

MUDDY WATERS

News from the Missouri Cooperative Fish and Wildlife Research Unit

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Missouri Cooperative Fish and Wildlife Research Unit

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COOPERATORS



THE SEQUESTER

The tight budget times and frustrating political climate have finally hit the Coop Units. After months of speculation, rumors, and all sort of other things, we have gotten a little more guidance on the federal budget cuts and what is means for the Missouri Unit. About a month age we were told we would be furloughed in an effort to save funds caused by the budget cuts known as the sequester. However, after tightening the belts within USGS, we found out in early June that we will not be furloughed. This was a bit of good news in a time where bad news seems to be the norm.

However, the sequester has already affected what we do. There has been increased scrutiny of travel and thus Lisa, Amanda and myself all had to cancel travel to conferences, meetings, and presentations. The tight travel restrictions means you may not see us at conferences and meetings. However, we are making every effort to keep the Missouri Unit involved. Even if we cannot attend a meeting, we are sending our students to give presentations and for professional development. These are tough times, with decisions being made from top levels of government. Our supervisors in Reston, Virginia are trying their best to make this as painless as possible for us, but many issues are beyond their control. We have emphasized strongly that, although the sequester may hit us, we want to make sure the students are still provided every opportunity for presentations, field work, professional development, and mentoring.

These budget and political issues are beyond our control but we will survive. I hope the sequester hasn't affected the students (other than



Sometimes we have to help the young ones start off in the right direction. See page 5 for the many outreach events we have done recently.

learning what a furlough is), and we are hopeful these current (and likely future) tight times will have limited effect on our primary mission of working with the cooperators and training students.

Craig Paukert, Unit Leader

A NEW FORMAT

This issue marks a new format for Muddy Waters where we will only highlight new projects and students since the last newsletter. We have gotten too big to highlight every project and student. The Unit has been fully staffed for a year and we now have no less than 16 research projects, 15 students, post docs, or full time staff. In an effort to keep the newsletter relatively short we will focus on recent and finishing students and projects. For more information about ongoing projects please see past issues of Muddy Waters:

<http://web.missouri.edu/~paukerc/newsletter.html#>

STUDENTS AND STAFF WIN AWARDS

Amanda Rosenberger was presented the Distinguished Recent Alumna award from Virginia Tech on April 9, 2013. While in Blacksburg, she participated in two classes, giving talks on applying to graduate school and drawing fish and gave a Departmental seminar on her work from the University of Alaska.

Undergraduate student and technician **Jackman Eschenoeder** received the Conservation Federation of Missouri Stegner Scholarship.

Undergraduate student and technician **Michael Moore** received the Missouri AFS Student Achievement Award.

Post doctoral researcher **Jacob Westhoff** received his Associate Fisheries Professional certification from AFS.

Emily Tracy-Smith received the Staff Development Award, which will fund attendance at the 2013 AFS conference. The program is intended to assist in professional and personal development through funding for conferences, workshops, short courses, or other appropriate short-term experiences.



Emily Pherigo at the 'Day on the River' Outreach event. See page 5 for more outreach

NEW STUDENTS AND STAFF

Leslie Crawford is a new graduate research assistant working on her master's degree with **Dr. Amanda Rosenberger**. She graduated with a B.S. in Fisheries and Wildlife Sciences from Mizzou in May 2012, and worked with the



Missouri Department of Conservation and the Columbia Environmental Research Center before beginning graduate school. Leslie's project will focus on developing standardized protocols for assessing freshwater mussel community metrics in the state of Missouri and will be conducted on the Meramec River. She plans to begin her field season this summer with the help of her field technician Brad Ebinger, who graduated with his B.S. in fisheries and wildlife sciences this May.

Sean O'Daniels is a new MS student starting in fall 2013 working with co-advisors **Lisa Webb** and Dylan Kesler. Sean is a native of Nebraska and spent part of his childhood in Iowa, earning a BS in Biology from Graceland University. He has worked as a private sector nuisance wildlife specialist for the last 10 years in metropolitan Kansas City, where he developed his interest in woodpecker biology. Sean currently lives in Independence, MO, with his wife and daughter. He is a member of the Osage Trails Chapter of Missouri Master Naturalists and enjoys volunteering with this group and with the Missouri River Bird Observatory when time permits.

