



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

Winter 2017 Newsletter

With the departure of the intrepid Emily Miller as our monitoring and education coordinator in 2016 (now happily teaching biology at Whitcomb in Bethel) time has snuck by without an MWR newsletter! We're excited to say that the quiet on the communications front does not reflect the activity of the MWR program...

Over the last year MWR has worked with 24 teachers from schools throughout the watershed to bring MWR content to more than 500 students. We're thankful to the Wellborn Ecology Fund, Lamson-Howell Foundation, Hope Foundation Couch Family Foundation, and Greater Upper Valley Trout Unlimited for their support of MWR programs, and to the teachers and educators who have leveraged that support to connect students with their surroundings, the waterways that sustain us, and the diversity of life that we share these connections with. Here's a brief look at highlights from the last year and a glimpse of things to come:

Monitoring the White River units can be tailored to address individual school goals.

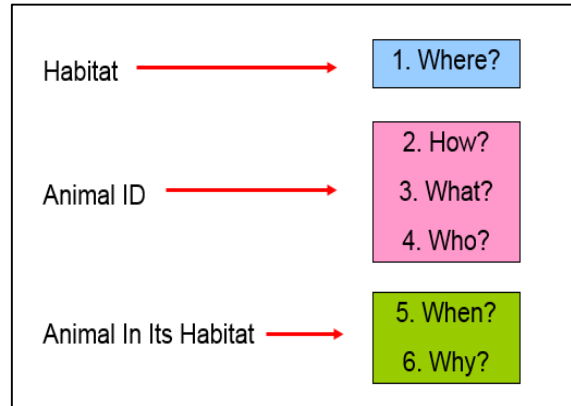
- *Crayfish* – key members of river and riparian food webs and invasive species
- *Waterbugs* (benthic macroinvertebrates) – indicators of river health and water quality
- *Winter Track & Sign* – evidence of wildlife activities along river corridors
- *Watershed Restoration* – on-the-ground projects 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!*



During fall 2016 students at the Stockbridge Central and Rochester schools caught big water crayfish (*Cambarus robustus*) at their study sites along the mainstem of the White River. Previous to that time, students participating in MWR programs had documented some of the first stream sightings of this crayfish species in Vermont in 2012 (in Bethel), but did not see this species again until 2015 (in Sharon and Bethel). Our mentors and colleagues at the Vermont Department of Environmental Conservation helped confirm the species identification and archived a specimen for their records of crayfish species found in Vermont. MWR crayfish work helped

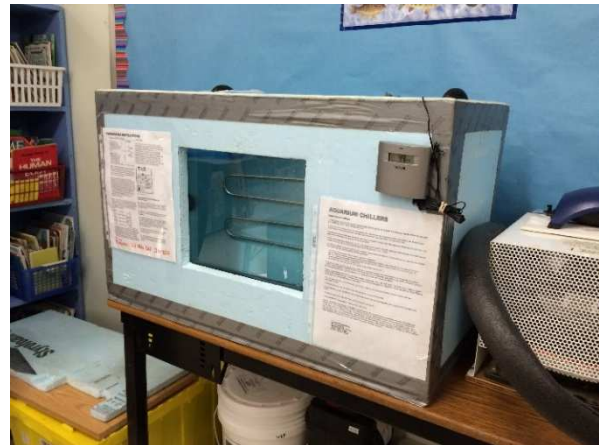
provide information for a 2015 U.S. Fish and Wildlife Service publication on this species.

Despite a lack of snow much of the winter of 2015-2016, third graders at South Royalton and Ottauquechee Schools used the MWR Track & Sign inquiry process in understanding plenty of wildlife activity other than tracks. The third graders at Randolph Elementary, on the other hand, benefitted from some of the better snow of the winter to highlight plenty of tracks along Ayers Brook right behind the school. Better yet, for much of May they observed a fox with five kits along the same river corridor – right within view of the school!



Winter Track & Sign season is upon us for 2016-2017, and already the snow has been better than almost the entirety of last year. Seven different school groups will spend indoor time on background and prep activities before heading outdoors for a session of fieldwork this winter.

We are also extremely excited that our winter offerings are expanding through our collaboration with Vermont Trout Unlimited in bringing Trout in the Classroom programs to more White River basin schools. Last year teachers at Bethel, Braintree and Chelsea schools raised brook trout from eggs in classroom tanks, releasing them in area streams come spring. This year teachers at Sharon Elementary, Randolph Union and South Royalton (two tanks there!) have joined these veterans. The program has valuable lessons about early trout development, monitoring tank water chemistry, and maintaining water quality, with documented ties to Next Generation Science Standards. It also has remarkable possibilities for cross-ties to a broad range of other subjects and interests. Stay tuned and in touch for more great things to come on this front!



Even with winter upon us, however, our planning has us thinking of the springtime ahead. Spring is tree planting season, and last year 13 schools helped us plant nearly 5,000 trees and shrubs along the White River and its tributaries in late-April and early-May. Students, teachers and their colleagues combined hearts and hands, minds, spirits, and backs in this fulfilling work by joining streamside days with in-class explorations. Lessons explored everything from the numerous important roles that good buffers play to how to map and plan a planting.

We offer a pre-planting classroom presentation to school groups that come out to plant as part of our **Watershed Restoration: Trees for Streams** unit. We explain the rationale behind planting riparian buffers, the process for selecting tree species at each planting site, and more!

The MWR **Watershed Restoration: Culverts** unit explores culvert replacements and retrofits, a key link to creating better fish passage, healthier stream systems and greater flood resilience for communities. As with all Monitoring the White River units, these lessons are adaptable to different grade and interest levels. Please get in touch if you have any questions!



Come May and June, we're back in the stream with kick nets and crayfish traps; nothing like an end of year science outing to look at "waterbugs" and their larger crayfish cousins!



During spring 2016 Sharon sixth graders found a large hatch of an unusual red-gilled mayfly during their MWR Waterbugs explorations, and later shared knowledge gained in their studies with younger students at their annual spring River Day outing on the White mainstem.

And speaking of being back in the stream...

Our colleagues at the USDA Forest Service will be bringing a great opportunity to our area toward the close of the 2016-2017 school year, offering a year-end activity that can't be beat! They will be offering an exciting educational program for students in grades 4-8 to further watershed explorations through SNORKELING! Space will be limited and is offered on a first-come, first-serve basis. Please contact us if you are interested in this fabulous opportunity.



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 Dan 'rudi' Ruddell at rudi@whiteriverpartnership.org or (802) 763-7733.



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

<u>MWR Schools</u>	<u>Supporting Organizations & Agencies</u>
<p>Bethel Elementary School Braintree Elementary School Brookfield Village School Chelsea Public School Dothan Brook School (Hartford) East Valley Academy Hartford Memorial Middle School Mid-Vermont Christian School (Quechee) Newton School (Strafford) Ottauquechee School (Hartford) Prosper Valley School 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)</p>	<p>Canaday Family Charitable Trust Clear Water Carbon Fund Couch Family Foundation Ecotone Education (Verdana Ventures LLC) Four Winds Nature Institute Friends of the Winooski Greater Upper Valley Trout Unlimited Green Mountain National Forest Hope Foundation (Hypertherm) 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>
<p align="center">Questions about MWR? Dan 'rudi' Ruddell, WRP Monitoring and Education Coordinator rudi@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>