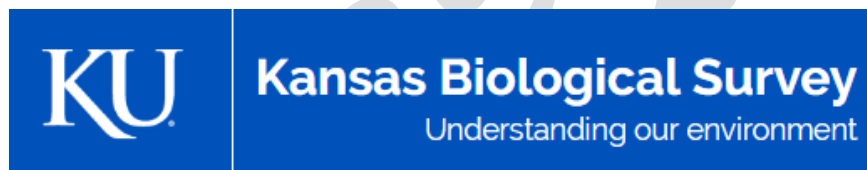


GREAT PLAINS LIMNOLOGY 2018



5-6 October 2018

Hosted by:



Sponsored by:



Program Agenda

Friday, 5-Oct:

Social mixer at *Johnny's Tavern* in North Lawrence

- Address: 401 North 2nd Street, Lawrence, KS 66044
- Time: 6:30PM
- Details: Food will be covered – come join in the fun!

Saturday, 6-Oct:

- 7:45AM** Poster set-up, load presentations, coffee and breakfast provided
- 8:30AM** Welcome to the University of Kansas Field Station – Ted Harris & Jerry deNoyelles
- 8:40AM** Plenary by David Hambright
- *Ecosystem Disruptive Algal Blooms in the Southern Great Plains*
- 9:30AM** **30-minute break**
- 10:00AM** Ten consecutive, 12-minute oral presentations (10min presentation, 2min question)
- 12:00PM** Lunch (provided)
- 12:30PM** Poster session
- 1:30PM** Five consecutive, 12-minute oral presentations
- 2:30PM** **15-minute break**
- 2:45PM** Five consecutive, 12-minute oral presentations
- 3:45PM** **15-minute break**
- 4:00PM** Two consecutive, 12-minute oral presentations
- 4:24PM** Wrap-up and conclusion by 4:30PM

Plenary Speaker



David Hambright

Ecology and Evolutionary Biology and Plankton Ecology and Limnology Lab

Department of Biology

University of Oklahoma

Abstract

Ecosystem disruptive algal blooms (EDABs) were first described as blooms of toxic or unpalatable algal species that disrupted energy flow and nutrient recycling by reducing grazing rates of planktonic and benthic herbivores. Inland water blooms of the toxigenic marine haptophyte, *Prymnesium parvum*, have been categorized as EDABs primarily because they can cause massive fish kills during blooms, although secondarily, some research has noted other harmful effects, particularly on zooplankton feeding and survival. I will present an overview of research conducted on Lake Texoma for the past fifteen years, in which major impacts on pelagic communities during *P. parvum* blooms have been documented, including dramatic restructuring of bacterial, protistan, zooplankton, and fish assemblages. Thus *P. parvum*, particularly in inland water bodies, redefines and expands the concept of an EDAB to truly include the entire ecosystem. Although evidence is limited at present, we suspect that such major changes in community composition and dynamics across the entire food web also will have profound ecosystem-wide functional repercussions.

Oral Presentations

(*Denotes a Student Presentation)

Name: **Puni Jeyasingh**

Time: 10:00-10:12AM

Institution: Oklahoma State University

Presentation Title: On supply stoichiometry and ionome-wide cell quotas

Author List: Puni Jeyasingh

Abstract: I posit that quotas of several other elements should decrease when imbalances in bulk mineral supply limits protein synthesis. Such reduction in quotas should carry substantial energetic costs (e.g., higher per-protein respiration), ultimately realized as a growth penalty. I furnish several lines of evidence in support, but much work remains.

Name: **Grace Wilkinson**

Time: 10:12-10:24AM

Institution: Iowa State University

Presentation Title: Predicting Toxic Algal Blooms In Eutrophic Lakes

Author List: Grace Wilkinson, Jonathan Walter, Ellen Albright, Rachel Fleck, Haley Grigel, Eric Moody, David Ortiz, Anna Zmich

Abstract: Toxic algal blooms are becoming more common in lakes. However, it remains difficult to predict when and where toxin production will occur, particularly in a eutrophic landscape. Using monitoring data from 130 Iowa lakes, we created and tested a model that predicts which lakes are likely to have cyanotoxins.