Sammy See finished her junior year at Rock Bridge High School and has been a part of the Center for Gifted Education in Columbia Public Schools. Sammy has been working with **Craig Paukert** and **Emily Pherigo** and learned how to sample river fishes and age spotted bass. Sammy has been recently toured the University of Florida, Florida State, and Louisiana State University. However, she is not opposed to staying at Mizzou. Sammy was recently awarded a Hutton Junior Scholar (see page 8). She will be working with **Jodi Whittier** to develop stream temperature models for Missouri.



Sammy See and Jackman Eschenoeder

MOVING ON...

Andy Dinges completed his MS in May 2013 evaluating the effects of the Light Goose Conservation Order on behavior and distribution of waterfowl in the Rainwater Basin of Nebraska. Andy is currently working on submitting manuscripts based on this thesis research and applying for waterfowl jobs with various conservation agencies.

Jason Harris finished his MS in May determining habitat selection of largemouth bass in

Table Rock Lake. Jason, a South Dakota native, just accepted a position with



the Minnesota Department of Natural Resources and will begin in mid summer. In the meantime, he is helping MDC write up manuscripts and analyze additional data related to habitat improvements at Table Rock Lake.

Michael Moore was an undergrad at Mizzou and has worked in fisheries in the Coop Unit and with MDC for a couple years including undergrad research projects on the effects of non-native fishes in native fishes. Michael is leaving us this summer to start his MS at Virginia Tech with Don Orth. We wish Mike well and surely will see him at AFS meetings in the future.



Dan Whiting, who has been a research associate with the Coop Unit for two years, is leaving in June to start his MS in science education. Dan has primarily

been working on translocation of humpback chub in Grand Canyon, and the role of tributaries for river conservation and management. Dan has been a great asset to our program and we wish him well in his new career.

NEW RESEARCH PROJECTS

Developing Measures of Vulnerability to Climate Change and Disturbance of Aquatic Communities in Heartland Network National Parks.

PI: C. Paukert

Funding: US Geological Survey and National Park Service

The NPS Inventory & Monitoring Program is designed (in part) to elucidate the current variability in biotic metrics typically encountered within parks. These results can be used with climate and land use scenarios to determine the vulnerability of aquatic biota to these changes. We will leverage efforts by the NPS, USGS, and universities to identify 1) areas with stable aquatic communities, 2) aquatic communities vulnerable to climate and land use change, and 3) whether vulnerability to climate and land use change differs by stream size or geographic region and how vulnerability may be affected by landscape-level factors. This study will provide park managers with tools to identify rivers sensitive to climate and land use change and of those which ones will most likely experience changes in climate and landcover.



Development of Reference Reaches for Missouri Streams.

PIs: C. Paukert, J. Whittier, and A. Rosenberger

Funding: Missouri Department of Natural Resources and Missouri Department of Conservation

Local and instream habitat is a key indicator of aquatic system health. Increases in agricultural and urban land use have been linked to declines in water and habitat quality, stream warming, altered stream flow, increased pollution, and fewer sensitive fish taxa. Because of these alterations, physical habitat assessment in streams can be used to define designated uses for these waters. The Missouri Department of Conservation's Missouri Resource Assessment and Monitoring Program collect dozens of metrics across 11 transects at each site related to instream and riparian habitat that can result in over 400 measured or calculated metrics per site. Efforts often attempt to develop a hybrid approach that combines multiple habitat metrics into one index score. There is a need to identify candidate reference reaches that can be used as a benchmark of high quality stream habitat in Missouri. A critical first step in evaluating a habitat index is to determine the range of habitat conditions in Missouri to fully evaluate which habitat metrics are associated with highly degraded versus highly pristine sites. The overall goal of this study is to develop scientifically-defensible criteria for identifying candidate reference reaches using physical habitat metrics for all stream sizes classes that will be used in the next phase of this project to develop a physical habitat index for Missouri wadeable streams. Specific objectives include 1) Identify candidate reference stream reaches of wadeable streams in Missouri using existing landscape-level data, 2) develop a quantitative, scientifically-defensible method to determine candidate reference site conditions in Missouri wadeable streams for each MORAP stream size classification, and 3) validate reference site methodology and selection using on-site physical habitat and biological sampling.

