

Batten Kill News



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The MISSION of the Vermont Department of Fish & Wildlife is the conservation of fish, wildlife, and plants and their habitats for the people of Vermont. In order to accomplish this mission, the integrity, diversity, and vitality of all natural systems must be protected.

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Whirling Disease Found in the Batten Kill!

This past summer whirling disease, a potentially serious disease affecting trout and salmon, was discovered in the Batten Kill. The Vermont Fish & Wildlife Department was alerted to this by the New York State Department of Environmental Conservation in June of this year after that agency got back disease test results from fish samples collected from the river in August 2001. Ten species of fish, including brown and brook trout, were sampled from three locations on the river in New York and were sent to the Northeast Fishery Center at Lamar, Pennsylvania for laboratory testing. Results returned negative for all species except brook trout.



In response to this news, this Department collected samples of brook and brown trout in early August from the Vermont section of the river about two miles upstream of the state line. The fish were tested by a private laboratory based in Colorado, and test results were soon returned indicating both brown and brook trout exposure to the whirling disease parasite.

Whirling disease is caused by a microscopic protozoan, *Myxobolus cerebralis*, that invades the body of fish through the skin (see **Whirling Disease Life Cycle**). The parasite releases spores into the fish which attack cartilage tissue, particularly in the head, causing serious physical damage to the fish. The disease has devastated some trout populations in the Rocky Mountain states, such as

Colorado, Montana, and Wyoming. It can occur in both hatchery and wild environments.

The disease is native to Europe and was first discovered in the U.S. in 1956, where it showed up in Pennsylvania. Since then, it has been reported from at least 22 other states. It was first observed in New York in October 1994. The recent appearance of the parasite in the Vermont portion of the Batten Kill is the first documented case for this state.

The Vermont Fish & Wildlife Department collected additional trout samples this fall from the Batten Kill and the nearby Walloomsac and Mettawee rivers to begin determining the extent to which the parasite is distributed in the state. Positive results have been indicated for trout sampled at two of five locations in the Batten Kill watershed. Whirling disease presence was detected in trout captured at the Route 313 bridge in Arlington and in the Green River. Fish collected near the Union Street bridge

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Whirling Disease: Questions & Answers



Why is it called whirling disease? The disease causes skeletal deformities, including the vertebral column. When infected fish are disturbed, they swim in a gyrating or whirling manner, hence the name of the disease.

Are there other signs indicating a fish might be infected with whirling disease?

Yes, infected fish may show gross deformities of head structures, such as gill covers and the jaw. Also, fish may have a blackened tail. Even though these are symptoms of whirling disease, they are not positive indicators of the disease alone. Similar symptoms can result in fish subject to physical trauma or poor nutrition. Laboratory testing is the only sure means of determining the presence of the disease.

Are all fish susceptible to whirling disease?

Current information indicates this is a disease that inflicts salmonids only. While all salmonids, with the possible exception of lake trout, are subject to infection, some species are more susceptible than others (presented in order of high to low): rainbow trout, sockeye salmon, golden trout, cutthroat trout, brook trout, steelhead, chinook salmon, Atlantic salmon, brown trout, and coho salmon.

How serious is whirling disease? Whirling disease has been reported to impact fish hatcheries and wild fish stocks in the natural environment. Western states, such as Montana and Colorado, have reported massive declines in wild trout fisheries infected with the parasite. Eastern states, such as New York and Pennsylvania, have not documented any serious declines in wild trout populations. Research into whirling disease is ongoing to help fisheries professionals better understand this complex parasite and its effects on fish.

Does whirling disease pose a health threat to humans? No. The parasite has only been found to infect fish and its intermediate host, the tubifex worm. It does not infect humans.

How is whirling disease spread from one location to another? Because the parasite, that causes whirling disease, has two distinct life stages (see **Whirling Disease Life Cycle**), it can be

transmitted a number of ways. Live or dead infected fish or fish parts are the main vectors for the spread of the disease. Fish-eating birds have also been documented as transmitting the parasite through their feces. Humans also have the potential to spread the parasite through their use of infected equipment, water, and other aquatic organisms. See **What You Can Do to Prevent the Spread of Whirling Disease**.