Name: **Ellen Albright***

Time: 10:24-10:36AM

Institution: Iowa State University

Presentation Title: Identifying potential hotspots of internal phosphorus loading in Iowa lakes

Author List: Ellen Albright, Rachel Fleck, Quin Shingai, Grace Wilkinson

Abstract: Phosphorus release from lakebed sediments may prompt and fuel harmful algal blooms. We collected 70 sediment cores from seven natural lakes and used sequential extractions to characterize sediment phosphorus content. Spatial variation in the sediment phosphorus pools reveals potential hotspots for internal nutrient loading across the study lakes.

Name: **Jon Sweetman**

Time: 10:36-10:48AM

Institution: North Dakota State University

Presentation Title: Assessing the impacts of neonicotinoids on wetland ecosystems in the Great Plains

Author List: Sweetman, J.N and Williams, N.

Abstract: Neonicotinoid pesticides are widely used across the Great Plains region, and there is growing concern of the potential effects on aquatic environments. We examined the distribution of neonicotinoids in Waterfowl Protection Areas in Minnesota as well as evaluated the impacts on chironomid communities using a mesocosm experiment.

Name: **Rebecca North**

Time: 10:48-11:00AM

Institution: University of Missouri- Columbia

Presentation Title: When are lakes REALLY green?

Author List: North, R.L., Graham, J.L., Obrecht, D.V., Baulch, H.M., Hudson, J.J., Abirhire, O., Dillon, P.J., Smith, R.E.H., Thorpe, A.P., Jones, J.R.

Abstract: Winter limnology has been receiving greater attention, and recent global studies report that under-ice chlorophyll *a* concentrations are half of those measured during the summer. From a year-round perspective, this significantly challenges the assumption of negligible algal growth during winter. Here, we explore winter phytoplankton peaks over a latitudinal gradient.

Name: **Jerry deNoyelles**

Time: 11:00-11:12AM

Institution: University of Kansas and Kansas Biological Survey

Presentation Title: Vertical distribution and migration by the alga *Cryptomonas*: recorded for 25 years in a 12 m deep Kansas reservoir

Author List: Jerry deNoyelles, Jude Kastens, LeeAnn Bennett, Sean Bergin, Val Smith, Bridget Chapin, Sharon Dewey, Chuck Knapp, John Lomas

Abstract: Distribution of motile *Cryptomonas* spp. was monitored for 25 years providing the most detailed record of diel migratory behavior for any planktonic alga reported for a single lake. Moving dense layers of *Cryptomonas* were tracked with an in situ fluorometer and behaviors were related to temperature, light and chemical conditions.

Name: **Eric Moody**

Time: 11:12-11:24AM

Institution: Iowa State University

Presentation Title: Eutrophication Elicits Evolution: Interpopulation Variation in *Daphnia* Growth Reaction Norms over a Phosphorus Gradient

Author List: Eric Moody, Tyler Butts, Rachel Fleck, Punidan Jeyasingh, and Grace Wilkinson

Abstract: Limnologists have traditionally assumed fixed trait values for the keystone grazer *Daphnia*. We demonstrate that both individual and population-scale reaction norms for *Daphnia* growth to dietary P vary depending on source lake trophic state. This suggests that evolutionary responses to eutrophication could explain why eutrophic lakes function in surprising ways.

Name: **Amy J Burgin**

Time: 11:24-11:36AM

Institution: University of Kansas and Kansas Biological Survey

Presentation Title: Are biogeochemical responses linked to the microbial composition of a defined nutrient and microbial input to a larger river?