A Decision Support Mapper for Conserving Stream Fish Habitats of the Northeast Climate Science Center Region.

PIs: C. Paukert and J. Whittier (MU), D. Infante (Michigan St.), Jana Stewart (USGS, Madison, WI), and T. Wagner (USGS-Pennsylvania Coop Unit)

Funding: US Geological Survey, Northeast Climate and Wildlife Science Center

Human impacts occurring throughout the NE CSC, including urbanization, agriculture, and dams, have multiple effects on the region's streams which support economically valuable stream fishes. Changes in climate are expected to lead to additional changes in stream habitats and fish assemblages in multiple ways, including changing stream water temperatures. To manage streams for current impacts and future changes, managers need region-wide information for decision-making and developing proactive management strategies. Our project meets that need by integrating results of a current condition assessment of stream habitats based on fish response to human land use, water quality impairment, and fragmentation by dams with estimates of which stream habitats may change in the future. Results will be available for all streams in the NE CSC region through a spatially-explicit, web-based viewer, the Climate Change Visualization and Integration of Ecological and Watershed Resources (CCVIEWer). With this tool, managers can evaluate how streams of interest are currently impacted by land uses and assess if those habitats may change with climate. These results, available in a comparable way throughout the NE CSC, provide natural resource managers, decision-makers, and the public a wealth of information to better protect and conserve stream fishes and their habitats.

Development of Standardized Protocols for Mussel Community Metrics:

PI: A. Rosenberger

Funding: Missouri Department of Conservation and Missouri Cooperative Fish and Wildlife Research Unit

This project will develop standardized methods for assessing unionoid mussel community metrics, including species richness, diversity, and community composition. Our work will concentrate on areas of high diversity in the Meramec River drainage in Missouri. Typically, low-cost approaches are visual, while baseline estimates of mussel composition can be obtained via high-effort methods, including collection of bulk sediment with a grab (allowing complete census of the entire mussel community) or visual assessment an area where mussels have been collected, marked, and released. Although our focus is on the Meramec drainage, development of standardized methods with known ability to assess community composition and species metrics will have a broad impact on statewide mussel surveys.

Ecological Relationships between Ultraviolet Light Patterns in Fungi and Woodpecker Excavation Sites.

PIs: L. Webb and D. Kesler

Funding: Avian Power Line Interaction Committee, USDA National Wildlife Research Center, Arkion Life Sciences, and Critter Control
Woodpeckers are keystone species in many woodland and forest environments, and there is a gap in the scientific literature regarding woodpecker vision. This project will evaluate ultraviolet vision in two

(Continued on page 4)

RESEARCH PROJECTS CONTINUED

(Continued from page 3)

woodpecker species and how the trait might be important to woodpeckers' behaviors and ecology. **Sean O'Daniels**, the MS student leading the project, in conjunction with Scott Werner at the National Wildlife Research Center (USDA/APHIS, Ft. Collins, CO), worked to create this unique public/private research opportunity garnering support from multiple private sector industries in addition to the USDA, USGS, and MU. Sean is hopeful that results from this research will create opportunities to increase non-lethal control measures of woodpeckers in nuisance situations and limit woodpecker damage to man-made structures.



Using agent-based waterfowl movement models to identify conservation solutions to large scale environmental variation and land use change.

PIs: L. Webb, D. Kesler and B. Beatty

Funding: Upper Mississippi River and Great Lakes Region Joint Venture; Missouri Cooperative Fish and Wildlife Research Unit

This project will use **Bill Beatty's** previous post-doctoral research evaluating mallard habitat selection and movements at multiple spatial scales to develop and parameterize spatially explicit agent-based models of movement and habitat selection during the non-breeding period. The accumulated effects of habitat selection and movement decisions made by individual birds ultimately determine waterfowl population dynamics and distributions. This project will combine quantitative movement metrics derived from data collected with GPS satellite telemetry units attached to 40 mallards and 68 American black ducks with existing information about habitats, landscapes, energetics, weather and demography in migratory waterfowl populations. We will then use these models to evaluate alternative approaches to managing migratory waterfowl and their habitats under a range of potential future land-use scenarios that incorporate large-scale environmental variation.