What are the options for dealing with the disease?

There are no simple solutions for managing the disease, and there are no known ways of eliminating the parasite from waters that have become infected with it. Containment of the disease by strict regulation of the transport of fish is one of the best options. The Vermont Fish & Wildlife Department has a strong fish health program designed to prevent the introduction of exotic fish pathogens. The program includes fish health inspections of state, federal, and private commercial hatcheries; fish importation regulations; and disease surveys of free-ranging fish in Vermont waters. The general public, including anglers and other water users, also has a critically important role in controlling the problem and safe guarding our fisheries from the spread of whirling disease, and other fish pathogens and aquatic nuisances (see **What You Can Do to Prevent the Spread of Whirling Disease**).

Has whirling disease had any affect on trout populations in the Batten Kill? There is no evidence indicating the disease is affecting either the brook or brown trout at the population level in the river, although it cannot be entirely discounted at this time. Both New York and Vermont fisheries departments conducted fish health testing of Batten Kill trout prior to 2001 (New York in 1999; Vermont in 1998 and 1999). All tests returned with negative results for whirling disease. This suggests the disease may be a recent introduction to the river, and probably occurred well after the onset of the observed decline in brown trout abundance. Also, brown trout are considered to have some resistance to the parasite. Further evaluation is needed.

How You Can Help Prevent the Spread of Whirling Disease

Anglers and other river users are a critical link to limiting the spread of this disease to other waters. This disease has the potential of negatively affecting the health of Vermont's valued trout and salmon fisheries.

- ▶ Never transport any fish or water from one waterbody to another, including private ponds.
- ▶ Do not import any fish from another state unless a permit has been obtained from the Vermont Fish & Wildlife Department. The Department has a fish health certification program which identifies commercial hatcheries that are free of serious fish diseases.
- ▶ Do not clean fish in our lakes and streams. Dispose of fish entrails or skeletal parts as dry waste that would go to a landfill or bury underground away from waters. Infected fish may hold whirling disease spores, and the improper disposal of fish parts may spread the parasite to uninfected waters.
- ▶ Clean all equipment, including boats and trailers, canoes, float tubes, waders, boots, and any other equipment of mud and aquatic plants before leaving any waterbody. Thoroughly wash and dry equipment, preferably in the sun, before using it again.
- ▶ Whenever fishing more than one stream or lake within a day, take the time to inspect and clean all equipment having had contact with infected water before moving onto the next waterbody. If possible, fish waters identified as uninfected before going to those known to be infected. For example, if you plan to fish the Batten Kill and Mettawee River within the same day, make your trip to the Kill last.

Adopting the above guidelines in your general use and enjoyment of our waters also lessens the possibility of spreading other aquatic nuisances, such as non-native fishes, zebra mussels, Eurasian milfoil, and other diseases and parasites that threaten Vermont's aquatic ecosystems and fisheries.

Whirling Disease Found in the Batten Kill *(cont. from page 1)*

and West Branch in Manchester, and a site in East Dorset were negative. Also, samples taken from the Walloomsac and Mettawee rivers produced negative results.

The affect whirling disease has had on trout populations in the U.S. has a mixed record. Although the parasite has severely impacted populations and hatcheries in several western states, investigations conducted to date indicate eastern and West Coast populations have not been similarly affected. Much about the parasite, its behavior in the environment, and its affect on trout populations remains to be learned. This being said, however, whirling disease must be viewed as a real threat to Vermont's trout populations and recreational fisheries. Eric Palmer, Vermont's director of fisheries, notes "Anglers and others who use the Batten Kill, and for that matter other bodies of water, can help prevent the spread of whirling disease and other harmful organisms by following some basic precautions." See **How You Can Help Prevent the Spread of Whirling Disease**.

