

2014 SWPBA Newsletter – News from the Bluegrass State

It's been a busy year in Kentucky – is there ever not a busy year these days? KDOW biologists have been in to all sorts of things besides our routine monitoring, from advising on web resources and outreach products, to finding ways to expand existing monitoring programs, to exploring new monitoring technologies. The marching orders to “do more with less” won't be ending any time soon and I'm sure everyone can relate. We are all hard at work to get the job done even though “the job” keeps getting bigger! Here are just a few highlights.

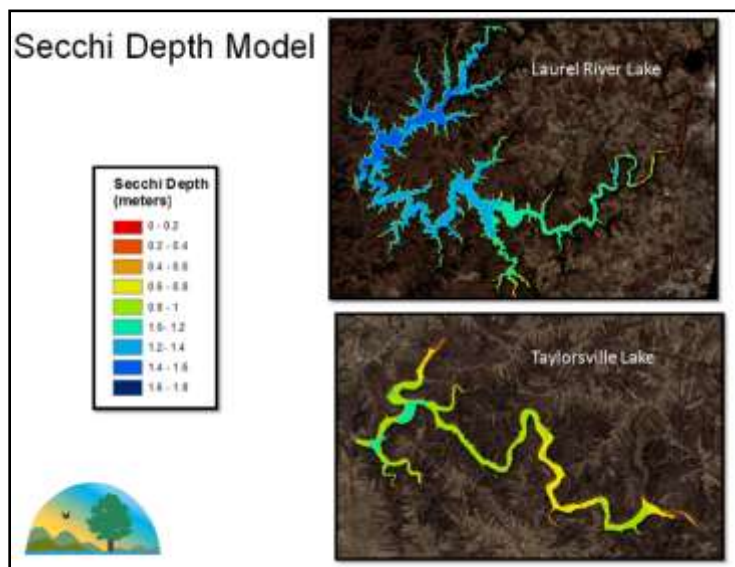
Harmful Algal Blooms – Boo!



Harmful Algae Blooms (HABs) are an emerging issue in Kentucky and KDOW biologists have been helping to develop a strategy to monitor for HABs and provide information for public advisories. KDOW continues to sample a network of ~80 lakes (most with multiple stations) in its Clean Lakes program, but this network is limited to quarterly sampling over a 5 year basin cycle which likely misses many HABs that may be occurring. Increased public awareness and KDOW outreach efforts are increasing the number of citizens and field office inspectors reporting apparent blooms. KDOW biologists are responding to these blooms whenever possibly by collecting samples for chlorophyll-*a* analysis and cyanobacterial cell counts. Biologists also are revisiting lakes which have had confirmed blooms from previous years. Cell counts are being compared to World Health Organization guidelines to make recommendations to the Department of Public Health for recreation advisories. US Army Corps of Engineers staff also are monitoring HABs in Corps lakes and KDOW is cooperating with that agency to issue press releases to inform the public about HABs.

Remote sensing is a very promising tool for identifying bloom conditions on a larger scale than can be monitored using conventional sampling. KDOW biologists are using satellite imagery calibrated with intensive sampling at a limited number of sites to produce whole-lake

chlorophyll-*a* and Secchi depth models of several lakes. These models can highlight areas of possible bloom conditions that would not otherwise be identified.



An example of Secchi depth models for two contrasting Kentucky lakes

In 2015 KDOW plans to add additional tools for identifying HAB problems, including using ELISA to quantify toxins in lakes with advisories, using HPLC to quantify and identify toxins in lake receiving advisories, and using ESA Sentinel 2 satellites for remote sensing to improve lake-wide models.

For more information contact Mark Martin (mark.martin@ky.gov) or Garrett Stillings (garrett.stillings@ky.gov).