Author List: Amy J. Burgin, Lydia Zeglin, Michelle C. Kelley, Cay Thompson, Janaye Hanschu

Abstract: We ask: Does nitrogen processing respond solely to changes in nitrogen substrate supply, or does changing the microbial community composition also affect ecosystem-scale biogeochemistry? We use a release of remarkably high-N water (from a decommissioned fertilizer plant) and its resident microbial enrichment culture into the Kansas River to address our question.

Name: **Lindsey A Bruckerhoff***

Time: 11:36-11:48AM

Institution: Kansas State University

Presentation Title: Assessing landscape sampling strategies to evaluate the influence of multiple stressors on stream fish communities.

Author List: Lindsey A Bruckerhoff, Keith B Gido

Abstract: We determined how the distribution of samples across landscape gradients affects the measured response of fish communities to these gradients. We used randomization tests to compare variability in responses of richness and composition to watershed area and cultivated lands when samples were distributed randomly, skewed, and uniformly across the gradients.

Name: **Patrick Lind***

Time: 11:48AM-12:00PM

Institution: Oklahoma State University

Presentation Title: Iron amendment impacts cyanobacterial abundance in Grand Lake, Oklahoma

Author List: Patrick Lind, Andrew Dzialowski, and Punidan Jeyasingh

Abstract: We tested the hypothesis that iron supply would have a significant effect on cyanobacterial growth, due to the iron intensive nature of nitrogen fixation. We performed this study in Grand Lake, Oklahoma through sediment core and water column analysis and by using P and Fe addition experiments.

Name: **Alba Argerich**

Time: 1:30-1:42PM

Institution: University of Missouri

Presentation Title: Benthic algal responses to forest harvest

Author List: A. Argerich, L. Ashkenas, S. Johnson

Abstract: Can we predict benthic algal responses in small streams when the riparian corridor and the vegetation cover of the whole catchment have been altered? Here we present results from a large experimental study of algae, nutrients, and shade within the food web context of the Trask River Watershed Study.

Name: **Bill Mausbach**

Time: 1:42-1:54PM

Institution: Oklahoma State University

Presentation Title: Habitat identity and spatial heterogeneity interact to drive biodiversity in experimental metacommunities

Author List: Mausbach, W.E. and A.R. Dzialowski

Abstract: We conducted a metacommunity mesocosm experiment to test how gradients in spatial heterogeneity of and environmental contrast between freshwater and saline habitat patches influence local and regional zooplankton biodiversity and composition. Local and regional biodiversity were influenced by spatial heterogeneity, whereas, community and metacommunity composition were structured by environmental contrasts.

Name: **Brian Mason***

Time: 1:54-2:06PM

Institution: University of Nebraska at Kearney

Presentation Title: A Comparison Between Different Cove types of the Harlan Reservoir

Author List: Brian Mason

Abstract: This presentation will compare differences in water quality and fish assemblage between coves that are permanently connected to, intermittently connected to, and permanently isolated from the main water-body of Harlan Reservoir in south central Nebraska.

Name: **Michelle Kelly***

Time: 2:06-2:18PM

Institution: University of Kansas

Presentation Title: Where does it all go? Understanding nitrogen cycling and metabolism in response to a sustained pulse event in the Kansas River

Author List: Michelle C. Kelly, Amy J. Burgin

Abstract: We treated a controlled nitrogenous waste release into the Kansas River as an ecosystem-scale nutrient addition experiment. Nitrate and dissolved oxygen sensors were deployed across 32 km of the river. Dissolved nitrate concentrations followed a diel cycle both pre and post-addition, suggesting that microbiota increased uptake in response to enrichment.

Name: **Garrett W Hopper***

Time: 2:18-2:30PM

Institution: Kansas State University

Presentation Title: Short term effects of intense drought on a local stream community

Author List: Garrett W. Hopper, Keith B. Gido, Bryan D. Frenette, Casey A. Pennock, Crosby K. Hedden

Abstract: Our objectives were to understand short term effects of an intense drought on a local aquatic community. We surveyed 12 isolated pools in an intermittent stream and quantified temporal changes in community composition and biomass. Communities became dominated by tolerant species and biomass decreased as abiotic conditions deteriorated.

