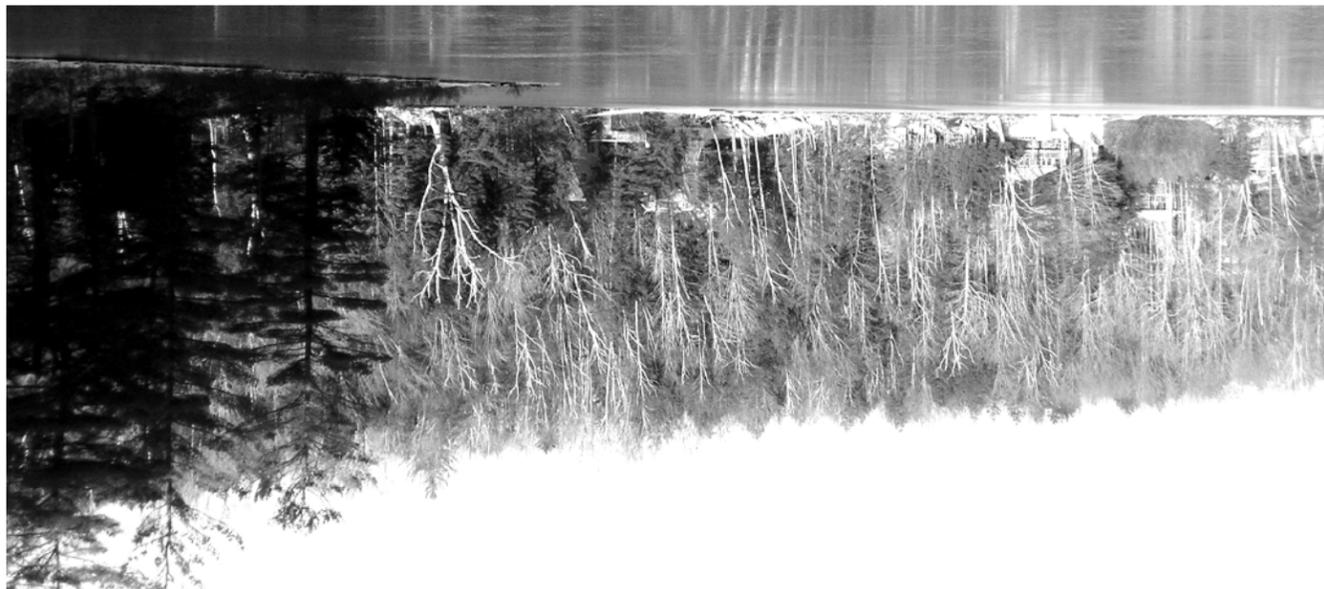


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## Calais Lakes and Ponds WORKING GROUP



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# Calais Lakes and Ponds WORKING GROUP

WINTER  
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### Exotic Invasives—Pond Pirates

Calais is under attack by pirates. They come from afar and are looking for new places to live. They aren't a democratic lot. They like their own company best and lots of it. They push the locals out of the way and take over. Their perspective is rather narrow. Swimming? Who cares about swimming? Boating? Not when you could expand the pirate population.

Who are these unfriendly sorts? Ecologists call them "exotic invasives." *Exotic* means that they are not native to Vermont. They come from faraway places around the world. These pirates sail into a pond on boat propellers, trailer wheels, and fishing gear. They are *invasive* because they reproduce very fast and can rapidly take over a pond.

North Montpelier Pond has been home to one of the most rapacious of pond pirates, Eurasian Water Milfoil (*Myriophyllum spicatum*), since the 1980s. This pirate has had a curious history. How he slipped into the pond will never be known, but in a twinkling he took over and fouled the whole pond with mats that made the waters impassible. Now a new hero may be turning the tide. Read on for this exciting saga!

#### Who Is This Pirate?

Eurasian Water Milfoil likes to live in lakes, ponds, shallow water reservoirs, and slow-moving rivers and streams. It has traveled a long way from its native habitat in Europe, Asia, and North Africa. It spreads mostly by roots or runners (stolons) in the ground. If a stem breaks off, it can start a new plant. It is very tolerant of cold water, so it can grow fast in cold Vermont lakes in early spring.