Wild Rivers Program gets well deserved attention

Portions of 9 rivers and streams of exceptional quality and aesthetic character maintain the Kentucky "Wild River" designation in accordance with KRS 146:200-360. The protected segments include portions of the Cumberland River, Red River, Rockcastle River, Green River, Big South Fork Cumberland River, Little South Fork Cumberland River, Martins Fork Cumberland River, and two Cumberland River tributaries Rock Creek and Bad Branch. Management activities in each Wild River corridor include quarterly water quality monitoring, periodic monitoring of high traffic areas, and an annual aerial land use survey. KDOW manages nearly 5,000 acres of Wild Rivers inventory by eradicating invasive species, documenting illegal activities and monitoring property boundaries.

The Public Broadcasting Service at Western Kentucky University recently highlighted Kentucky's Wild Rivers in its production of a 30-minute documentary entitled "Kentucky Wild Rivers: Secrets of Discovery". This documentary was nominated for a regional Emmy by the Ohio Valley chapter of the National Academy of Television Arts and Sciences. Check out the Kentucky Wild Rivers Program Facebook page for links to excerpts!

For more information on Kentucky Wild Rivers contact Zach Couch: zach.couch@ky.gov.

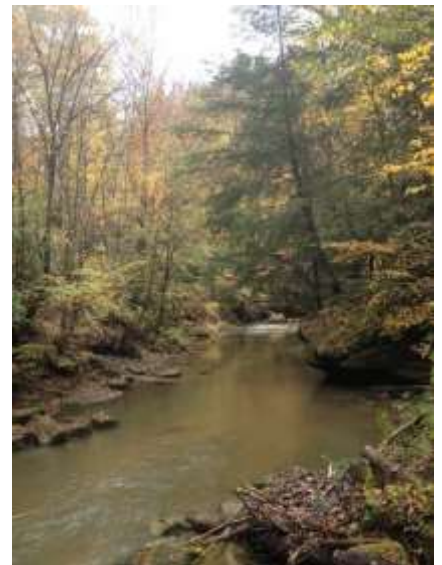


Reference Reach Monitoring Program getting busier

KDOW has recently made expansions to the wadeable streams Reference Reach program. In the early 2000s the Reference Reach network of ~ 200 stations on ~175 streams were intensively sampled for biological index development. Since then, a subset have been sampled on a 5-year rotating basin cycle to increase the amount of index calibration data, to monitor the condition of Reference Reaches, and to help with interpreting contemporary biology sample results from ambient and targeted monitoring programs.

In 2013, KDOW initiated a companion to the routine basin cycle monitoring aspect of the program in order to improve the ability to detect trends in the condition of Reference Reaches and to better characterize physicochemical conditions for least disturbed streams in the respective bioregions. The Reference Trends Monitoring Network (RTN) consists of 16 sites which will get annual biology sampling, bimonthly water sampling, and periodic flow measurements. Continuous data for water level and temperature are being recorded at four of these sites. These four sites are also serving as Kentucky's representatives in SWPBA's Southeastern Monitoring Network (SEMN).

