



White River Partnership
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Monitoring the White River

A School-Based Watershed Education Program

Spring
Newsletter

April 2013

Monitoring the White River (MWR) is now finishing up our 3rd year! In collaboration with our partners, we reached over 40 teachers and almost 500 students to get schools excited about rivers and support quality science instruction throughout our watershed. We anticipate receiving continued funding for the 2013-2014 school year and will adopt a few changes to strengthen our foundation:

- To allow us to bring you top-notch programming, this summer we'll implement an easy application process for schools to participate in MWR. Programs will continue to be tailored to an individual teacher's needs.
- MWR Watershed Educator Jenna Guarino, will be joined by Emily Miller, WRP Monitoring Coordinator, who will do much of the behind the scenes work with MWR. Emily will also teach MWR units and support teacher work. Jenna will continue to be available for curriculum planning, classroom teaching, and/or student fieldwork.
- This year, MWR is planning to expand our offerings to include education materials that would support topics such as riparian tree plantings, culvert replacement/retrofits, and river corridor restoration projects. WRP Project Manager Greg Russ often fields requests from teachers interested in the restoration work done by the WRP and we're exciting to be able to offer more on these topics.
- Over the summer, we'll start formalizing a Watershed Education Network of MWR contacts at local schools, organizations, and businesses, and state and federal agencies interested in helping implement effective watershed education in the White River watershed.

The four **MWR units** listed below can be tailored to address individual school goals. The modules should be available on the White River Partnership's website (www.whiteriverpartnership.org) under the Teacher Resources tab) sometime this summer.

- *Waterbugs* (benthic macroinvertebrates) - indicators of river health and water quality
- *Crayfish* - key members of river and riparian food webs
- *Riparian Trees* -planted to prevent erosion and improve river health
- *Riparian Track & Sign* - evidence of wildlife activities along river corridors

Participating schools are invited to borrow a MWR Teaching Kit for each unit.

We're optimistic about securing ongoing funds and we'll send out more information about programs and the application process in the coming months. If you have any questions or are interested in learning more about MWR program opportunities or would like to know more about our lending library, please contact Emily at emily@whiteriverpartnership.org or (802) 763-7733.

Promoting Environmental Literacy in the White River Watershed and Beyond

As humans face a host of changes in our social, economic, political, and natural environments, an understanding of how systems work can create a solid foundation from which we can make informed decisions as democratic citizens. This learning process is the goal of environmental literacy.

MWR encourages schools and communities to monitor one or more natural components in their part of the watershed to build their own knowledge base about their unique place, and then to share their knowledge with other groups across a broader area. MWR promotes environmental literacy by:

- Connecting students to their place so that they feel invested in the well-being of their environment and their community.
- Helping students learn how to use scientific inquiry to explore their world and achieve pertinent academic standards in the Common Core and Next Generation Science Standards.
- Helping students understand how society uses scientific information and collaboration to make informed decisions as democratic citizens.
- Helping students gather useful information about their place, which contributes to thoughtful river stewardship. This service learning approach builds a positive alliance between the school and its community.



Students and teachers from the Hartford Middle School watch intently as Jenna introduces them to crayfish anatomy.



Students from Braintree Elementary plant trees in Spring 2012 to reestablish a riparian buffer in Royalton that was wiped out by Tropical Storm Irene. The class returned in the fall to assess the trees using the materials from the Riparian Trees unit.

Highlighting a MWR unit: *Riparian Trees*

In this unit students use methods adapted from the US Fish & Wildlife Service to monitor the health of native trees that have been planted by WRP volunteers along the White River and its tributaries to restore riparian buffers. A riparian - or riverside - buffer is a strip of vegetation along the bank of a river or stream, which provides an important transition between water and human land use.

Forested riparian buffers provide shade and cover for both aquatic and terrestrial ecosystems, and keep river water cool.

Woody debris that drops in from overhanging trees provides the most basic building blocks for aquatic life. Riverbank trees also improve human well-being. Their root systems absorb flood waters and filter pollutants from runoff bound for the river. Property values, water quality, and human health are all protected by their presence along our riverbanks.

In the process of monitoring riparian trees, students learn about the important environmental services provided by riparian buffers, develop skills in tree identification, and receive an introduction to dichotomous keys. Assessing these planting sites, particularly when done repeatedly over time, provides the WRP and other planting groups with important information. Student findings can help to improve planting techniques and better match species with sites.

This unit is best done in late May or June, after leaves have appeared on the trees. It can also be done in late August or early September, when leaves are still actively growing. Once leaves fall off, identification and assessment gets much more difficult!



Larry Kasden and Pomfret students explore river dynamics with the ONRCD river table. The river table was also a big hit at our January workshop and networking meeting.

River Table Workshop and Networking Meeting

On January 17th, 2013, 21 people attended a workshop and networking meeting at the Bethel Schools to learn about using a river table to teach scientific inquiry and give students experience solving problems through practical applications. Larry Kasden and staff from the Ottaquechee Natural Resources Conservation District (ONRCD) generously brought their recently acquired river table and walked us through the basics of set-up and maintenance.

MWR watershed educator Jenna Guarino led us through a few lessons she and Pomfret teacher

Jenny Hewitt had developed to study erosion with her 3rd and 4th grade students and we spent time making observations and playing with the table. After dinner, we continued our discussion of river dynamics and lessons learned through Jenny's and Bridgewater teacher Corinna Dooley's experiences with the river table in their classrooms.

We do not currently have a MWR program that uses the river table, but it is a wonderful tool that deepens student learning gained through MWR units. If you are interested in the river table, please contact Larry Kasden at ONRCD (larrykasden@hotmail.com).

Snapshot of MWR's Watershed Education Network

MWR Schools

Bethel Elementary School
Braintree School
Brookfield Village School
Chelsea Public School
Hartford Middle School
Mid-Vermont Christian School (Quechee)
Newton School
Pomfret School*
Randolph Elementary School
Randolph Middle School
Sharon Elementary School
South Royalton School
The Sharon Academy (Sharon)
Tunbridge Central School
Whitcomb High School (Bethel)

Supporting Organizations & Agencies

Canaday Family Charitable Trust
Clear Water Carbon Fund
Four Winds Nature Institute
Friends of the Winooski
Green Mountain National Forest
Ottauquechee Natural Resource Conservation District
Mascoma Savings Bank Foundation
Upper Valley Linkages for Environmental Literacy
U.S. Fish and Wildlife Department
U.S. Forest Service
Vermont Biomonitoring and Aquatic Studies Section Lab
Vermont Fish and Wildlife Department
Vermont Water Quality Division
Wellborn Ecology Fund

*schools with which we collaborate on river/watershed studies that are supported by other organizations

Visit the White River Partnership's website for more information on:

- The White River watershed
- Water Quality Monitoring
- Trees for Streams
- Crayfish Monitoring
- River Corridor Plans
- Watershed maps

And more! www.whiteriverpartnership.org

Questions about MWR?

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