



Monitoring the White River: A School-Based Watershed Education Program

Fall 2014 Newsletter

Wow! What a busy fall for MWR! 21 teachers from schools throughout the watershed have used MWR programs in their classrooms with over 300 students **so far** this year (up from 200 students last fall). We are thrilled that there's such interest and are grateful to the funds that support these MWR programs. This year we have received continued support from the Wellborn Ecology Fund as well as new support from the Lamson-Howell Foundation and the Couch Family Foundation. We so appreciate that funders and teachers recognize the importance of getting students out to the river to connect with their place in the world and to tackle real scientific issues.

We're looking forward to heading out to the river this winter with many of you to study the animal tracks and signs that we find along the river as part of our *Riparian Track & Sign* unit. This unit is a great way to get kids outside in the winter and to continue your discussions of the importance of the riparian zone to life in and along our rivers and streams. Please join us for our fall networking meeting to explore this exciting MWR unit (see below).

If you have any questions, are interested in learning more about MWR program opportunities, or would like to know more about our Lending Library, please contact Emily Miller at emily@whiteriverpartnership.org or (802) 763-7733.

The **MWR units** listed below can be tailored to address individual school goals.

- *Crayfish* – key members of river and riparian food webs and invasive species
- *Riparian Track & Sign* – evidence of wildlife activities along river corridors
- *Waterbugs* (benthic macroinvertebrates) – indicators of river health and water quality
- *Watershed Restoration* – on-the-ground projects that improve water quality and habitat:
 - Culvert replacements and retrofits
 - Trees for Streams, riparian buffers, and planting plans
 - Alternative stream bank restoration projects *and more!*



The busy riparian zone on Ayers Brook in Randolph (Jenna Guarino).

Fall Workshop & Networking Meeting Thursday, December 4th from 3:30-5:30pm South Royalton School

We'll focus on the Riparian Track & Sign unit at our Fall Workshop and Networking Meeting on December 4th. Watershed educator Jenna Guarino will give us an overview of the unit and explain how new components help meet NGSS. We'll explore the unit's activities and Furbearers Kit from VT Fish and Wildlife and work together to integrate Riparian Track & Sign into your winter curriculum.

Join us whether you're signed up to do the unit or just want to learn more and have a chance to network with your MWR colleagues. We'll be inside for this one and will provide a snack to keep you sharp. Please RSVP to Emily at 802-763-7733 or emily@whiteriverspartnership.org.

Save the Date!

The many directions one unit can go: Crayfish

MWR units can be a great jumping off point for larger studies of organisms, ecosystems, and the way humans interact with their environments. We thought it would be interesting to highlight some of the ways different teachers fit the same MWR unit into their unique curricula. And what better unit to start with than crayfish - one of the first MWR units developed, which has been consistently popular ever since.



Dothan Brook School 4th graders measuring crayfish (foreground) and catching hundreds more (background) at Clifford Park in West Hartford (Emily Miller).

We have always found that crayfish capture people's attention. They are abundant, yet secretive and somewhat elusive, and they are just the right amount of scary to pick up. This fall we've gone crayfishin' with three different schools in the watershed: Sharon Academy (middle school), Stockbridge Central School (3rd/4th grades) and Dothan Brook School (4th grade). All three groups learned important skills related to careful scientific observation and data collection in order to identify the different species of crayfish, to determine gender, and to take measurements of claw and carapace length. After that point, the groups took their crayfish and ran with them:



Measuring crayfish (Emily Miller).

- Both the Sharon Academy and Dothan Brook School used crayfish they collected in a series of preference trials. The Dothan Brook 4th graders focused on whether crayfish would prefer an open water or rocky habitat, while the Sharon Academy middle schoolers tried to determine whether claw size predicted success in competition for resources.
- Stockbridge Central School used crayfish as a gateway for their broader study of animals and their habitats, life cycles, adaptations, and food webs/chains. They also used them as a spring board for discussions about the interdependency of organisms and the environmental impact of invasive species. Crayfish had already been a hot topic in the 3rd/4th grade class thanks to a student who brought some in for the class aquarium; the MWR unit inspired them to dig deeper.

