

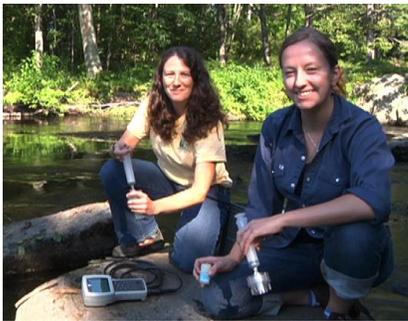
## Newsletter Summer 2014



### **Making Sure the Lamprey Is “Fishable and Swimmable”**

Prior to passage of the 1972 Clean Water Act, some waterways in the US were seriously polluted. One of the key goals of the Clean Water Act was to ensure that US waterways were safe enough for people to swim in and eat fish from.

How do we know if our waterways are safe for these activities? Welcome to the wonderful world of water quality monitoring! When water people talk about “water quality”, they are referring to a series of tests that help to define the essential characteristics of water for us and wildlife: acidity, clarity/cloudiness, amount of dissolved oxygen gas, saltiness, temperature, and often, the amount of fecal bacteria. Most tests can be conducted in the field with immediate results.



Lamprey River Watershed Association volunteers have been conducting water quality testing along the Lamprey every summer for many years.

Results are reported to the NH Dept. of Environmental Services and can be viewed at <http://des.nh.gov/organization/divisions/water/wmb/vrap/lamprey>. For a quick overview of the key findings, please visit <http://www.lampreyriver.org/about-river-water-quality>. The Lamprey Rivers Advisory Committee provides funding for this important work.

The next time you see a volunteer team performing water quality tests, please thank them for their dedicated efforts to make sure the Lamprey remains fishable and swimmable for us and the critters. If you would like to find out more about local water quality testing opportunities, visit the Lamprey River Watershed Association’s website at [www.lrwa-nh.org](http://www.lrwa-nh.org) or contact Dawn Genes: [dawn.genes@lrwa-nh.org](mailto:dawn.genes@lrwa-nh.org), 603-659-9363. The LRWA trains and organizes volunteers to run water quality tests on the Lamprey - no experience necessary!

Water is the most critical resource issue of our lifetime and our children's lifetime.  
The health of our waters is the principal measure of how we live on the land."

*- Luna Leopold*

# *The Lamprey River Curriculum*



The original Lamprey River Curriculum was created in 2000 and was used widely for many years by many local teachers to supplement their social studies classes. The Curriculum was updated and expanded in 2011 to include the state's latest science and social studies standards.

In June, Lee's Mast Way School brought 80 fourth graders to Mary Blair Park in Epping to get up close and personal with the Lamprey River. The field trip was a key feature of the Curriculum. The students evaluated the health of the river by measuring the speed of its current, its temperature, the amount of dissolved oxygen gas in the water, the pH, its clarity, the condition of the land around the site, and the resident population of aquatic invertebrates. They found clear, cold, well-oxygenated water and critters that help to filter water or rely on clean water. They also had the opportunity to explore the remains of historic mills that once harnessed the river's power to saw wood and grind grain.

The Lamprey River Curriculum is a free resource that is ready to help connect both elementary and middle-high school students to their river and local history. It can be found at <http://www.lampreyriver.org/education>. The Lamprey Rivers Advisory Committee is ready to help teachers who want to use the Curriculum. Please contact Sharon Meeker at 659-5441 or [s-meeker@comcast.net](mailto:s-meeker@comcast.net) for more information.

## **Raymond Regatta**

The second annual Raymond Regatta boat race was hosted by the Lamprey River Watershed Association on June 7. The number of contestants increased substantially over last year's race and the weather was considerably more pleasant. The race is intended to offer friendly competition and creative opportunities to get out onto the river. We hope the race will continue to grow in popularity and that more people will appreciate the wonderful asset that flows through our Lamprey River towns.

## Great Bay Nitrogen Non-point Source Nitrogen Study



photo by [www.wildlife.state.nh.us](http://www.wildlife.state.nh.us)

The Great Bay Estuary has 21 square miles of tidal waters and is one of 28 "estuaries of national significance" established under the Environmental Protection Agency's National Estuary Program. The estuary is experiencing several symptoms of nutrient pollution: low dissolved oxygen, macroalgae blooms, and declining eelgrass habitat.

The model used for the study predicted a nitrogen load of 800 tons per year (+/- 100 tons/yr). Thirty two percent of the nitrogen nutrients that end up in the Great Bay Estuary comes from direct discharges from municipal wastewater treatment facilities. The majority of nitrogen (68%) comes from non-point sources consisting of atmospheric deposition (42%), fertilizers (15%), human waste disposed into septic systems (29%), and animal waste (14%). The model concluded that 34% of all the nonpoint source loads were delivered through stormwater run-off.

The intended use of this study is for planning purposes, and is not meant for regulatory allocations or specific reduction requirements. The results of the model can be useful for towns or watershed groups for prioritizing nitrogen reduction efforts or as a starting point for more detailed studies of non-point sources. The model makes no conclusions about the benefits of nitrogen reductions to receiving waters or overall estuarine health.

The Great Bay Nitrogen Non-Point Source Study is available from the New Hampshire Department of Environmental Services website. [CLICK HERE](#) for the pdf of the study.

### Winged Jewels

Dazzling dragonflies and damselflies (also known as darning needles) are insects that grace local ponds, streams, and other natural areas. They occur throughout much of the world and have a wide variety of sizes, shapes, and colors. Approximately 200 different species occur in New England alone.

Dragonflies and damselflies make up the order Odonata, meaning they are toothed. No insect really has teeth, but one could easily imagine these "odes" having teeth due to their prominent jaws and their voracious appetites. Both as aquatic larvae and as flying adults, these insects are excellent hunters. They eat other insects and occasionally larger prey such as tadpoles. They commonly eat

both larval and adult mosquitoes. As such, dragonflies are welcome guests in most people's yards.

Dragonflies and damselflies differ in several ways: Dragonflies are strong fliers. At rest, they hold their wings perpendicular to their bodies. Damselflies are weak fliers. At rest, they hold their wings parallel to and over their bodies.

Dragonflies and damselflies begin life in the water. After they hatch, the larvae (called nymphs) remain in water several months to several years. At the end of the larval stage, the nymphs metamorphose into soft adults still in the larval exoskeleton. They crawl out of the water and find a suitable substrate, such as a tree or rock. The back of the exoskeleton splits open and the adult slowly emerges. The larval exoskeleton left behind is called an exuvia (plural exuviae) Once free of the exuvia, the newly emerged adult must actively pump air into its body to create the familiar adult form and let its soft wings harden.



Dragonflies and damselflies are fascinating insects to watch whether one wishes to get very specific in identifying specimens or just wants to enjoy their beauty and diversity. If they are within close range, "odes" often will spend as much time being observers as their curious human counterparts. Their aerial acrobatics and stealth are difficult to match. People who try to net them learn quickly that odes can be elusive prey. Like other objects of beauty, though, they are well worth observing. Take a close look, and then let these jeweled hunters return unharmed to their surroundings.

### **You're Invited**

July 27, 9-11a.m., "Bike It" history and nature tour in Lee

July 24, 7:00 p.m. Lamprey Rivers Advisory Committee meeting, Smyth Library, Candia

August 12, 7:00 p.m. Wild & Scenic Subcommittee meeting, Lee Safety Building

August 24, 10-noon, "Like It" history and nature tour at Mary Blair Park, Epping

August 28, Lamprey Rivers Advisory Committee meeting, Smyth Library, Candia