

Hello all. The year to date has been somewhat wet. We've managed to get most of the spring sampling accomplished and have just recently been able to start our summer work. Changes and additions to personnel have occurred. Rodney Pierce is the Monitoring Section's new supervisor. New hires include Grayson Patton, Ryan Evans and Mark Martin. While some faces have changed here, the issues are pretty much the same.

### **K-WADE Development**

Last year we reported on the beginning stages of developing a division-wide database for water quality monitoring data called K-WADE (Kentucky Water Assessment Database for Environmental Monitoring). This database has been patterned after systems in use by Alabama and Mississippi, whose staff have graciously provided demonstrations and helpful advice to us throughout this process. WQB biologists have been in the trenches helping the IT section hammer out the details at every level. We are now reviewing a K-WADE prototype that incorporates numerous enhancements and modifications to the base systems, including sampling and results for biology (macroinvertebrates, fish, and algae) with electronic data import and a flexible system for storing species trait information. There is still much to do to address issues large and small, but we hope to have the system up and running by summer 2011. The new system will streamline many work processes, improve data integrity, and make reporting to WQX a cinch!

### **Nutrient Criteria Development**

Last year a draft summary of wadeable streams nutrient "benchmarks" was completed to compile efforts thus far in characterizing in-stream total nitrogen and total phosphorus concentrations protective of aquatic life use in Kentucky Bioregions. Regional nutrient benchmarks tied strongly to uses continue to be problematic in many regions of the Commonwealth. For this reason, Kentucky is declining to propose numeric standards in the upcoming triennial review. Our improved knowledge, however, is supporting a more consistent translation of narrative standards. For example, the draft stream nutrient benchmarks are being used to develop protocols for setting nutrient targets in nonpoint source watershed plans.

In the continued effort toward numeric standards, other current activities include:

- Data analysis from a 2010 study in the Western Pennyroyal Karst Plain (ecoregion 71e) and the Eastern Highland Rim (ecoregion 71g), which may help to illuminate nutrient-biology relationships in those areas.
- A pilot study to develop a monitoring program for chlorophyll-*a* in non-wadeable streams as a potential target for standards in those waterbodies (a 106 supplemental grant project).
- Information-gathering for a proposal to begin tracking algal blooms in reservoirs.

### **Reference Reach Network Review**

Kentucky's Reference Reach Program was initiated in 1991 and has since grown to a network of over 200 stations on 174 wadeable and headwater streams. An effort is just beginning to review the network to address any gaps in representing stream classes, to better define the selection criteria, and to re-validate the stations in the network to ensure they meet the refined criteria for least impacted conditions in their respective regions. We expect to produce a report in 2013 including the outcome of the review, the revised selection criteria, a summary of existing data for each reference reach, and regional profiles for biology, habitat, and water chemistry.

## Quality Assurance for Biology

Made possible by a 106 supplemental grant we have expanded our QA system for biology to include external taxonomic analysis and review. Macroinvertebrate, fish, and diatom samples are being analyzed by external specialists through contracts and MOAs, and we look forward to getting those results in September to help validate the accuracy of our biology data. For diatoms, the external QA includes verification of voucher images, plus review of problem taxa groups in samples from recent nutrient criteria development studies. It is likely that at least one new species will be described as an outcome of this project. Plans for future QA of macroinvertebrates and fish include similar external verification of reference specimens.

### Kentucky Division of Water Probabilistic Monitoring Program

The Probabilistic Monitoring Program is currently assessing sites in the Green-Tradewater BMU (Figure 1) (when it's not raining!). Aside from the BBQ, the group's enjoying seeing the high species diversity this region's known for. Information from this monitoring allows resource managers to gain an idea of basin condition for wadeable streams < 200 m<sup>2</sup> while providing use support determinations for 305 (b) reporting. In addition, the group is nearing completion of biological sample identifications from last year's collections in the 4 Rivers-Upper Cumberland BMU. Overall, everyone's staying busy with travel or time at the lab bench.

