

## Save Our Streams

Water input to the lake comes from more than just the Roanoke and Blackwater rivers. Many smaller estuaries exist and can carry significant sediments and pollutants into SML. Monitoring the health of these streams is critical to understand the quality of stream water that drains into SML. SMLA collaborates with the local Virginia Save Our Streams Program (VA SOS) and the Blue Ridge Foothills and Lakes (BRFAL) Chapter of the Virginia Master Naturalist Program to conduct water quality monitoring on small streams that eventually feed into the lake. Certified volunteer monitors (“citizen scientists”) collect and identify fresh water aquatic macroinvertebrates (critters) that live on the bottom of a stream (benthic area) on a quarterly basis. Information on the diversity and number of critters found is used to determine the quality of water flowing through the streams and to monitor the quality over time. Data collected is entered into the VA SOS database and used by the Virginia Department of Environmental Quality in assessing the overall quality of Virginia’s streams and rivers and used to identify specific problems that may need to be addressed. The VA SOS data from streams feeding into Smith Mountain Lake complements the SMLA/ Ferrum College Water Quality Monitoring Program (WQMP) that has set the standard across the nation for a volunteer lake monitoring program for over 33 years. Minor expenses for this project, generally for equipment replacement, came from the same sources as Water Monitoring funds.

In its annual survey report of water quality, SML’s Save our Streams unit reports that 16 streams in our watershed were surveyed during 2019. Three- and four-person teams of certified monitors, who base their findings on a count of macroinvertebrates, conducted a total of 44 monitoring events. The ratings are based on the relative numbers of pollution-tolerant and pollution-intolerant species identified. Scores run from 0 to 12, from low to high, with a score of 7 and below considered unacceptable; 8 in the gray area zone; and 9 and above acceptable. This year’s average score was an 8.3, down slightly from 9 the previous year.

According to our long-time adviser, Dr. Don Kelso, while “there is no single way of encapsulating the quality of the water, the quality of the habitat, or the robust-ness of the community of organisms...,” our monitoring protocol is among the best available. Moreover, our data has been accepted by Virginia’s Department of Environmental Quality and will become part of their annual report. However, since DEQ won’t be publishing its statewide report until late in the year, the data for our watershed as depicted below should be seen as preliminary.

<b>Year</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>
Sites Monitored	17	16	16
Acceptable (9-12)	12	7	10
Gray Area (8)	1	4	3
Unacceptable (0-7)	1	0	2
Unable to Determine*	3	5	1

\*based on insufficient data, either because fewer than two monitoring events took place or the number of specimens collected were insufficient for a valid sample.

<b>Area Results</b>	<b>Acceptable</b>	<b>Gray Area</b>	<b>Unacceptable</b>	<b>Unable to Determine</b>
	2017/'18/'19	2017/'18/'19	2017/'18/'19	2017/'18/'19
North Shore (Bedford Co.) 3/0/2 (3 sites)	3/0/2	0/1/1	0/0/0	0/2/0
Gills Creek Area (3 sites)	3/2/1	0/0/1	0/0/1	0/1/0
Boones Mill Area (1 site)	1/1/1	0/0/0	0/0/0	0/0/0
Upper Blackwater (2 sites)	1/1/2	0/1/0	1/0/0	0/0/0
Lower Blackwater (2 sites)	1/1/1	1/0/1	0/0/0	0/1/0
Hardy Road Area (3 sites)	1/1/3	2/2/0	0/0/0	0/0/0
Pigg River (2 sites)	1/1/0	0/0/0	0/0/1	1/1/1
Totals	11/7/10	3/4/3	1/0/2	1/5/1

**Notes:**

1. One of the Gills Creek sites noted for its high ratings, Truman Hill, slipped into the gray area this year due to a high count of black flies in one of the samples. This was likely a fluke, as a recent hatch of any invertebrate at a given sampling can throw off the rating.
2. The high ratings for the Upper Blackwater sites are notable, because they reinforce the conclusion that the Blackwater River upstream from the MVP pipeline crossings is in good ecological condition.
3. The Lower Blackwater sites, including one just downstream of the planned MVP pipeline crossing, are both rated as acceptable as this point. There was, however, evidence of higher sedimentation, most likely resulting from the earthmoving activity associated with the ongoing pipeline construction.

**Conclusions**

Looking over the results of the past six years, several things seem to be true:

- The general health of the streams in our watershed is good.
- Fluctuations in the rating of a given stream are most often due to quirks in individual specimen counts (i.e., a one-time jump or dip in ratings due to an abnormal count of a given species, most often the result of a very numerous hatch in the sampling area); or an abnormal short-term shift in the stream conditions (i.e., a temporary construction project, or a nutrient spill from a farm or golf course, or as the result of cattle straying into a stream).
- Fluctuations in the ratings of multiple streams are most often caused by weather variability, such as a very rainy year or as a result of major flooding.
- In almost all of the above cases the stream or streams have proven resilient and reverted to their normal mean the following year.

While greater disruptions, such as those caused by climate change or a major construction project affecting a large area of our watershed, are clearly a threat to the health of our watershed, we've not seen evidence of such disruption to date.

Despite volunteer turnover due to relocations and age-related "retirements," our overall team strength remains steady at around 40 members. We will begin orientation and training of some 17 new volunteers in 2020. When they are certified, they will be assigned to bolster the strength of our current monitoring teams.

We will continue to monitor the health of our streams in the area affected by pipeline construction. Those streams have yielded generally good ratings up until now.