



Biological Health of Rivanna Basin Streams

2005-2007



A summary of the StreamWatch 2008 report

For over five years, with public and private support, with the involvement of governmental and non-governmental sponsors, with the guidance of expert scientists, and with the help of scores of dedicated volunteers, StreamWatch has been conducting biological surveys at dozens of monitoring sites throughout the Rivanna River watershed. The creatures we collect - insects, snails, worms, and such - are environmental indicators. Their presence, absence, and relative abundance tell us about water quality and habitat conditions, and through analysis of multiple samples, StreamWatch is able to gauge our waterways' ability to support life and provide services to our human community. In this, our third report, we assess biological health at 31 representative sites based on three years of data ending in fall 2007. The summary you are now reading is distilled from a comprehensive report available at our website: www.streamwatch.org/reports.

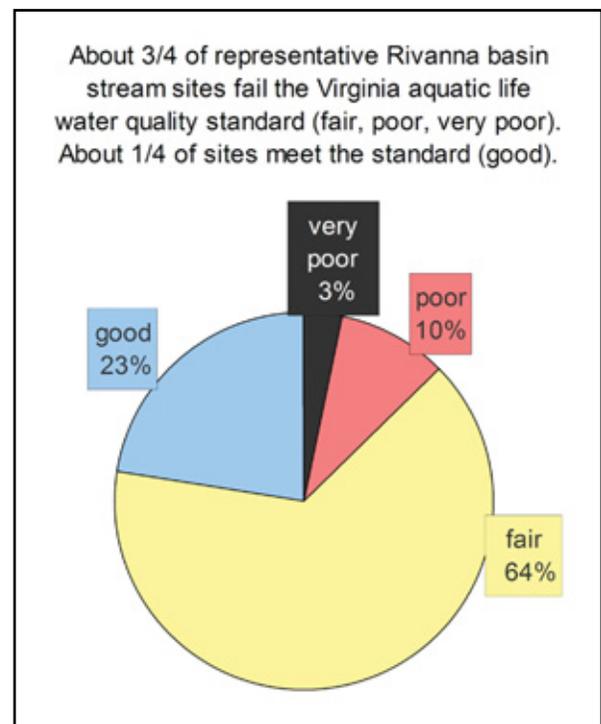
Findings

- Three-quarters of representative stream sites failed the Virginia aquatic life water quality standard. Failure means the community of organisms in the stream is at least moderately degraded due to human-related stressors.
- The condition of most failing sites lies near the pass/fail cusp. These streams have a reasonable chance of regaining good health in response to improved stewardship. Conversely, most passing streams also lie near the cusp, and could fail in response to neglect. Four of 31 sites (13%) are badly impaired.
- The percentage of failing sites is slightly higher than in our previous report. Evidence suggests that drought in 2006 and

Above: Cameron "The Magnificent" Beers volunteers in the streams and in the virtual world. We owe our beautiful website to Cameron's generosity.

2007 may have piled additional stress on streams already burdened by human disturbance. However, we do not have a long enough data record to test this theory.

- As with previous StreamWatch reports, we see a strong relationship between stream health and land use intensity. StreamWatch has been monitoring the Rivanna system for five years, during which time land use in parts of the watershed has changed. But the change has not been extensive enough to affect the overall biological health of the stream network, at least not in a way that our monitoring system can detect.
- Biological health at our monitoring station on Middle Fork Cunningham Creek has declined quite noticeably.



Biological health at 33 Rivanna basin monitoring sites. Use site numbers to locate sites on facing map.

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Site # on map	Site name	Locality	Number of samples	Biological condition	Change from 2004-05 ¹	Assessment confidence
3	Roach/Buffalo River north of 648	Greene	9	Fair	same	strong
6	Preddy Creek west of Rosewood Drive	Greene	7	Fair	NA	strong
1	Doyles River upper @ National Park Boundary	Albemarle	2	Very Good ³	NA	moderate
2	Lynch River @ 603	Albemarle	9	Good	same	strong
4	Swift Run @ 605	Albemarle	8	Fair	same	strong
5	North Fork @ Advance Mills	Albemarle	7	Fair	same	strong
7	Buck Mountain Creek upper west of 666 - A	Albemarle	10	Good	same	strong
8	Buck Mountain Creek @ 665 - A	Albemarle	7	Fair	worse	strong
9	Moormans River @ 601	Albemarle	8	Fair	worse	strong
10	Mechums River @ 601	Albemarle	8	Fair	same	strong
11	Doyles River @ 674	Albemarle	6	Good	same	strong
12	Lickinghole Creek south of Fairwinds Lane	Albemarle	8	Fair	same	strong
13	Ivy Creek @ 601	Albemarle	7	Fair	same	strong
14	South Fork @ Forks of Rivanna	Albemarle	11	Poor	same	² moderate
15	North Fork @ Forks of Rivanna	Albemarle	6	Fair	worse	strong
19	Rivanna @ Milton	Albemarle	12	Fair	same	² moderate
20	Mechunk Creek upper @ 600	Albemarle	7	Fair	same	strong
22	Carroll Creek in Glenmore	Albemarle	7	Poor	same	strong
23	Buck Island Creek @ 729	Albemarle	8	Fair	worse	strong
—	Albemarle County reference stream #1	Albemarle	2	Very Good ³	NA	moderate
16	Meadow Creek west of Locust Lane Ct	C'ville	7	Poor	better	strong
17	Rivanna @ Darden Towe	C'ville	12	Fair	same	² moderate
18	Moore's Creek near Woolen Mills	C'ville	5	Very Poor	same	strong
21	Mechunk Creek @ 759	Fluvanna	7	Good	better	strong
24	Rivanna @ Crofton - A	Fluvanna	11	Fair	same	² moderate
25	Cunningham Creek Middle Fork @ Bell Farms Ln	Fluvanna	8	Fair	worse	strong
26	⁴ Rivanna @ Palmyra	Fluvanna	7	Good	same	² moderate
27	Cunningham Creek @ 15	Fluvanna	7	Fair	same	strong
28	Raccoon Creek @ 15	Fluvanna	7	Good	same	strong
29	Ballinger Creek @ 625	Fluvanna	6	Good	better	strong
30	Long Island Creek @ 601	Fluvanna	8	Fair	worse	strong
31	Carys Creek @ 15	Fluvanna	8	Fair	same	strong
32	Rivanna @ Rivanna Mills	Fluvanna	9	Fair	same	² moderate

