

## What is Stream Monitoring?

Stream monitoring is how we are able to tell how healthy our streams are, and can help us identify and locate sources of pollution, show us if restoration is helpful for a stream, and notify officials of places with hazardous levels of pollution.



One set of unsorted samples

How exactly do we monitor? We do this by taking samples from our streams using a special methods and collect macroinvertebrates, or “critters,” as shown in the pictures. Each of these critters are affected by pollution differently – some worse than others. By counting how many of each we have, we can come up with a “score” that tells us how healthy the stream is.



Common Netspinner Caddisfly

## What Can You Do To Help?

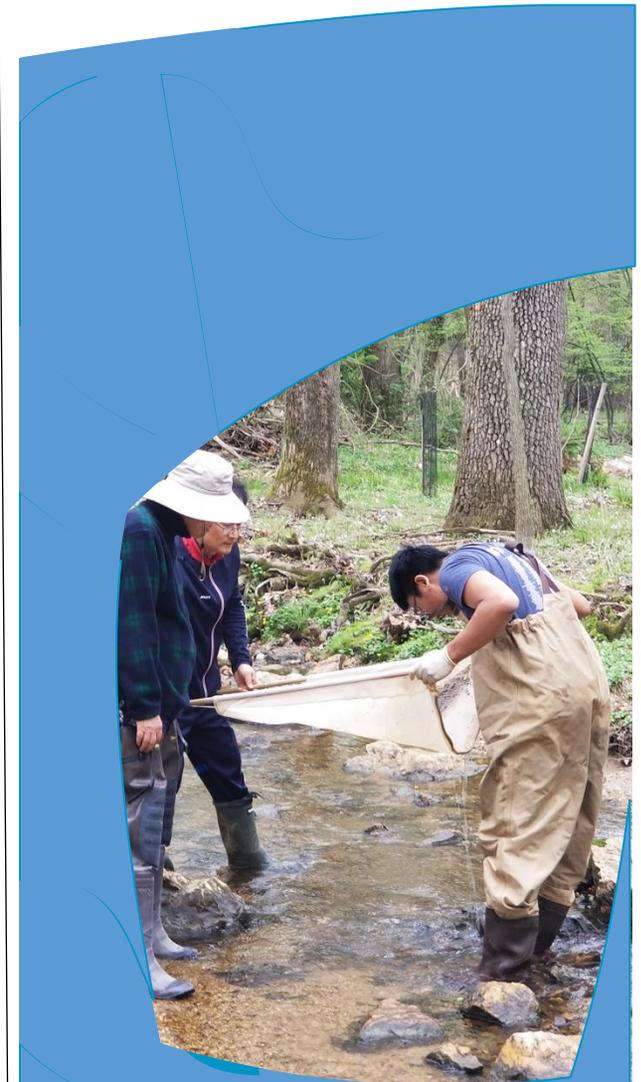
Currently, only about 20% of streams are monitored in Virginia simply because there aren't enough people. By volunteering, you can help raise that number and make sure more of our streams are watched.



The easiest thing you can do to help is to join in on workshops, where you can help monitor streams around your area. The next step up, once you have participated in some workshops, is to become a certified monitor yourself. After passing a test, you are allowed to “adopt” your own stream and monitor it 4 times a year, helping our environment by making sure our streams are healthy.

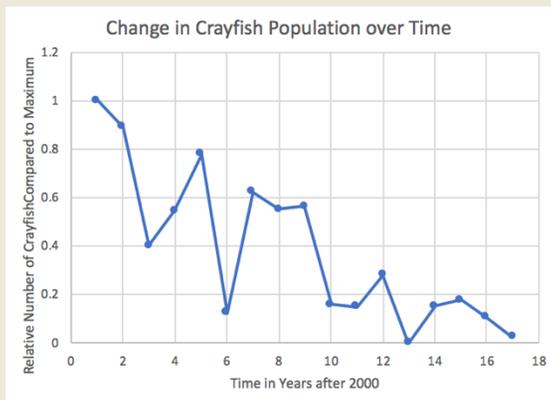
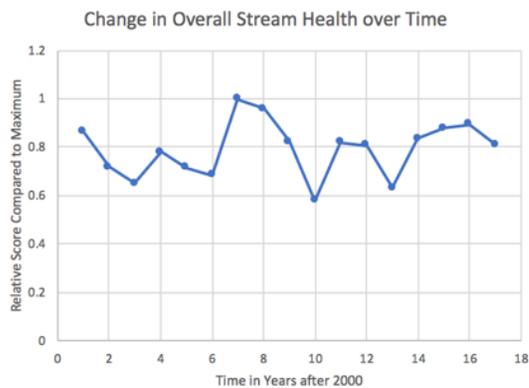
Made by Ho Yeon Jeong, a student at Thomas Jefferson High School for Science and Technology as part of his Youth Conservation Leadership Institute project. He has been helping monitoring streams since the 8<sup>th</sup> grade and has been a certified stream monitor since his freshman year of high school.