Ongoing projects (see past newsletters for details)

Managing the nation's fish habitat at multiple spatial scales (PIs C. Paukert and J. Whittier)

Habitat selection of largemouth bass in Table Rock Lake (PI C. Paukert)

Helping refine ecological flow research in Missouri (PI C. Paukert)

Climate change effects of biodiversity (PI C. Paukert)

The role of tributaries on Missouri River recovery. (PI C. Paukert)

Smallmouth bass movement and habitat use related to thermal regimes (PIs C. Paukert and J. Westhoff)

Evaluation of translocation humpback chub in Grand Canyon (PIs C. Paukert and J. Whittier)

Conservation planning for fishes in the Upper Colorado River Basin (PIs J. Whittier and C. Paukert)

Evaluation of environmental DNA as a tool for Asian Carp detection (PI C. Paukert)

Development of stream temperature models for selected Missouri streams (PIs J. Whittier and C. Paukert)

Identification of gaps in the distribution and availability of stream temperature and flow data (PI J. Whittier and C. Paukert)

Effects of the light goose conservation order on behavior of waterfowl and hunting participants in the Rainwater Basin, Nebraska (PI L. Webb)

Waterbird use and food availability at migratory bird habitat initiative wetlands (PI L. Webb)

Assessing validity and precision of moist-soil seed estimation techniques (PI L. Webb)

Effects of wetland management on secretive marshbirds (PI L. Webb)

Resource selection of mallards (PIs L. Webb and D. Kesler)



Evan Hill spreading his wings

OUTREACH, OUTREACH, AND MORE OUTRACH

Missouri Unit students and staff partnered with the University of Missouri Extension, Missouri River Relief, and other partners to help inform the public and kids about fish and wildlife conservation and management. This is a great way to introduce others to what we do, and the importance of conservation.

On April 16, 2013 **Emily Pherigo**, **Mike Moore**, and **Dan Whiting** participated in the Washington, MO "Day on the River" education event sponsored by Missouri River Relief. They collected fish and aquatic invertebrates to show and teach local elementary school students about some of the fauna found in Missouri's streams and rivers. Even though it was cold and rainy day, the enthusiasm brought by the students made the event very fun and exciting.

On May 4, 2013 **Emily Pherigo**, **Travis Schepker**, **Michael Moore**, and members of the Fisheries and Aquatic Sciences Society volunteered with students from the Agriculture Education Department to assist Boy Scouts seeking their fish and wildlife merit badge. The scouts listened to a presentation on freshwater habitats and then got to apply what they learned through setting up their own native fish tanks.



Amanda Rosenberger and Leslie Crawford teaching fish anatomy



Lisa Webb teaching wetland ecology at the 4-H River Academy

On May 29, 2013, **Amanda Rosenberger** and **Leslie Crawford**, completed a fish dissection demonstration for the 4th grade students at Paxton Keeley Elementary to close out the Spring semester! Through the 'eeeeewwws,' and 'aaaahhhs,' Amanda was able to hear 'I want to be a fish biologist!!' from one of the kids. Job done.

On May 30th, **Amanda Rosenberger**, **Lisa Webb**, and **Leslie Crawford** also participated in the first annual 4-H "River Academy" on the Missouri River! The goals of the program were to develop and conduct a series of learning experiences that focus on the Missouri River ecosystem for youth audiences and that result in increased awareness and being involved in opportunities for

Dear Dan,

Thank you for helping us learn more about our river animals. I got smacked by the shovelnose sturgeon there as well. All of the fish were awesome but my favorite fish was the gar. Thank you again even though we had to leave early.

Sincerely,

Johnny Webb

4th grade, Washington West

Excerpt by a letter to Dan Whiting by a student at the Day on the River in Washington, Missouri

River Conservation Programs within their respective communities. Amanda and Leslie did a demonstration of fish anatomy and fish diversity, while Lisa did a presentation on floodplain and wetland birds that depend on the river to complete their life histories. This event was organized in partnership Missouri River Relief, and at University Extension as we work to develop a proper "Missouri River Academy" in the future. Thanks to Bob Pierce and Amanda Rosenberger for all their help in planning the event!

