

The Secret Life of Stream Bugs:

King County Aquatic Macroinvertebrate Regional Trends

By Beth Sosik

Each year since 2002, in the heat of summer, the hardy folks of King County's Science and Technical Support Section have donned their waders, armed themselves with nets and hedge clippers, and braved the gauntlet of blackberry, nettles and devil's club that line our county's hundreds of creeks and small rivers.

Once in a stream, they find a suitable area to place their sampling net, crouch down and begin turning over rocks and scouring the stream bottom within a 1-square-foot sampler perimeter, carefully catching the stream insects and other dislodged material into a net.

If you saw them working, you might wonder, "What are they searching for that's so valuable?" These field scientists would tell you that they are in pursuit of the smallest indicators of water quality dwelling in our streams. These indicators are easy to overlook—you might not even notice they are there. But if you pay attention, they have an important story to tell.

Some types of insects spend part or all of their lives living in the water, crawling over and under the rocks that line the stream bottom. They are known as benthic macroinvertebrates, but we affectionately call them "stream bugs."

Because they spend such critical parts of their lives in the stream and have such limited mobility, these insects are especially affected by the composition of the jumble of rocks and the quality of the water flowing over and through them. In fact, scientists can tell a lot about how healthy the stream is by examining the species and number of stream bugs present.

We recently examined over 10 years' worth of Benthic Index of Biotic Integrity (B-IBI) data from 126 sites within King County to look for long term trends in stream health.

The results: More than half of the sites scored "very poor," "poor" or "fair" (62 percent). A quick glance at a map immediately shows that low scores tend to cluster in areas with higher concentrations of development. In studies done across the globe, researchers have consistently found a strong negative relationship between urbanization and stream health.

B-IBI TRENDS MAP (next page):
Circles indicate sites with stable Benthic Index of Biotic Integrity (B-IBI) scores, and triangles note sites with significantly improving scores. The symbol color illustrates the site's average B-IBI score from 2002 through 2017.

B-IBI SCORES

The presence and number of certain types of stream bugs, in addition to other ecological characteristics, can be combined into a single "score," known as the benthic index of biotic integrity, or "B-IBI score." The higher the B-IBI score, on a scale of 0-100, the healthier the stream. King County has been a pioneer in using and refining this monitoring tool, which has become widely adopted across the Puget Sound region.

