

KBS HAB research update: Lovewell and Perry HAB coring

Each year, sediment and billions of dead algal cells settle to the bottom of Kansas reservoirs, continuously covering last year's deposits. The dead algal cells slowly degrade within the sediment, but leave behind pigments unique to distinct algal taxa – including the “blue-green algae” that comprise Kansas’s Harmful Algal Blooms (HABs). Because older sediments are buried by more recent sediments/dead algae, the cores serve as a layered timeline of algal community changes and HAB events over the entire life of the lake. Sediment core investigation is one of the **most cost-effective ways to help understand which reservoirs are becoming more vulnerable to HABs over time. Evaluating historical HAB and water quality data was ranked as the number #1 priority of the HAB research coordination group.** Completed/In-process work based on \$100K/year, proposed Kansas River basin assessment is 300K.

Completed FY 2018-2020: Milford, Marion, Sebelius, with Kanopolis and Webster final report in June

In-process FY 2021 @ 100K : Lovewell, Perry (see below)

FY 2022 @ 300K: Waconda, Kirwin, Wilson, Cedar Bluff, Clinton, Tuttle (see KBS Kansas River basin proposal)

FY 2023 @ 200K: Big Hill, Elk City, Fall River, Toronto (Verdigris basin water quality projection)



FY 2021 Preliminary Results:

Lovewell and Perry were cored in 2020 to determine HAB trends over time. Cores were collected at three sites in each reservoir; only 2 sites were analyzed in Lovewell. Preliminary results revealed that all algal groups (total algae) are increasing over time in both reservoirs (below; deeper sediment depths represent further back in time). Additionally, blue-green algae (cyanobacteria) generally seem to be increasing in both reservoirs over time. We are in the process of dating the sediment cores to determine estimated year from sediment depth. Preliminary results indicate that Lovewell and Perry are similar to Kanopolis, with progressively increasing HABs over time. Overall, HAB coring results have shown that Kansas River Basin reservoirs may be becoming more vulnerable to HABs over time.