BIOLOGIST FOR A DAY TO HELP MISSOURI RIVER RELIEF

On May 16, 2013 a volunteer joined **Emily Pherigo's** crew to experience electroshocking on the Osage River. Enjoying the outdoors and handling fish was nothing new to **Gunilla Murphy** who is the wife of **Dave Murphy**, the Executive Director of the Conservation Federation of Missouri. She deftly netted all sorts of native Missouri fish including skipjack herring and paddlefish. Gunilla was the highest bidder at a silent auction at the Wild and Scenic Film Festival that is part of a fundraiser to help Missouri River Relief, a grassroots, volunteer and equipment-based not-for-profit organization dedicated to connecting people to the Missouri River through hands-on river clean-ups, education events and stewardship activities. The Missouri Unit is honored to help out a great organization that aligns well with the emphasis conserving and protecting natural resources.



Gunilla Murphy, Biologist for a Day, with a paddlefish from the Osage River

UNIT PUBLICATIONS IN 2013

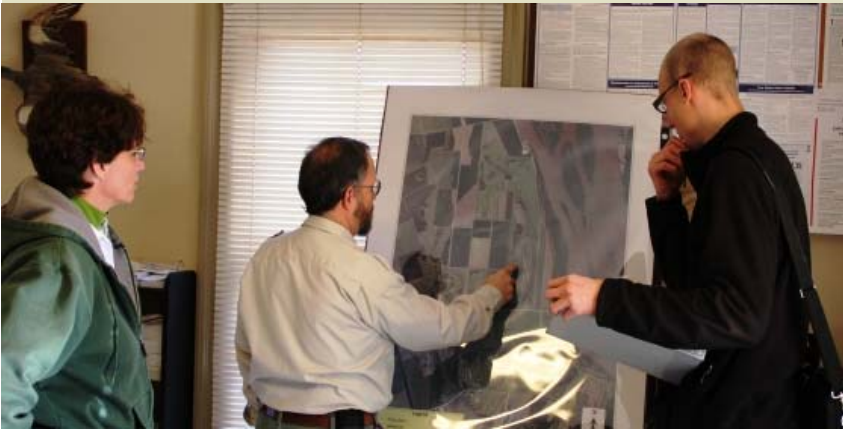
Gerken, J., and C. Paukert. In press. Fish community and habitat factors associated with the distribution of Topeka shiner (*Notropis topeka*) in Kansas streams. *Journal of Freshwater Ecology*.

Haynes, T.B., A.E. Rosenberger, M. Lindberg, M. Whitman, and J. Schmutz. In Press. Method- and species-specific detection probabilities of fish occupancy in Arctic Lakes: Implications for design and management. *Canadian Journal of Fisheries and Aquatic Sciences*.

Haynes, T.B., J.A. Schmutz, M.S. Lindberg, and A.E. Rosenberger. Accepted. Risk of predation and weather events affect nest site selection by sympatric yellow-billed and Pacific loons in Arctic habitats. *Waterbirds*.

Hoem Neher, T.D., A. Rosenberger, C. Zimmerman, C.M. Walker, and S.J. Baird. In Press. Estuarine environments as rearing habitats for juvenile coho salmon in contrasting south-central Alaska watersheds. *Transactions of the American Fisheries Society*.

Olmstead, V.G., E.B. Webb, and R.W. Johnson. 2013. Moist-soil seed biomass and species richness on Wetland Reserve Program easements in the Mississippi Alluvial Valley. *Wetlands* 33:1-10.



Gary Calvert, MDC wildlife biologist and Doreen Mengel, MDC waterbird ecologist, discussing wetland management with Evan Hill

Pease, A.A., and C. P. Paukert. Accepted. Potential impacts of climate change on growth and prey consumption of stream-dwelling smallmouth bass in the central United States. *Ecology of Freshwater Fish*.

Tidwell, P.R., E.B. Webb, M.P. Vrtiska, and A.A. Bishop. In press. Diet and food selection of female mallards and blue-winged teal during spring migration. *Journal of Fish and Wildlife Management*

Westhoff, J.T., A.V. Watts, and H.T. Mattinly. 2013. Efficacy of artificial refuge to enhance survival of young Barrens topminnows exposed to western mosquitofish. *Aquatic Conservation: Marine and Freshwater Ecosystems* 23:65-76.