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B-BIBI TRENDS

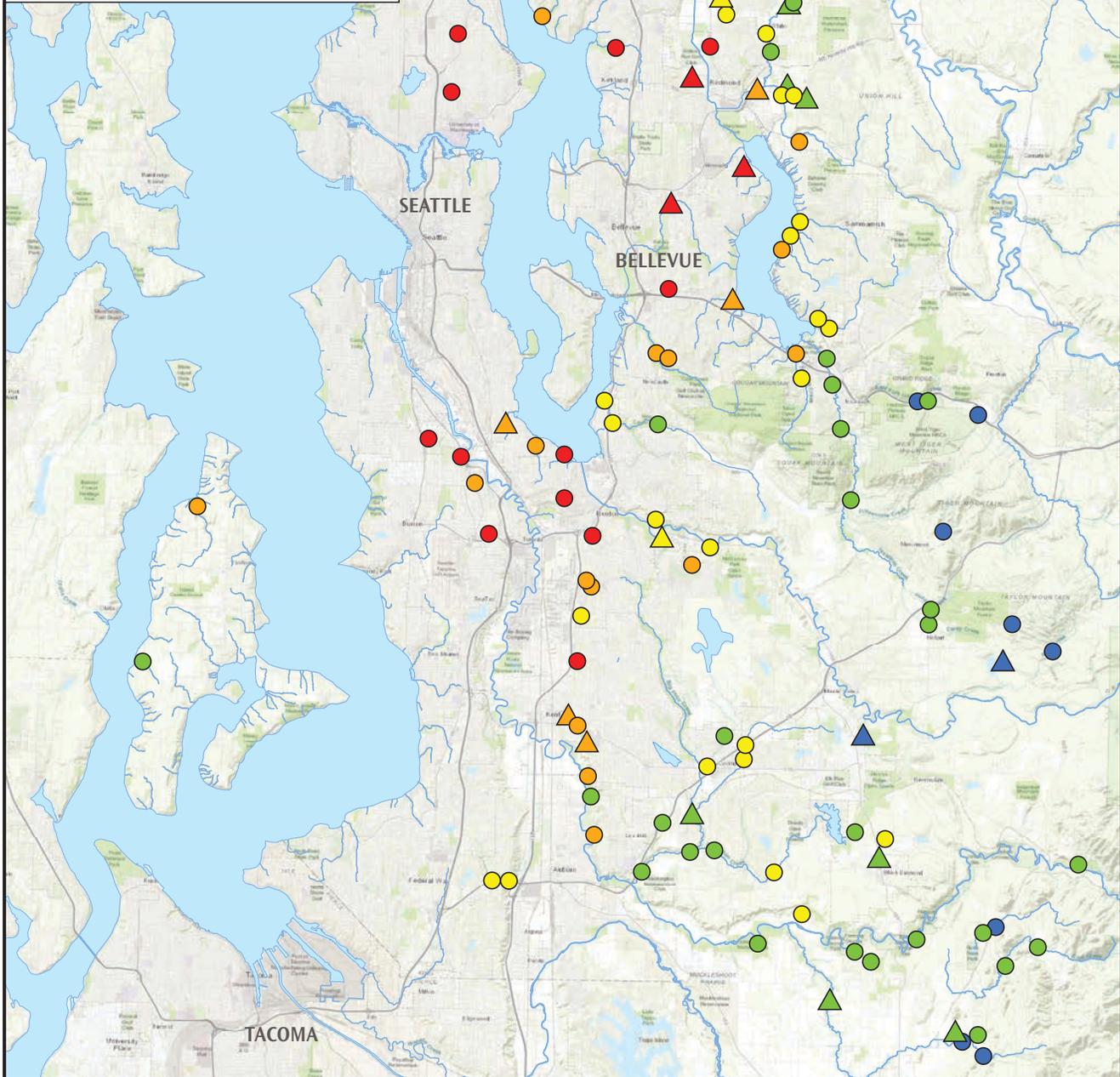
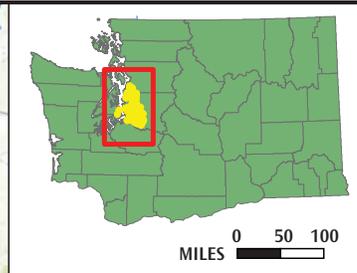
King County, WA



King County

- ▲ Excellent, increasing
- Excellent
- ▲ Good, increasing
- Good
- ▲ Fair, increasing
- Fair
- ▲ Poor, increasing
- Poor
- ▲ Very poor, increasing
- Very poor

Note:
The use of the information in this map is subject to the terms and conditions found at: www.kingcounty.gov/services/gis/Maps/terms-of-use.aspx. Your access and use is conditioned on your acceptance of these terms and conditions.



(continued on page 32)

Given the massive growth spurt our region has seen in the last decade, this relationship should give us cause for concern.

Examining how B-IBI scores have changed over time, however, we see a slightly different story. B-IBI scores at most sites (83 percent) have remained stable since 2002, and scores for some streams (17 percent) have actually improved.

The improvement we see is often incremental. Sites that scored poorly might improve, but still be considered poor. However, in light of the continuing waves of development in King County, the fact that we don't see significant decreases in B-IBI scores at any of our sites and in some cases see mild increases, is reason to feel cautiously optimistic.

A lot of work has been done over the years to restore habitat, address stormwater, improve water quality, and manage growth. These results suggest that although we still have a lot of work to do, these efforts are making a difference—the needle is moving in a positive direction.

For more information, visit [King County's Stream Bug Monitoring web page](#).

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