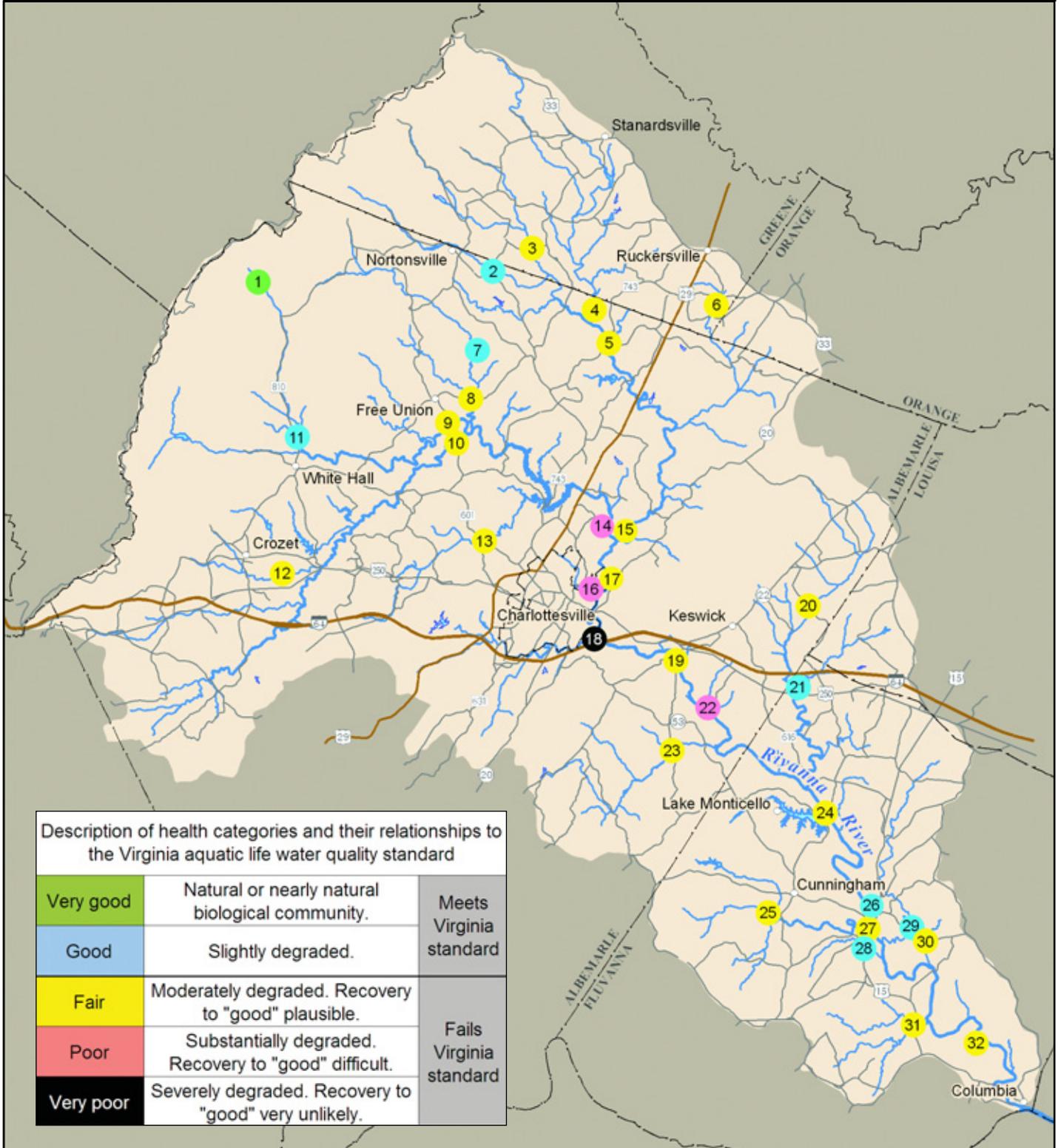
1) We make this comparison by applying the 2005-07 assessment method to both data windows. Please see full report at www.streamwatch.org/reports for details.

2) Our biomonitoring protocol is less precise in large streams than smaller tributaries. For this reason, we assume moderate rather than strong confidence in our assessments of sites on the mainstem Rivanna River and South Fork. We also assume moderate confidence when we have fewer than three samples for a site.

3) These two sites are reference sites. They were selected because their watersheds are almost completely natural. They are not part of our representative site set. Assessment confidence is "moderate" because we have fewer than three samples for these sites. The bar separating the "very good" and "good" health tiers has provisionally been raised since our last report.

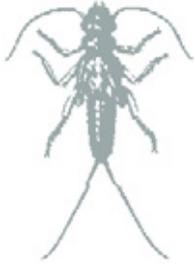
4) Monitoring at this site ceased in 2007 due to bridge construction.

StreamWatch monitoring sites in the Rivanna watershed. Colors indicate biological health. Site names can be referenced in table to left.



Map courtesy of Chris Bruce, The Nature Conservancy

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