Whirling Disease Life Cycle

Whirling disease is caused by a microscopic parasite, *Myxobolus cerebralis*, and has a fairly complex life cycle involving two host organisms, a salmonid fish and a small aquatic worm (tubifex) that lives in the bottom of the stream or other waterbody. Fish become infected when the free-floating TAM stage of the parasite (acronym for triactinomyxon, a grappling hook-like spore) come in contact with the gills or skin of young host fish or by fish directly ingesting infected tubifex worms. The parasite then invades the fish's cartilage tissue causing debilitating deformities of the skull, backbone, and nervous system which result in the fish developing the characteristic blacktail and whirling behavior. Fish are about one to 1.5 months of age when these symptoms develop. At 3 to 4 months, the TAMs convert to the myxosporean stage and mature in the cartilage. These spores are released from the infected fish upon its death or when ingested by a predator. The spores are then released into the water and taken up by tubifex worms, where after 3 to 4 months, actinospores (the precursor to TAMs) are produced and are released into the water by the worms completing the life cycle.

Off-Season Angling: Fishing for Redds

Editor's note: *The following article was prepared by Doug Lyons, an avid fly fisherman who has been wetting his line in the Batten Kill for 25 years. He and other members of Trout Unlimited have been making an important contribution to our better understanding of the Kill's trout fishery and habitat, and we thought their findings and perspective would be of interest to our other readers.*

Not many anglers venture forth onto their favorite trout streams after the close of the season. That is too bad because for those interested in seeing their rivers from a different perspective, it is well worth the time to get out onto the stream for a walk or even a canoe trip after the rod has been put away for the season.

Members of the Southwest Vermont and Clearwater (NY) Chapters of Trout Unlimited have been spending weekends in November over the past three years on the Batten Kill and its tributaries observing and mapping where trout spawning activity has been taking place. This information is being shared with the respective Vermont and New York fisheries agencies to develop a history of where trout spawn in the Batten Kill. This information is also being used by biologists to assess how much silt is finding its way into the spawning redds and interfering with the egg survival.

When this project began three years ago, nobody knew what to expect. To the surprise of many, the number of trout observed spawning in the river was far more than previously thought. After several weekends, over 40 redd sites, many with two or more redds per location, were flagged and mapped on the Vermont section of the river alone.

The initial canoe drifts dispelled a few myths too. For instance, it was learned that brook trout utilize the mainstem of the river to spawn more than had been assumed. Conventional wisdom suggested that brook trout use the tributaries or the upper reaches of the river to reproduce. In the case of the Batten Kill, brook trout were seen spawning in many sections of the river. Subsequent electrofishing surveys conducted by the state fisheries agencies demonstrated brook trout actively spawn in the river well into New York. This is over 20 miles below the

river's headwaters. Over the course of these drifts, it has also become apparent that the trout are spawning in the same sections of the river from year to year.

Another interesting and important find was the encouraging number of large brown trout seen on redds. It is an exciting sight to see a pair of brown trout exceeding the 20 inches sitting on a redd. With the general lack of trout between 10 and 14 inches in the population over the past recent years, it appears that these larger trout are making the primary contribution to the river. Fortunately, two strong juvenile trout age classes have been produced recently and will hopefully begin contributing to rebuilding the fishery over the next few years.

One of the great rewards of witnessing Batten Kill trout spawning has been the opportunity to see the end result. Last spring (2001), while watching the water along a stretch of the river in Sunderland, where I had seen a number of brook trout spawning the previous fall, I noticed a small fish finning in the gentle currents. Careful observation revealed several more, and as I continued to look over two dozen young brook trout from the previous fall's spawning were counted.

