulos, USFS

Page 2 (bottom) — http://techalive.mtu.edu/mec/module07/exotics_2.htm

Page 4 (top) — Chris Alexopoulos, USFS

Page 4 (bottom) — Southwest VT Chapter TU

Page 5 — <http://www.univ-ubs.fr/ecologie/>

Page 6—Chris Alexopoulos, USFS

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