Name: **Lydia Zeglin**

Time: 2:45-2:57PM

Institution: Kansas State University

Presentation Title: Linking the aquatic microbiome and water quality across the precipitation and land-use gradients of Kansas.

Author List: Lydia Zeglin, Amy Burgin, Janaye Hanschu, Yasawantha Hiripitiyage, Belinda Sturm, Pamela Sullivan, Samantha Thomas, Walter Dodds

Abstract: This new project will evaluate how stream flow and catchment land-use characteristics are related to stream water and sediment bacterial, archaeal and algal communities, and water chemistry. The work is a platform for further studies on microbial controls over nitrogen cycling and removal, and tracking possible microbial inocula of downstream blooms.

Name: **Jessica Corman**

Time: 2:57-3:09PM

Institution: University of Nebraska-Lincoln

Presentation Title: Nutrients in the Niobrara River

Author List: Jessica Corman

Abstract: The Niobrara River in northern Nebraska is one of the only “National Scenic Rivers” in the Great Plains. Following this designation in 1991, nutrient concentrations have decreased. However, tourist activity in the river may still be impacting nutrient cycling and presents a unique management challenge.

Name: **Erin Petty***

Time: 3:09-3:21PM

Institution: University of Missouri

Presentation Title: Feast or famine? Exploring light-nutrient co-deficiency of phytoplankton communities in Missouri reservoirs

Author List: Erin L. Petty, Daniel V. Obrecht, Rebecca L. North

Abstract: With eutrophication and algal blooms threatening global water quality, we explore the role of light and nutrients in controlling phytoplankton productivity across the trophic gradient exhibited by Missouri reservoirs. Preliminary results from nutrient addition experiments suggest co-deficiency between light and nutrients for most of the 27 sampled reservoirs.

Name: **Deb Finn**

Time: 3:21-3:33PM

Institution: Missouri State University

Presentation Title: Surface/subsurface connectivity likely bolsters high macroinvertebrate diversity in flashy Ozark streams

Author List: Nathan Dorff, Deb Finn

Abstract: Despite extremely flashy flow regimes, Ozark streams have diverse macroinvertebrate assemblages including insects with predictable, synchronous life histories. Based on a year of monitoring in Bull Creek (Missouri), we make a preliminary case that a majority of the benthos uses the hyporheic zone as a refugium during bed-moving floods.

Name: **Elizabeth Renner***

Time: 3:33-3:45PM

Institution: Kansas State University

Presentation Title: Analyzing the role of gizzard shad in Kansas small impoundment food webs

Author List: Elizabeth Renner, Keith Gido

Abstract: Gizzard shad are an important forage fish in Kansas small impoundments, but their effects on water quality and food webs are poorly understood. We are characterizing fish, macroinvertebrate, and plankton communities and collecting water quality data to analyze factors influencing gizzard shad abundances and nutrient dynamics in Kansas impoundments.

Name: **Anthony Thorpe**

Time: 4:00-4:12PM

Institution: University of Missouri

Presentation Title: Cylindrospermopsin in Missouri Reservoirs

Author List: Anthony Thorpe, Daniel Obrecht, Erin Petty, Alba Argerich, Rebecca North

Abstract: Missouri-wide monitoring of cylindrospermopsin began in 2017. We found cylindrospermopsin was broadly distributed across the state, occurring in 20% of reservoirs monitored in 2017. Cylindrospermopsin presence was more closely associated with low measures of turbidity than high (e.g. low chlorophyll, low inorganic particulates, high clarity).