Trout Unlimited plans to continue redd monitoring this fall. If you are interested in participating in this activity and observing first hand this critical stage of a trout's life, please do not hesitate to contact:

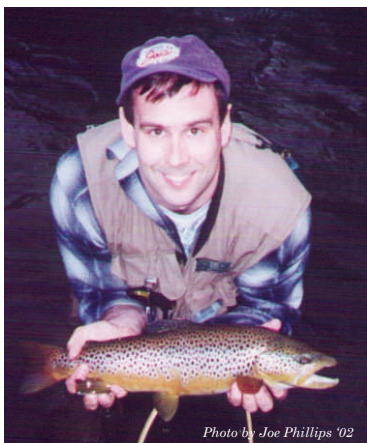
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or

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An Overview of the 2002 Spring-Fall Season

The 2002 season might best be described as a mixed bag all the way around. The fishing season appeared that it would get off to a fast start as March and early April were unusually warm, and the winter's below normal snow fall and subsequent melt set the stage for fishable river flows. However, that soon changed by mid April, when seasonable cold temperatures returned and one last winter snow storm blanketed the Vermont landscape. April temperatures seemed to dominate the month of May causing the Batten Kill to warm up ever so slowly. By June, overall river conditions looked as if they would improve, and then drenching rains resulted in days of bankfull flows. Anglers reported very slow fishing conditions and trout catches right through early summer.



No complaints from this angler!

At last, improvements in river conditions and fishing turned around by early July. But in August river conditions were in total contrast with those that dominated the first half of the season: temperatures approached record highs and river flows plummeted. Trout activity, at least from the anglers' perspective, seemed to improve. There were frequent reports of brown trout measuring 20" and up, and some nice brookies were also being caught. Although 8-10" trout were encountered, the general impression is their numbers did not reflect the strong young-of-the-year classes measured in 2000 and 2001. Browns in the intermediate size class were occasionally taken. Fall conditions saw a return of river flows and temperatures to near normal, and fishing seemed to hold up well to the end of the season.

Late summer brown trout population estimates resulting from electrofishing surveys at several sites on the Batten Kill mainstem appear to more or less substantiate angler's observations. This year's estimates and those from 1998, 2000, and 2001 are presented below. Values are expressed as numbers of trout per mile. Young-of-the-year densities for 2002 were found to be on par with or higher than the 2001

estimates at all locations with exception of the Manchester site. Generally, 2002 yearling numbers are below 2001 levels; however, estimates of the numbers of browns 10" were higher this year at the two most downstream river sampling sites.

It warrants pointing out, the population monitoring sites in total amount to only 2.5% of the length of the Batten Kill mainstem, and there are habitats that do not lend themselves to effective sampling by electrofishing (e.g., deep pools and runs). However, when creel surveys are conducted within the same year of electrofishing surveys, the resulting trout catch estimates and catch rates provide another means of assessing changes in trout abundance.

While the 2002 data alone do not necessarily demonstrate a complete turn around in the brown trout population at this time, other sampling activities carried out in late summer and fall suggest the river supports ample numbers of trout. Supplemental electrofishing for tagged fish and collections for whirling disease turned up numerous trout 10" and up into the low 20s. One fish measured just shy of 25" and weighed 5 pounds.

So, where are the fish and why do anglers have such a difficult time encountering them? Well that's a topic best left for a future issue of this newsletter.

Sampling location	Year	Size class, inches				
		YOY	<6	6-9.9	10.11-9	≥12
West Arlington	2002	568	0	43	22	7
	2001	245	14	129	7	7
	2000	723	0	14	0	7
Arlington	2002	580	8	56	32	40
	2001	468	8	193	0	24
	2000	463	8	138	8	32
Manchester	2002	281	62	52	10	42
	2001	969	125	62	21	52
	2000	360	95	53	21	63
East Dorset	2002	344	105	153	29	38
	2001	334	420	105	38	48
	2000	130	50	80	60	20

Check Out These Web Sites

VT Agency of Natural Resources
www.anr.state.vt.us

U.S. Forest Service
www.fs.fed.us

The Whirling Disease Foundation
www.whirling-disease.org

**New York State Department of
Environmental Conservation**
www.dec.state.ny.us/website/dfwmr/fish/whirldis.html

Montana Whirling Disease Task Force
www.whirlingdisease.org



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BATTEN KILL NEWS

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