MISSOURI UNIT HELPS ORGANIZE AND SPONSOR DUCK SYMPOSIUM

The 6th North American Duck Symposium and Ecology and Management of North American Waterfowl Conference was held in Memphis, Tennessee January 27-31. Over 450 scientists and students attended the meeting, which is only held every three years and included 220 invited and contributed talks and 85 posters. The Missouri Coop Unit was well represented at the Symposium, with **Bill Beatty**, **Andy Dinges**, **Jessi Tapp**, and **Lisa Webb** presenting a combined total of 10 research presentations and posters. **Lisa Webb** also served on the Scientific Program Committee, co-chaired the poster session committee, and (along with Josh Stafford, SD Coop Unit) provided closing thoughts and comments during a synthesis session on the topic *What is the Future of Waterfowl Ecology?* In addition, the MO Coop Unit co-sponsored refreshments for a poster session on the topic *Estimating Habitat Carrying Capacity for Waterfowl*.

UNDERGRADUATE RECEIVES McNAIR SCHOLARSHIP

Josie Ridgeway, an undergraduate at MU that has been working with graduate student **Emily Pherigo**, received a McNair Scholarship at MU. The MU McNair Scholars Program provides enriching experiences that prepare eligible students for doctoral study. Josie will work with **Craig Paukert** and **Emily Pherigo** on a research project related to larval fish diversity in Missouri River tributaries.

PRESENTATIONS BY STUDENTS AND STAFF IN 2013

North American Duck Symposium, Memphis, TN

Beatty, B., E. Webb, D. Kesler, D. Humburg, L. Naylor, A. Raedeke, and S. Schaeffer. 2013. Mid-continent Mallard Habitat Use and Selection of Wetland Reserve Program Easements During Migration and Winter.

Dinges, A. E.B. Webb, and M.P. Vrtiska. 2013. Hunting Disturbance and its Effects on Dabbling Ducks During the Light Goose Conservation Order in the Rainwater Basin of Nebraska.

Dinges, A. E.B. Webb, and M.P. Vrtiska. 2013. Migratory Bird Hunter Opinions on Future Control Options for Light Goose Populations.

Gray, M.J, H.M. Hagy, and E.B. Webb. 2013. Obtaining Reliable Estimates of Food Availability in Moist-soil Wetlands for Dabbling Ducks.

Mengel, D., F. Nelson, A. Raedeke, and E. Webb. 2013. First Steps in Wetland Management ARM: Developing a Decision-Support Tool.

Tapp, J. L. and E.B. Webb. 2013. Dynamics of Waterfowl Food Availability at Wetland Reserve Program Sites in Arkansas and Missouri.

Tapp, J. L. and E.B. Webb. 2013. Waterfowl and Shorebird Use of Wetland Reserve Program Sites in Arkansas and Missouri.

Tidwell, P.R., E.B. Webb, M. Vrtiska, and A. Bishop. 2013. Diet and Food Selection of Female Mallards and Blue-winged Teal During Spring Migration. .

Tidwell, P.R., E.B. Webb, M. Vrtiska, and A. Bishop. 2013. Effects of Wetland Density on Lipid and Triglyceride Levels in Spring Migrating Mallards and Blue-winged Teal.

Missouri Natural Resources Conference, Osage Beach, MO.

Dolan, M., E. Pherigo, and C. Paukert. 2013. Age and growth of spotted bass in the Osage and Gasconade rivers. Poster

Harris, J., C. Paukert, S. Bush, M. Allen, and M. Siepker. 2013. Using largemouth bass to evaluate a large reservoir habitat project. Invited

Pherigo, E., and C. Paukert. 2013. Fish community of the Osage and Gasconade rivers.

Sievert, N., and C. Paukert. 2013. Assessing the vulnerability and distribution of Missouri's stream fish species.

Tracy-Smith, E., C. Paukert, D. Lobb, and P. Blanchard. 2013. A review of fish responses to stream flow metrics.

Westhoff, J., and C. Paukert. 2013 Thermal and physical habitat characteristics of the Ozark National Scenic Riverways.

Other Seminars and Conferences

Klymus, K., D. Chapman, C. Richter, and C. Paukert. 2013. DNA shedding rates of Asian carps, for use in understanding field collections of eDNA. International Conference on Aquatic Invasive Species, Niagara Falls, Ontario.