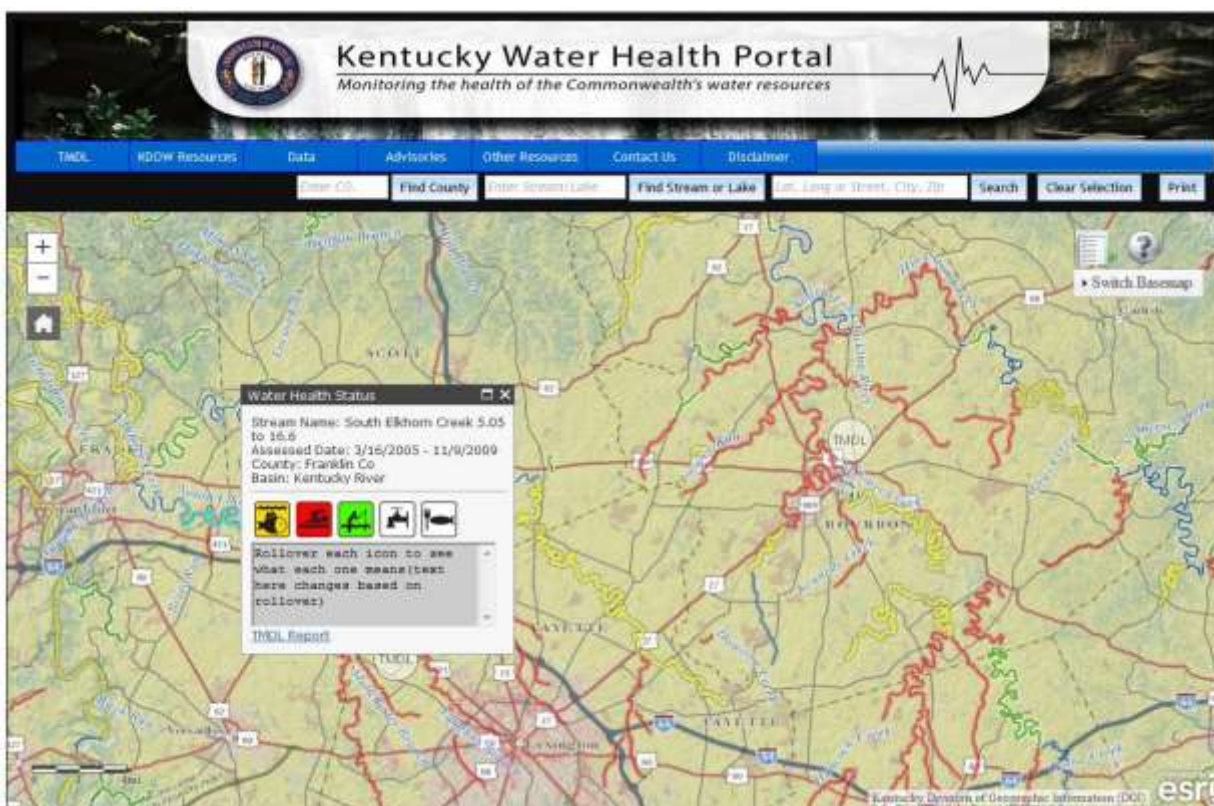
For more information contact Ryan Evans (ryan.evans@ky.gov).



Kentucky Water Health Portal – taking it to the people

KDOW biologists have been instrumental in efforts to create a new public information resource called the Kentucky Water Health Portal. This effort was in part spurred by a new statute requiring KDOW to increase accessibility and detail of information relating to 303(d) listings and TMDLs in development. KDOW has gone above and beyond to produce a very user-friendly interface with a wealth of information about impaired and healthy streams. From an interactive map, a dashboard of stream status can be accessed by selecting a water body. The dashboard will display information on designated use attainment and basic stream information. It also will have links for the user to download a detailed listing summary, watershed health reports, OSRW information and TMDL documentation. The system will be finalized soon and we are looking forward to continued feedback from the public and stakeholders to maximize its usefulness.

For more information contact Katie McKone (katie.mckone@ky.gov).

