# LORI A. HAN Norman, OK 73072 lhan@ou.edu

Mission Statement: to provide excellence in teaching to create a highly qualified future workforce and to provide significant contributes to research in addressing some of the world's most pressing environmental challenges using the wisdom of nature in ecologically engineered practices for water resources.

## **EDUCATION**

University of Minnesota, College of Food, Agricultural and Natural Resource Sciences - St. Paul, MN

- \* PhD Bioproducts and Biosystems Science, Engineering and Management \* 2018
- \* MS Water Resources Science with a Minor in Geographic Information Science \* 2012

\* BS Fisheries, Wildlife and Conservation Biology (Wildlife Emphasis) \* 2010

## **CURRENT ROLE**

University of Oklahoma - Norman, OK (August 2023 - current)

#### Gallogly College of Engineering, School of Civil Engineering and Environmental Science

- Assistant Professor
  - Providing research-related input as a member of the Center for Restoration of Ecosystems and Watersheds (CREW)
  - Teaching upper level under grad and graduate courses on nature-based solutions and engineering with nature
  - Conducting field, lab, and computer-based research related to water quality and quantity
  - Writing proposals for internal and external research and student funding
  - Writing peer-reviewed research articles for scholarly journal publication

## **TEACHING EXPERIENCE**

#### Torah Academy of Minnesota – St. Louis Park, MN (February 2022 – August 2023)

#### > 6th Grade Math and Science Instructor, Multi-Tiered System of Support Coordinator and Math Interventionist

- Provided classroom math and science instruction in a unique cultural setting
- Created math and science curricula to supplement provided materials and recommended lessons
- Assisted elementary students struggling in their regular math class using math interventions in the form of pull-outs
- Provided summer tutoring for 4th grade math intervention students
- Coordinated reading and math intervention placement and progress based on tri-annual standardized testing
- Authored a new teacher's manual based on my recent experience as a new general studies teacher

## WizEducators - Edina, MN (Dec. 2021 - March 2022)

### Academic Tutor (contract)

- Provided middle and high school math students with assistance related to their coursework (assignments, tests, projects, etc.)
- Assisted middle school students with preparing for standardized tests (quantitative, verbal, reading, and essays)

#### St. Paul Public Schools – St. Paul, MN

- Literacy Tutor (Oct. 2012 June 2013)
  - Worked 1-on-1 and cross culturally teaching 2nd and 3rd grade students how to read in an in-school setting
  - Engaged students in games and activities designed to assist children in reading

## City of Minneapolis – Minneapolis, MN

- Naturalist (July 2010 July 2011)
  - Led school-age, family and adult groups through various natural resource education programs and tours
  - Performed plant and animal surveys and monitoring for contribution to the garden's ongoing inventory catalog
  - Created educational material for display in the visitor center

## **RESEARCH EXPERIENCE**

#### Department of Bioproducts and Biosystems Engineering (BBE): University of Minnesota – St. Paul, MN

### > Ph.D. Fellow, Project: Nutrient Removal using Novel Bioreactor Media (Sept. 2014 – Feb. 2018)

- Engineered a large-scale laboratory apparatus to test for nutrient removal from agricultural drainage
- Designed and conducted a complex water quality research experiment using novel bioreactor configurations
- Performed statistical analysis of water quality data in SPSS and Excel to determine nitrate removal
- Advised and supervised undergraduate and graduate students in planning and conducting water quality research
- Operated as project manager (developing work plans, documenting progress, technical research, budget management)
- Created technical communications for academic and professional audiences, including Powerpoint presentations and site tours
- Educated farmers and other stakeholders about agricultural BMPs and bioreactors at numerous outreach events
- Co-authored the MDA Ag. BMP Handbook for Minnesota, 2<sup>nd</sup> Ed (Lenhart et al., 2017)

### > Graduate Research Assistant, Project: Mycoalgae for Water Treatment (July 2017 – Jan. 2018)

- Engineered a portable paddlewheel system to test for nutrient removal from wastewater using fungi
- Conducted on-site paddlewheel experiments to determine field feasibility of a laboratory developed fungi

### > Research Fellow, Project: Assessment of the Mullenbach Two-Stage Ditch (July 2010 – Aug. 2014)

- Installed flumes and stage recording equipment for determining water balance within the ditch
- Performed longitudinal profile surveys to determine sediment transport for assessing geomorphic character
- Collected and statistically analyzed water samples for nitrates to assess in-stream denitrification capabilities
- Designed and conducted riparian vegetation surveys for biotic assessment
- Designed, conducted, lab tested and statistically analyzed soil samples for denitrification potential
- Supervised an undergraduate research assistant in conducting field work and performing lab analyses

### > Research Fellow, Project: Side Inlets to Improve Agricultural Water Quality (Sept. 2013 – July 2014)

- Created stage-discharge relationships in Excel to assess the hydraulics of various side inlet designs
- Designed, assessed, and compared the performance of alternative side inlets using SEDCAD
- Performed project management duties (organized meetings, facilitated communications, budget assistance)