Paukert, C., M. Dornecker, J. Faulkner, J. Harris, M. Moore, E. Pherigo, L. Pierce, N. Sievert, J. Spurgeon, and M. Staudinger. 2013. How are state freshwater fisheries agencies adapting to climate change? National Adaptation Forum, Denver, CO. Invited.

Pherigo, E. and C. Paukert. 2013. The effects of river regulation and a low-head dam on the fish communities in two Missouri River tributaries. MO River Natural Resources Conference, Jefferson City, MO.

Rosenberger, A. E., T. Hoem-Neher, M. Gutsch, L. Wirth, T. Haynes, S. Laske, K. Foely, C. Zimmerman, A. Prakash, and J. Margraf. 2013. Landscape Ecology of Fishes in Alaska. Invited Departmental Seminar, Virginia Polytechnic Institute and State University, Blacksburg, VA.

Spurgeon, J. and C. Paukert. 2013. Conservation of freshwater fishes through translocation: a case study involving an endangered large-river cyprinid. Annual meeting of the Nebraska Chapter of the American Fisheries Society. Gretna, NE.

Westhoff, J. T. and C. P. Paukert. 2013. Movement of riverine smallmouth bass in a thermally heterogeneous system. Annual Meeting of the Southern Division of the American Fisheries Society, Nashville, TN.



CURRENT STAFF, STUDENTS, AND AFFILIATES CONTACT INFORMATION



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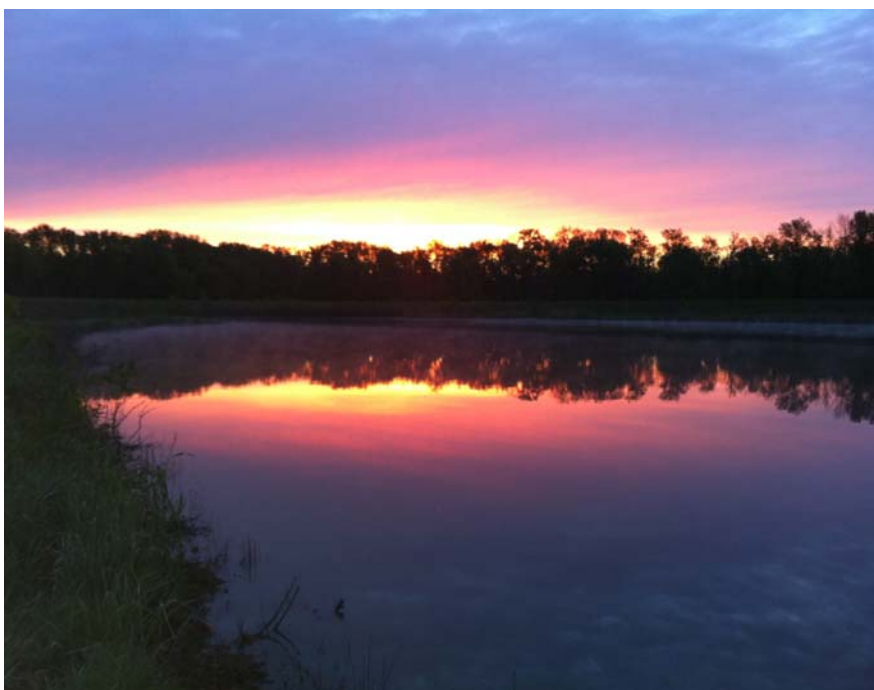
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HIGH SCHOOL STUDENT RECEIVES PRESTIGIOUS AWARD

Samantha (Sammy) See has been chosen as one of only 25 students nationwide to participate in the 2013 Hutton Junior Fisheries Biology Program, an innovative education program sponsored by the American Fisheries Society. Sammy is a student at Rock Bridge High School and has an interest in fisheries, oceanography, and water quality. The goal of the Hutton Program is to stimulate interest in careers in fisheries among groups underrepresented in the fisheries professions, including minorities and women. Sammy will be awarded \$3,000 for the program and work with **Craig Paukert** and **Jodi Whittier** to help develop stream temperature models for the state of Missouri. Sammy has worked with us for an internship this past semester and we look forward to having her around this summer.