Name: **Anne Schechner***

Time: 4:12-4:24PM

Institution: Kansas State University

Presentation Title: River Metabolism: Heterogeneity, Variation, and Implications for Methodology

Author List: Anne Schechner, Walter Dodds, Flavia Tromboni

Abstract: The contribution of heterogeneous features to whole river metabolism is not clear. We deployed probes to characterize variation on the transect, reach, and network scales, and to investigate how this variation biases metabolism estimation. We suggest metabolic heterogeneity provides additional understanding of fundamental ecosystem characteristics.

Poster Presentations

Name: **Tyler Butts***

Institution: Iowa State University

Presentation Title: Changes in zooplankton communities following fishery renovations

Author List: Tyler J. Butts, Grace M. Wilkinson

Abstract: Several Iowa lakes are currently undergoing fishery renovation via removal of fish, or only rough fishes, and subsequent restocking. We investigated the response of the zooplankton community to these fishery renovations in five Iowa lakes. We observed statistically significant differences in zooplankton biomass after fishery renovation in our study lakes.

Name: **Jessica Wilson***

Institution: University of Missouri

Presentation Title: Influence of the riparian zone to stream function

Author List: Jessica Wilson, Alba Argerich, Sherri Johnson, Linda Ashkenas

Abstract: Riparian zones influence stream structure and ecological function by modulating water temperature and stream nutrient concentrations. This study aims to determine the influence of riparian vegetation on stream functional processes by analyzing water residence times, in-stream nutrient uptake and metabolism across headwater streams with different levels of riparian vegetation alteration.

Name: **Kui Hu***

Institution: North Dakota State University

Presentation Title: Evaluating past climate change effects on prairie pothole wetland ecosystems using paleolimnological methods

Author List: Kui Hu, Jon N. Sweetman, Kyle I. Mclean, David M. Mushet

Abstract: We investigated the effects of past climate variability (wet/dry periods) on diatom communities in a prairie wetland in the central Great Plains. Based on sediment core records, the diatom community shifted from primarily benthic taxa to planktonic species in recent decades, which correspond with an ecohydrological shift to wetter conditions.

Name: **Brittany Kirsch***

Institution: University of Nebraska Lincoln

Presentation Title: Performance of Nitrate-N Removal in a Small, Field-Scale Wetland

Author List: Brittany Kirsch

Abstract: This study was conducted to determine the effect of a wetland on removing nitrate-N from water received from a small agricultural field. The effects of seasonal variations in temperature, and precipitation amounts and duration on nitrate-N removal of the wetland were analyzed using data from a small wetland in Lousia County, Iowa.

Name: **William Mabee**

Institution: Missouri Department of Conservation

Presentation Title: Distribution records and habitat characteristics associated with occurrence of horsehair worms (Nematomorpha: Gordiida) from wadeable streams in Missouri

Author List: Matthew D. Combes, William R. Mabee, and Ben Hanelt

Abstract: We present Missouri distribution records for four species of Nematomorpha (horsehair worms) based on records from the literature and our locality records for reference specimens identified from macroinvertebrate community samples collected from reaches of wadeable streams sampled and surveyed throughout the state since the year 2000. The species found to occur in Missouri are: *Gordionus violaceus*, *Gordius robustus*, *Chordodes morgani*, and *Paragordius varius*. Select habitat characteristics and environmental parameters we found associated with occurrence of *G. robustus*, *C. morgani*, and *P. varius* at sites where reference specimens of these species were collected are also provided.

Name: **David Ortiz***

Institution: Iowa State University

Presentation Title: Detecting early warnings of harmful algal blooms in shallow lakes

Author List: David Ortiz, Grace Wilkinson

Abstract: Regime shifts, such as dominance of algae in lakes, exhibit statistical early warning indicators (EWIs), but this predictive method has only been evaluated in experimental lakes. Using high frequency data, we have demonstrated that temporal EWIs can be detected in non-experimental lakes prior to an oncoming bloom.