Of course, you don't have to work with MWR to love crayfish! The Pomfret Elementary School 3rd/4th grade class kicked off the school year with crayfish in the classroom again. The class learned about anatomy and the functions of those anatomical parts by creating detailed scientific drawings. Their crayfish studies also led them to learn about aquatic food webs and a broader study of rivers and streams.

Aligning MWR with the Next Generation Science Standards

We've been pleased to find that several of our Watershed Restoration topics naturally align with the new Next Generation Science Standards (NGSS). Several classrooms implementing our new unit Watershed Restoration: Trees for Streams have spent time using on-line mapping resources to create planting plans for riparian buffer restoration projects. We use the on-line Vermont Natural Resources Atlas in conjunction with the publication *Wetland, Woodland, Wildland* to determine which tree and shrub species should get planted at different locations throughout the watershed. These activities address **Engineering and Design** standards as well as the **Human Impacts on Earth Systems** and **Ecosystem Dynamics, Functioning, and Resilience** standards, among others. With its focus on flood resiliency and fish passage, Watershed Restoration: Culverts also easily addresses many of the same standards.

We're also working with teachers that are hoping to address specific standards through MWR. For example, 2nd grade teachers at Dothan Brook School wanted to use MWR to look at erosion in order to address the NGSS standards on the **Earth's Place in the Universe** and **Earth's Systems**. We worked with them to tailor a program that would introduce the standards' materials and get kids out to the brook behind the school. We learned that rivers need room to move and that healthy riparian buffers, like the one along Dothan Brook by the school, are important because they allow the erosion that naturally results from meandering to occur at a naturally slow pace.

As you all know, the river is a great classroom and it's also a great venue to explore the new NGSS standards. Let us know if there's a particular standard that you'd like to see addressed through MWR!

South Royalton Elementary teachers bring Watershed for Every Classroom from Lake Champlain home to the White River watershed

Four teachers from South Royalton School's 3rd-5th grades are participating this year in Watershed for Every Classroom, a year-long professional development experience offered through the Champlain Basin Education Initiative that supports teachers in their development of watershed education curriculums. The program is generally designed for educators working within the Lake Champlain Basin, but is open to teachers outside of the Lake Champlain watershed as well.



South Royalton 4th graders measure and explore a newly-installed culvert on Broad Brook in Royalton (Emily Miller).

Thanks to a grant from the Wellborn Ecology Fund, MWR has been able to partner with South Royalton School to help these teachers apply what they're learning in the WFEC class to the White River watershed. Studies so far have included explorations of riparian buffers and waterbugs, culverts, and the bioengineering project implemented at Hurricane Flats to restore a vulnerable streambank. We're excited that there's more to come in this year-long partnership!



Snapshot of MWR's Watershed Education Network (participants since 2012)

<u>MWR Schools</u>	<u>Supporting Organizations & Agencies</u>
Bethel Elementary School Braintree Elementary School Brookfield Village School Chelsea Public School Dothan Brook School (Hartford) Hartford Memorial Middle School Mid-Vermont Christian School (Quechee) Newton School (Strafford) Ottauquechee School (Hartford) Randolph Elementary School Randolph Union Middle/High School Rochester School Sharon Elementary School South Royalton School Stockbridge Central School The Pomfret School The Sharon Academy Tunbridge Central School Vermont Technical College Whitcomb High School (Bethel)	Canaday Family Charitable Trust Clear Water Carbon Fund Couch Family Foundation Ecotone Education (Verdana Ventures LLC) Four Winds Nature Institute Friends of the Winooski Green Mountain National Forest Jack & Dorothy Byrne Foundation Lamson-Howell Foundation Mascoma Savings Bank Foundation Ottauquechee Natural Resources Conservation District Upper Valley Linkages for Environmental Literacy U.S. Fish and Wildlife Service Vermont Department of Fish and Wildlife Vermont Department of Forests, Parks & Recreation Vermont Water Quality Division Wellborn Ecology Fund
<p align="center">Questions about MWR? Emily Miller, WRP Monitoring Coordinator emily@whiteriverpartnership.org (802) 763-7733</p>	<p align="center">Visit the White River Partnership's website for White River watershed information and maps, links to Water Quality Reports and other resources, and more: www.whiteriverpartnership.org.</p>