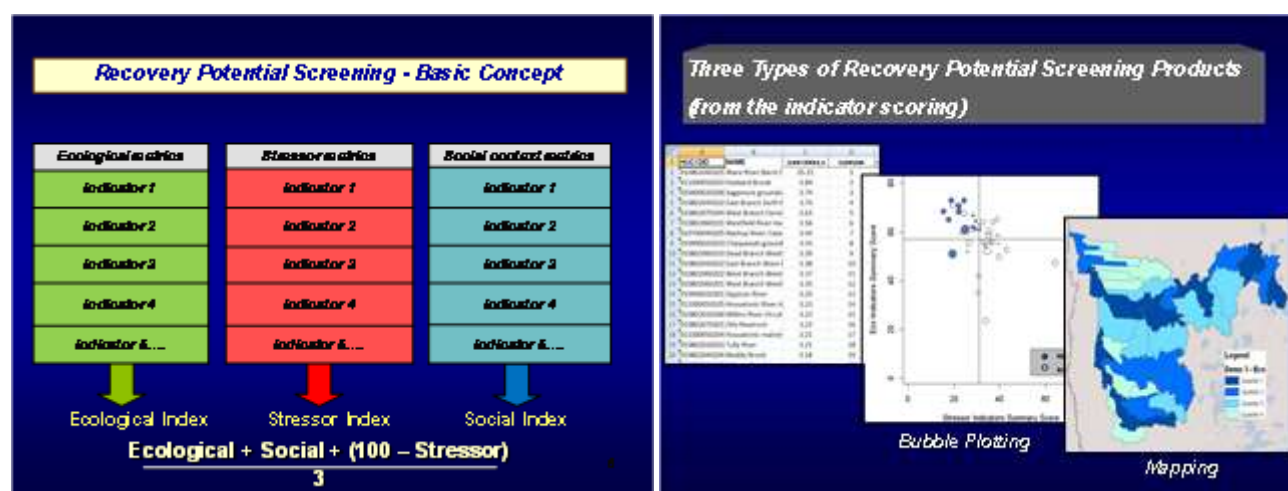


Screenshot above from the beta Kentucky Water Health Portal, showing attainment status of designated uses for South Elkhorn Creek and a link to the E. coli/Fecal coliforms TMDL document. There also will be a link to a "listing summary" (in the case of new listings) which will detail the basis for listing, the source and age of data used, the general monitoring methods, and the location of the data.

Recovery Potential Tool – scoring for the future

In cooperation with EPA Headquarters, KY is a pilot state for developing a recovery potential tool used to rank watersheds based on 3 categories of metrics – ecological, stressors, and social context. The tool is a GIS-based model, whereby layers of data are used to predict the recoverability of a watershed that may be impaired or identify high quality watersheds that can be protected (and many other ideas). The graphics below show the basic concept of how the tool works, considering the three categories of metrics; and the second slide shows the products of the tool.

For more information, contact Lisa Hicks (lisa.hicks@ky.gov).



Wetlands Monitoring – we're swamped!



In 2014, KY continued to develop a wetlands monitoring program, which included refinement of a rapid assessment method (KY-WRAM), protocols for assessments, and planning for the second round of the National Wetlands Condition Assessment in 2016. Thirty sites were

assessed for wetland characteristics using the KY-WRAM, which included hydrology, vegetation, habitat, soil condition and land use; those data will be combined with biological sampling to develop indices of biological integrity for wetland communities. The KY-WRAM assessment method may also be used in the future to assist in water quality certifications.

For more information, contact Barb Scott (barb.scott@ky.gov).

The National Water Quality Initiative - Hinkston Creek in the spotlight

In 2013, approximately 165 small watersheds throughout the U.S. were selected for targeted financial assistance from the Natural Resources Conservation Service through the National Water Quality Initiative (NWQI). The NWQI brought together the EPA, NRCS, and state agencies to identify watersheds with critical water quality concerns from non-point source pollution that had the potential to be improved through on-farm conservation investments. Financial assistance was made available through the Environmental Quality Incentives Program for agricultural best management practices (BMPs) such as fencing cattle out of streams, providing alternative water sources for grazing animals, and creating riparian buffers. Monitoring by state agencies pre- and post-BMP implementation will aid in evaluating the effectiveness of the BMPs in reducing nutrient, sediment, and pathogen contributions from agricultural land into nearby streams.

The Hinkston Creek Headwaters was selected for focused monitoring to identify improvements in water quality resulting from the NWQI. Over 65% of land cover in the watershed is devoted to pasture and hay. Monitoring in 2014 is focused on collecting pre-BMP or early BMP baseline data on nutrients, pathogens, total suspended solids, habitat and biology to compare to data in future years to evaluate the effectiveness of BMP implementation in improving water quality in the watershed.



Melanie Arnold is dressed for success in Hinkston Creek

For more information contact Melanie Arnold: melanie.arnold@ky.gov