Name: **Trang Tran***

Institution: Missouri State University

Presentation Title: Toxic effects of silver nanoparticles on small floating aquatic plants

Author List: Trang Tran, Jordan Heiman, La Toya Kissoon-Charles

Abstract: Use of silver nanoparticles (AgNPs) has increased in consumer products because of their antimicrobial properties. AgNPs can enter aquatic ecosystems where they pose a threat to organisms due to lack of removal processes in wastewater treatment. We exposed *Lemna minor* to AgNPs to determine effects on surface area and biomass.

Name: **Jordan Heiman***

Institution: Missouri State University

Presentation Title: Chemical Fingerprinting of Trees in a Mining Contaminated River

Author List: Jordan Heiman, Trang Tran, La Toya Kissoon-Charles

Abstract: The Big River contains lead contaminated sediments which are often vegetated. We measured metal concentrations in gravel bar trees to determine potential bioavailable concentrations. Trees on contaminated gravel bars tended to have higher metal concentrations than trees on non-contaminated gravel bars.

Name: **Abagael Pruitt***

Institution: University of Kansas

Presentation Title: Spatial Variation of Organic P Degrading Extracellular Enzymes in Milford Lake

Author List: Abagael Pruitt, Kynser Wahwahsuck, Emma Overstreet, Amy J. Burgin

Abstract: To understand how P inputs in Milford Lake are affecting extracellular enzymes in the sediment, we collected six 5cm-deep cores from 24 sites around the lake. We analyzed sediments for acid phosphatase enzyme activity to determine which areas in the lake had the most P-releasing enzyme activity.

Name: Kyra Florea*

Institution: University of Missouri

Presentation Title: Dissolved Organic Matter in Missouri Reservoirs: Implications for Cyanobacteria Harmful Algal Blooms

Author List: Kyra Florea, Ruchi Bhattacharya, Rebecca L. North

Abstract: Our objectives are to determine if reservoir dissolved organic matter (DOM) quality and quantity vary across land use and if it is correlated with cyanotoxin production. Agricultural watersheds are a source of reactive, high molecular weight DOM and contain reservoirs with higher levels of microcystin.

Name: James Guinnip*

Institution: Kansas State University

Presentation Title: Exploring causes of an extraordinary shift in water chemistry in a pristine grassland stream network

Author List: James P. Guinnip and Walter K. Dodds

Abstract: The Kings Creek stream network on Konza Prairie Biological Station has been an important benchmark for conservation of grassland streams, however an analysis of long-term water chemistry data from Kings Creek has revealed an extraordinary increase in the availability of reduced N (as NH_4^+) on a decadal scale. We hypothesize: 1) atmospheric pollution is increasing the deposition of reduced N, which enters streams. 2) woody expansion in grasslands stores N and alters N cycling to increase reduced N in streams.

Name: Cacey Wilken*

Institution: University of Nebraska-Lincoln

Presentation Title: Factors promoting carbon and nitrogen cycling in Nebraska streams

Author List: Cacey Wilken, Jessica Corman, Mirae Guenther

Abstract: Nutrient removal from streams can aid in improving water quality, particularly in agricultural areas. We tested potential nutrient removal rates in Nebraska streams by incubating stream water with treatments of added phosphorus and two organic carbon sources. We use shifts in nitrate concentrations and water color to compare treatment effects.

Name: Janaye Hanschu

Institution: Kansas State University

Presentation Title: Do novel inputs to the Kansas River affect the water or sediment microbiome and water chemistry?

Author List: Janaye Hanschu, Lydia Zeglin, Amy Burgin, Michelle Kelly, Emma Overstreet, Cay Thompson

Abstract: We collected grab samples of Kansas River water and sediment above and below a novel point input carrying unique microorganisms and high nitrogen concentrations. River water showed a signal of these microbes that attenuated downstream. Water chemistry was also variable, and we will learn whether microbiome and chemistry are correlated.