This aggressive growth kills off native aquatic plants. And when the native plants can't grow, other aquatic species that rely on the native plants for food and shelter have trouble surviving. Eurasian Water Milfoil's dense growth makes it difficult for invertebrates and other organisms that fish eat to survive. With less open water, fish also find it really hard to catch food in such a tangled lake and their populations decrease.

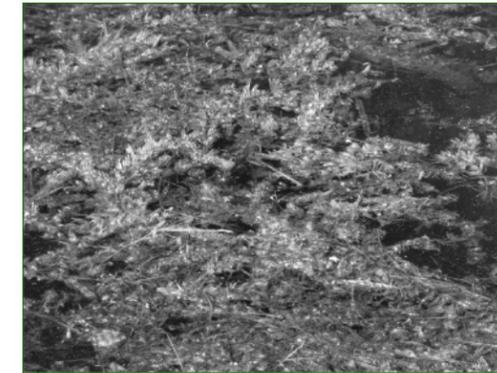
Have you ever tried to swim in weeds? Kinda hard, isn't it? Well, imagine a whole lake full of Eurasian Water Milfoil—so full that it's impossible to swim in, fish in, or drive a boat through. That was the state of North Montpelier Pond for years—but not anymore.

#### Enter Our Hero

Now there is a native hero who appears to be winning the battle and restoring the open waters and native habitat to the pond. Our hero is a small, plant-eating, aquatic beetle with the less-than-classy name of milfoil weevil (*Eubrychiopsis lecontei*). He is

a native specialist who eats only milfoil plants, both the native and Eurasian varieties. In its larval stage the weevil hollows out the stems of the milfoil and leaves them weakened. The stems lose buoyancy, collapse, and fall into deeper waters. As they sink out of the well-lit surface water, their ability to photosynthesize is reduced. The piratical milfoil is diminished to isolated patches scattered about the pond.

This is just what has happened at North Montpelier Pond. In 1986 nearly the whole surface of the pond was choked by Eurasian milfoil. When the beetle moved in is not known, but it began to feast on the dense mats of milfoil. A survey of aquatic plants conducted in 1990 showed that milfoil



was on the decline. The weevil was positively identified in 1991. By summer 2005 milfoil was nearly gone, restricted to patches in the northern end of the pond; in the rest of the pond there was only an occasional plant.

Will the weevil triumphantly eradicate the last sprig of milfoil in the pond? Not likely. Our hero depends on milfoil for his dinner. When the milfoil disappears, so does the weevil. When weevil populations decline, the milfoil is free to expand again until conditions are hospitable for weevils and their reproduction. Then the cycle begins again, with weevils happily dining on milfoil.

#### Will This Pirate Ransack Other Waters?

The answer to that question depends on each and every one of us. Milfoil is a very clever adversary. Just the smallest sprig of milfoil attached to propellers of an outboard motor, or caught in the keel of a canoe, or snagged on a fishing lure, can start a new infestation. Once the sprig is introduced it only takes a couple of years to develop into dense mats that choke the surface of a pond. Typically this little sprig is unwittingly moved from pond to pond by a fisherman or boater. All the lakes and ponds in Calais are at risk. Milfoil lives in other spots near us—Lake Elmore and Berlin Pond. When you are taking your boat or gear from one pond to another, carefully check to be sure that there are no bits of plants attached. Do this as soon as you pull your boat from the water before leaving your dock or the state fishing access. For good measure, check one more time before you launch at the next pond. Do this and we can forever preserve the beauty of Calais's waters!

This newsletter sponsored in part by:  
Vermont Watershed Grant Program



## Lakes & Ponds Status Report

This fall, the Calais Lakes & Ponds Working Group completed its survey of Number Ten Pond. The pond received a clean bill of health—water quality and clarity are high, a variety of game fish and wildlife species are thriving in the pond, and there are no signs of invasive species such as Zebra Mussels or Eurasian Water Milfoil. The glaring challenge for Number Ten Pond is the road that hugs its western shore and continuously erodes into the pond—a problem with no obvious solution.

The report on Number Ten Pond is now available online in the Conservation Commission section of the Calais website: [www.calaisvermont.govoffice.com](http://www.calaisvermont.govoffice.com). Reports are also available for Curtis Pond, Bliss Pond, and North Montpelier Pond. These reports assess the health of the ponds and offer strategies to maintain water quality. Future surveys will focus on Nelson Pond, Adamant Pond, and Sabin Pond, as well as the Kingsbury Branch.