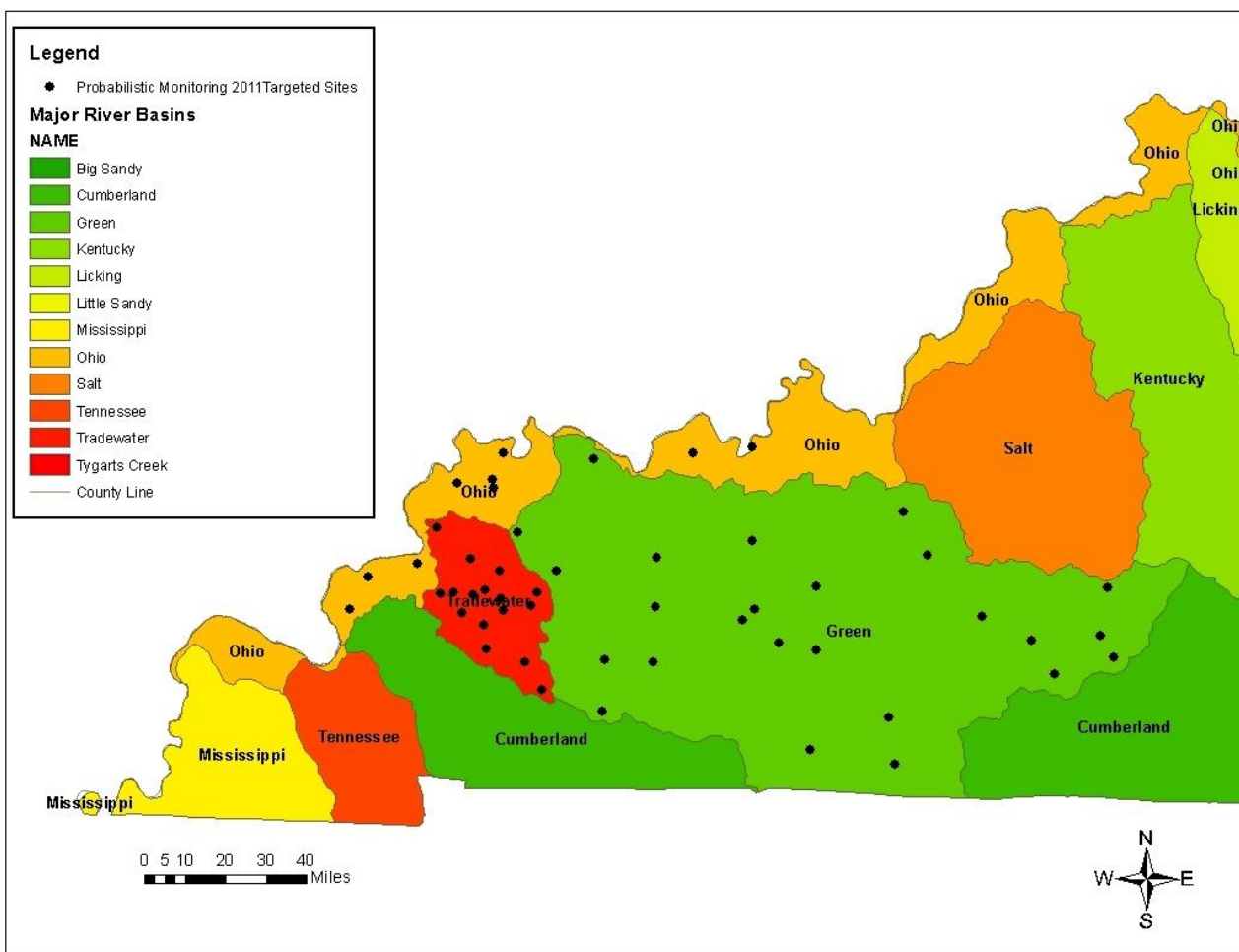


Figure 1. 2011 Probabilistic Monitoring sites in the Green-Tradewater Basin Management Unit (BMU).

