May 2025

Investment Insight

87,110 miles of streams in Illinois

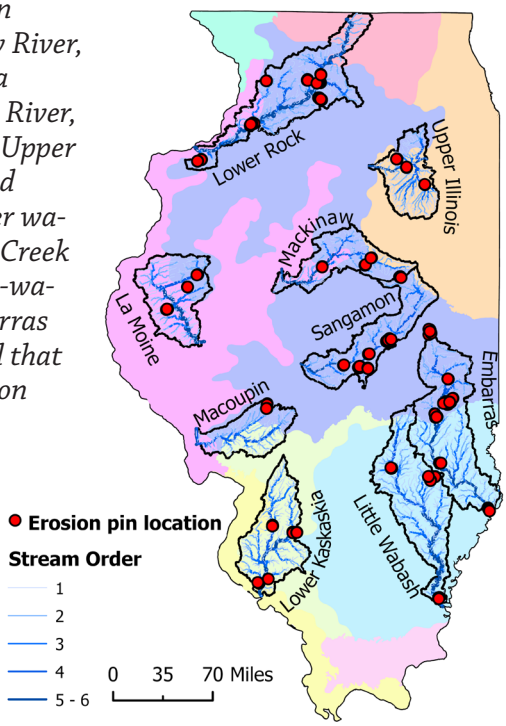
Where do you start? Dr. Andrew Margenot and his team of Dr. Shengnan Zhou, Robert Yanes and Jorge Serrano from the University of Illinois are in the trenches (quite literally) measuring streambank erosion and the amount of associated phosphorus (P) loss. Of the nine watersheds on which the team is working, one includes 66 miles of the Polecat Creek near Charleston, Ill. The Polecat Creek watershed is nearly 19,000 acres and exhibits streambank erosion in many reaches.

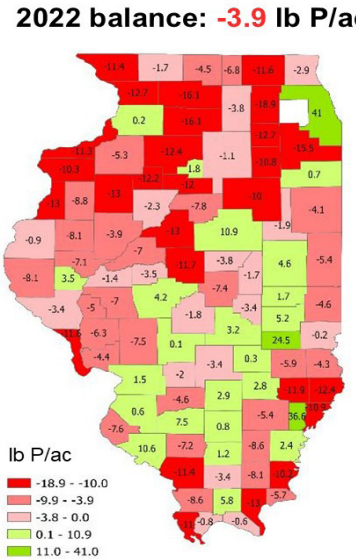
Why is it important? Phosphorus and sediment are two contributors to compromising downstream water quality and have been the focus of agricultural best management practices in recent years. This research examines in-stream erosion, particularly the P associated with sediment loaded by streambank erosion.

Ultimately, the research will yield must needed data that will test the hypothesis that a major source of measured P losses from Illinois today are not from contemporary fertilizer applications. Since 1990 P has been *under applied* relative to removal with grain harvest across Illinois croplands; yet dissolved phosphate in Illinois exported waters has increased by 35%. The increase suggests that despite Illinois farmers using less P "something else" is causing state P exports to jump. That "something else" is likely legacy sediments from eroded streambanks.

The statewide streambank erosion project brings the number of streambank erosion measurement pins to 2600 pins. A total of 53 landowners (28 in the Polecat watershed) are engaged and allow access to streams that cut through their properties. Each landowner receives a personal report on their land, with the entire group receiving general numbers and averages of streambank erosion and the encumbered P loads.

Included in the project are HUC-8 watersheds that represent nine major Major Land Resource Areas (MLRAs) of Illinois, including NLRS Priority Watersheds for nonpoint P: Embarras River, Little Wabash River, Upper Sangamon River, Mackinaw River, Lower Kaskaskia River, Macoupin River, La Moine River, Upper Illinois River, and Lower Rock River watershed. Polecat Creek is a HUC-12 sub-watershed of Embarras River Watershed that have dense erosion pins.





P balance in Illinois 2022. Figure created by Dr. Xian Liu and Dr. Amir Sadeghpour, co-authors of the project.

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