If you would like to participate, please contact Noreen Bryan at 223-5478 or [noreen1945@yahoo.com](mailto:noreen1945@yahoo.com).



## Nelson Phosphorus Levels Up

For the second year in a row, data taken through the Agency of Natural Resources Lay Monitoring Program showed elevated levels of phosphorus in Nelson Pond. Phosphorus is a sign of nutrient runoff into a lake, often through soil erosion. Traditionally, Nelson's phosphorus levels are around 10 ug/l, but in 2004 they were 17 and in 2005 they were 14. It's unclear what is causing the increased amount of nutrient erosion into the pond, but the situation merits watching.

## Better Back Roads Work Continues

This October, with the assistance of a grant from the Better Back Roads program, the Calais Road Crew was able to significantly improve the culverts and ditches that drain into Number Ten Pond, ensuring that less sediment erodes into the pond, and preserving water clarity. This was the second Better Back Roads grant received by Calais; hopefully more grants will follow, allowing for future improvement to the roadsides near streams and ponds. Hats off to Don Singleton and the Road Crew for going above and beyond the call of duty!

## Death and the Turtle

How long can you hold your breath? Thirty seconds? A minute? Maybe you are one of those diehards who can go two minutes. Still, that won't impress many of the creatures that call Calais's lakes and ponds home. The loon can go three minutes under water. The otter can go eight. The beaver beats them both at fifteen minutes.

Still, this is small potatoes for Calais's breath-holding champ. The painted turtle can hold its breath for five months.

Five months. No breathing. Don't try this at home.

Sometime in November, as the water temperature slides toward freezing, the turtle takes one deep breath, dives to the bottom of its pond, and buries itself in the mud. There it waits for the thick layer of ice to cover the pond for the winter and slowly thin in the spring. In April, when the ice breaks, the turtle swims sluggishly to the surface and draws what must be one sweet gulp of air.

How, you ask, is such a feat accomplished? By what you might call "controlled death." If you checked out a winter turtle, you would note no movement or physiological response, no breathing, and no pulse. In people, such a condition is generally described as "Dead." But the turtle isn't quite dead. If you checked its pulse long enough, you'd eventually feel one faint *thump*. Ten minutes later, you'd feel another. To survive at the bottom of the pond for five months, the turtle turns off all its systems—digestion, brain, breathing, everything—and relies on one heart beat every ten minutes to keep its metabolism going. It's kind of like your laptop or stereo on "sleep" mode—shut down except for one tiny monitor waiting for a signal to turn on. For the turtle, that signal comes when water temperatures rise in spring.

But keeping that heart beating, even so slowly, requires a little energy, and we animals use oxygen to burn our food and make energy. When we don't have oxygen available, burning energy creates a nasty byproduct called lactic acid. You know lactic acid—it's what burns your muscles and makes them sore the day after a hard workout or run. Too much lactic-acid buildup is fatal—the blood gets too acidic. We normally flush it out pretty fast, but that option isn't available to

the hibernating turtle. Instead, it has to somehow counter the lactic acid with a base that will keep the blood alkaline. Fortunately, a ready supply of calcium is at hand in the turtle's shell. Over the winter, it slowly absorbs just enough of its shell to keep its blood balanced.

What must it be like to "die" for half the year—no breathing, no eating, no dreaming, no thinking—and be reborn every spring? True, the turtle isn't quite dead, but how about the wood frog? It freezes solid and spends the winter as alive as an icicle. *Zero* breathing. *Zero* heart-beat. Its strategy? Flood its cells with super-high levels of blood sugar, which makes nice antifreeze. Everything nonessential—bladder, stomach, the water between its cells—freezes, but its organs and cell interiors are packed in sugary slurpie mix that keep them from being destroyed. It can thaw and refreeze multiple times. When spring comes for real, it thaws and hops away, good as new. Ted Williams, eat your heart out.

Semitropical mammals like us are used to living life as one long metabolic emergency—Eat! Drink! Breathe! Stay warm!—and we forget that there are a lot of other philosophies out there. As winter settles over Calais and draws blankets across our lakes and ponds for the long nap, it's worth wandering that white world and considering what it means to be alive in such a place. You can't go by heart beat, brain activity, or any of the usual scientific definitions; you have to find something shared by all species awaiting the lengthening days. You might call it hope.

