



# Monitoring the White River:

## A School-Based Watershed Education Program

Summer 2022 Newsletter

The WRP supports the efforts of White River valley educators of all stripes by providing content, specialist support, and other resources, free of charge, featuring opportunities for hands-on, place-based ecology education. Monitoring the White River (MWR) programs keep students of all ages engaged, having fun, and caring for water resources within walking distance of nearly any location. The MWR network is a group of place-based educators with a wealth of knowledge and experience. 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](mailto:rudi@whiteriverpartnership.org).



Some of our offerings are noted at right, and five of these 'units' have developed curricula found on our website: <https://www.whiteriverpartnership.org/teacher-resources/>. All of our MWR offerings are tied to our overarching commitment to the health of the White River watershed and its communities, and we always have an eye to watershed protection and restoration.

Though many of our streams and rivers are too often "out of sight, out of mind," they are never far off. We all need water, and water connects us; to borrow a phrase, Water Is Life. The unique and beautiful White River drains 710 square miles (the "watershed"), highlighting how many of us are connected and sustained by our collective actions. Playing and learning together, we deepen those connections and strengthen our ties.

At the same time, the White River watershed is remarkably diverse due in part to very different bedrock underlying different portions of the watershed, as well as a diversity of human and non-human communities situated within (and deriving different livelihoods from) the landscape that forms the watershed. Place-based education is invaluable in understanding "all our relations," and the unique contributions of each and every place. The exceptional status of the White as the longest undammed tributary of the Connecticut River further highlights its importance in presenting opportunities for climate change adaptations, and 'Monitoring the White River' takes on a whole 'nother level of significance.

**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
- *Trout in the Classroom* – what's needed for survival of this keystone (with Trout Unlimited)
- *Snorkeling* – in-depth exploration of the inhabitants of the pools and riffles of a restored stream (with the US Forest Service)
- *Watershed Restoration* – on-the-ground projects that improve water quality and habitat:
  - Culvert replacements/retrofits
  - Trees and shrubs, riparian buffers, propagation and planting plans
  - Alternative stream bank restoration projects
  - *and more!*

MWR efforts started with ‘real-world’ observations and impacts in 2005 when a group of ‘Teen Stewards’ helped document a significant incursion of Rusty crayfish on the lower reaches of the White mainstem. Students have played a key role in monitoring crayfish populations in the White River watershed since 2010, when VTDEC aquatic biologist Jim Kellogg helped train White River watershed teachers and started using student-collected data to help build a statewide database of crayfish observations.

These data helped clarify the extent and magnitude of the Rusty Crayfish incursion, but also provided important and hard-to-find information about other crayfish in the watershed. This helped lead to 2012 publication of a ‘Field Guide to Crayfish of the White River



Watershed’ (<https://whiteriverpartnership.org/wp-content/uploads/2014/04/Field-Guide-to-the-Crayfish-of-the-White-River-Watershed.pdf>), and further student crayfish work utilizing our Teaching Unit helped contribute to a Forest Service Ecological Risk Screening Summary for Big Water Crayfish. Big Water Crayfish was first identified in the watershed in 2010, and has now been documented at half a dozen sites visited during MWR outings.

In 2020 we teamed up with our friends and long-time collaborators at VINS to make a short crayfish YouTube video at Clifford Park in Hartford, and WRP Board member Jim Armbruster (who works at VINS) helped launch a statewide Vermont Crayfish Index on iNaturalist. In combination with our Monitoring the White River Project on iNaturalist, which includes observations of all sorts of life-forms in the White River watershed, these efforts provide real-world impacts and accessibility for the efforts of students and citizen scientists.

In 2021-2022, Vermont Center for Ecostudies helped move many of these records to the Global Biodiversity Information Facility (thank you, Kent McFarland!). VCE has further provided great guidance for structuring our monitoring efforts to increase the value of these data to the broader scientific community.

As we navigate year three of the COVID-19 pandemic, it is clear the world is a changed place. While we hope the most intense impacts are behind us, the process of understanding and leveraging new routines continues and we are here to support you. We cherish opportunities to tailor programs to meet your needs, whether you are an experienced teacher who has worked with us in the past or are a new ECO coordinator or otherwise helping coordinate outdoor activities. We highlight the “Partnership” portion of our name by giving students the opportunity to both gain and contribute important knowledge about all the nooks, crannies and residents of the watershed.

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

<u><b>MWR Schools</b></u>	<u><b>Supporting Organizations &amp; Agencies</b></u>
<p> Barnard Academy  Bethel Elementary School  Blue Mountain Union School*  Braintree Elementary School  Brookfield Village School  Chelsea Public School  Dothan Brook School (Hartford)  East Valley Academy (East Randolph)  Hartford Memorial Middle School  Hartford Area Career and Technical Center  Killington Elementary School  Mid-Vermont Christian School (Quechee)  The Newton School (Strafford)  Ottauquechee School (Hartford)  Prosper Valley School (South Pomfret)  Randolph Elementary School  Randolph Union Middle/High School  Randolph Technical Career Center  Rochester School  Samuel Morey Elementary*  Sharon Elementary School  South Royalton Elementary School  Stockbridge Central School  The Sharon Academy  Tunbridge Central School  Vermont Technical College  Waits River Valley School*  White River Valley High School (South Royalton)  White River Valley Middle School (Bethel)  Williamstown Middle/High School  Woodstock Elementary School  Woodstock Union High School </p> <p>*Trout in the Classroom participants via Greater Upper Valley Trout Unlimited partnership</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 &amp; Dorothy Byrne Foundation  Lamson-Howell Foundation  Lake Sunapee Bank (Bar Harbor Bank &amp; Trust)  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 &amp; Recreation  Vermont Water Quality Division  Wellborn Ecology Fund </p>
<p style="text-align: center;"> <b>Questions about MWR?</b>  Dan 'rudi' Ruddell  WRP Watershed Scientist  <a href="mailto:rudi@whiteriverpartnership.org"><u><b>rudi@whiteriverpartnership.org</b></u></a> </p>	<p style="text-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: <a href="http://www.whiteriverpartnership.org"><u><b>www.whiteriverpartnership.org</b></u></a>. </p>