Name: Kynser Wahwahsuck*

Institution: The University of Kansas

Presentation Title: Spatial variation of dissolved phosphorous in surface and bottom waters of Milford Lake

Author List: Kynser Wahwahsuck, Abagael Pruitt, Emma Overstreet, and Amy J. Burgin

Abstract: Phosphorous can be found in different forms in lakes and is a key nutrient that can encourage cyanobacteria growth. We measured soluble reactive phosphorus (SRP) in surface and bottom waters at 24 locations across Milford Reservoir. We found a 2-fold change across the lake, with the highest concentrations in Zone C.

Name: Phillip Klenke*

Institution: University of Missouri

Presentation Title: Longitudinal variability in streamwater chemistry in an urban stream network

Author List: Phillip Klenke, Alba Argerich, MU Limnology

Abstract: The MU Limnology lab led a synoptic sampling effort along the Hinkson Creek in Columbia, MO to better understand why this stream is on the MDNR impaired-water list. Samples were collected at intervals across the entire 32 mile stream to analyze the biotic and abiotic factors that make up the Hinkson's water quality.

Name: Jaylen Bragg*

Institution: University of Missouri

Presentation Title: Quantifying greenhouse gas flux across varying sediment types and water temperatures in wetland ecosystems

Author List: Jaylen Bragg, Jannice Newson, Hamza Amjad, Lauren Dyck, Selena Komarevich, Colin Whitfield, Helen Baulch, Jason Venkiteswaran

Abstract: Greenhouse gases (GHG) can be released through the process of ebullition—or bubbles being released from the aquatic sediments. This study aims to quantify the flux of GHGs that are released from wetland ecosystems representing varying sediment types and water temperatures. Understanding ebullition rates will give us a better understanding of its contribution to the global GHG budget.

Name: Emma Overstreet

Institution: Kansas Biological Survey

Presentation Title: How do nitrogen form and ratio affect nitrogen fixation rates in experimental mesocosms?

Author List: Emma V. Overstreet, Ted D. Harris, Michelle C. Kelly, Jerry deNoyelles, Amy J. Burgin

Abstract: To better understand the role of nutrient form and ratios in establishing harmful algal blooms (HABs), we measured rates of nitrogen fixation in a large-scale mesocosm experiment consisting of tanks inoculated with water from a bloom-producing reservoir and treated with varying levels and forms of nitrogen and phosphorous.

Name: Cameron Cheri*

Institution: Missouri State University

Presentation Title: An Odonata Survey of Buffalo National River Watershed

Author List: Cameron Cheri

Abstract: I surveyed odonates across the Buffalo National River watershed to determine species presence in lotic and lentic habitats throughout the park. I will discuss diversity patterns revealed from a full year of sampling and describe a Bio-Blitz event to investigate odonate diversity in a unique spring-fed pond habitat.

Name: Alexa Davis*

Institution: University of Nebraska- Lincoln

Presentation Title: Analyzing surface trends of nutrients with geospatial technology

Author List: Alexa Davis

Abstract: Nebraska has more miles of streams and rivers compared to any other state in the continental United States. Water quality is affected when excess nutrients enter waterways; being an agriculture and livestock producer, Nebraska is at risk. Using data collected by the state and federal agencies, I analyzed trends in surface water nutrients across the state and compared them with land usage and watershed area.

Name: Jacob Gaskill*

Institution: University of Missouri

Presentation Title: Can Glacial Rock Flour be used to Reduce Algal Biomass in Large-Scale Mesocosm Tanks?

Author List: J. Gaskill, T. Harris, J. deNoyelles, A. Burgin, A. Shields, S. Baker, L. Webb, R. Klepikow, H. Mash, R. North

Abstract: Glacial rock flour (GRF) is a fine particulate that floats on the water's surface and remains suspended in the water column. We applied GRF to mesocosm tanks with large cyanobacterial blooms to see if a reduction in light availability would result in a decline in chlorophyll-a concentrations, microcystin concentrations, and particulate organic carbon concentrations. This might indicate that cyanobacteria, which can produce harmful toxins and unsightly surface scums, can be controlled by inducing light limitation.