## Stream Monitoring in Virginia

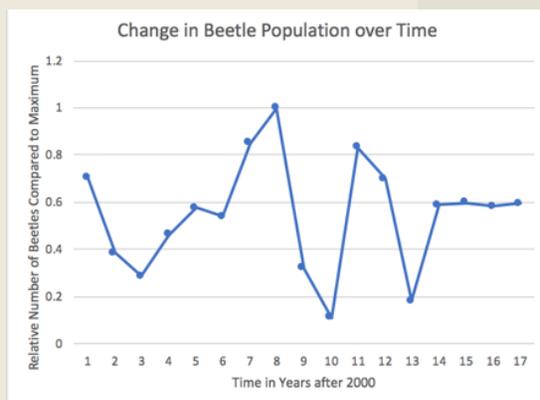


# Analyzing Stream Health Data

For my analysis, I was given the stream health data of all streams in my watershed (Difficult Run) from 2001 to 2018 from Ms. Palmer from Northern Virginia Soil and Water Conservation District.



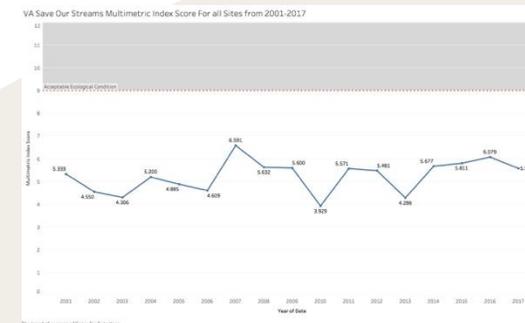
Some macroinvertebrates have been on the decline, like the crayfish.



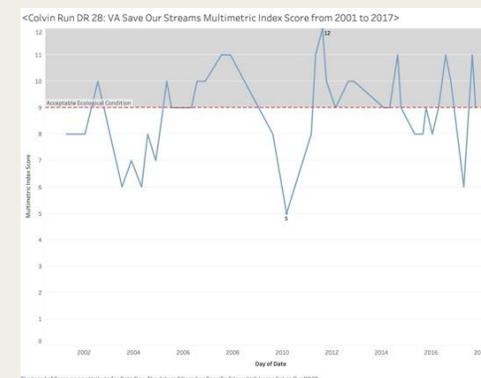
While others, like the beetle, follow along with the overall health score of streams.

In a scientific study conducted by Sarah R. Engel and J. Reese Voshell, Jr., a moderate correlation with actual scientific monitoring and volunteer monitoring was found in effective gauging of stream health, and then modified the protocol to what it is now to give volunteers accuracy close to professionals. The study can be found here: <http://www.vasos.org/wp-content/uploads/EngelVoshellAmerEnto2002.pdf>.

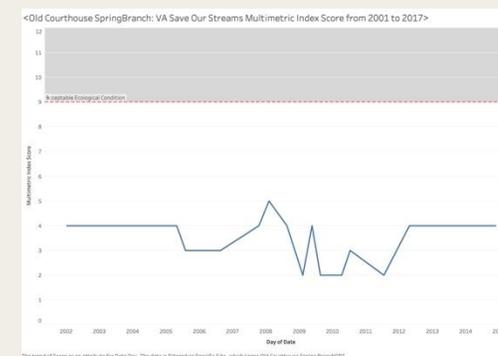
# Stream Health Trendlines in Difficult Run



Clearly, Difficult Run has been suffering from poor environmental health for a very long time.



While some are often in the "healthy" range,



Certain streams are clearly under heavy environmental stress.