## > Research Fellow, Project: Assessment of Agricultural Drainage Benefits (Sept. 2013 – July 2014)

- Performed an economic analysis of alternative methods of assigning monetary benefits to agricultural lands
- Performed project management duties (organized meetings, facilitating communications, budget assistance)

## > Research Fellow, Project: Prioritization of Sentinel Watersheds (April 2011 – June 2013)

- Created a model in Excel using ArcGIS data to prioritize watersheds for monitoring across the state of MN
- Organized, created and presented project updates containing technical information to a multi-agency board
- Organized two large stakeholder workshops to obtain feedback, facilitate communication and present results
- Wrote quarterly progress reports for the Minnesota Department of Agriculture
- Supervised an undergraduate research assistant in workshop event organization and preparations
- Model was used to aid in the first round of watershed selection in BWSR's 1 Watershed, 1 Plan process

#### Department of Entomology: University of Minnesota – St. Paul, MN

- Scraduate Research Assistant, Project: Stenotherms in Groundwater-fed Streams (Aug. 2010 May 2012)
  - Created regression models in Excel to estimate the possible future effects of climate change on trout habitat
  - Modeled and analyzed landscape attributes in ArcGIS to determine which variables affect stream temperature
  - Aided in sampling brown trout and aquatic invertebrates to assess biotic health

#### Department of Fisheries, Wildlife, and Conservation Biology: University of Minnesota – St. Paul, MN

- > Undergraduate Research Assistant, Project: Waterbird Nesting in the Great Lakes (Sept. 2009 Aug. 2010)
  - Performed waterbird counts from aerial photographs using ArcGIS to estimate Lake Superior populations
  - Created maps of waterbird nests sites in ArcGIS for use in publication (Wires & Cuthbert, 2010)
  - Performed ground counts of nesting waterbirds in the Twin Cities area for estimating local populations

# **RELATED EXPERIENCE**

## Edit911 - Oviedo, FL (Sept. 2021 - current)

- Academic Editor (contract)
  - Editing various academic works for citation style, structure, clarity, grammar, spelling, syntax and punctuation

# PROFESSIONAL EXPERIENCE

## Houston Engineering, Inc. – Maple Grove, MN

- Scientist II (Feb. 2018 Mar. 2021)
  - Conducted conservation watershed planning using hydrologic data, ArcGIS, PTMApp and other propriety GIS tools and models
  - Assessed the impacts of conservation practices on watershed hydrographs using ArcGIS and PyCharm
  - Organized and conducted conservation workshops for farmer-led conservation groups
  - Performed field work to collect riparian sediment samples and assess the sediment balance on degraded riverbanks in W MN
  - Used third party sustainability assessment software programs to track key sustainability metrics for dairy farms in WI
  - Developed and implemented a framework for creating and growing farmer-led conservation groups
  - Worked with WDs and SWCDs on regulatory and comprehensive watershed planning processes
  - Executed project management activities including managing tasks, timelines, budgets and workloads
  - · Provided technical training and oversight to new staff within the water quality business sector
  - Developed QAQC and internal user manuals for various tools and processes related to data analysis
  - Served as Agribusiness Coordinator to facilitate engagement with private industry as conservation partners
  - Wrote final project reports, technical memos and contributed technical content to state 1W1P, TMDL and WRAPS reports

# **COMPUTER SKILLS**

Software: ArcGIS 10.5 - 10.7 and ArcPro; Microsoft Office 365 Suite; Macintosh Pages, Safari, and Mail; Pycharm; SWAT; FLUX32; BATHTUB; MAPWINDOW; ERDAS Imagine; SEDCAD; HEC-RAS, HEC-HMS; XLSTAT; SPSS

# TECHNICAL SKILLS

Use of a laser level to take profile measurements; field site reconnaissance, sediment sampling and habitat assessments; Rosgen BANCS and BEHI models; set-up and use of water stage recording equipment (flumes, pressure transducers); use of water quality monitoring equipment (YSI Sonde, Hach Nitratax Nitrate Probe, DR890 Phosphorus Colorimeter); CR10X data logger set-up and troubleshooting; technical proposal writing in response to grant RFPs

# RELATED COURSEWORK

- Undergraduate: Botany; Ecology; Ornithology; Dendrology; Herpetology; Principles of Wildlife Management; Habitat and Regulation of Wildlife; Important Plants in Fisheries and Wildlife Habitats; Field Method Research and Conservation of Invertebrate Populations; Wetlands Conservation; Science, Protection and Management of Aquatic Environments; Environmental Policy, Law and Human Behavior
- Graduate: Hydrology and Watershed Management; Hydrology and Water Quality Field Methods; Assessment and Diagnosis of Impaired Waters; Environmental Chemistry; Biogeochemical Processes; Watershed Engineering, Ecological Engineering Design; Hydrologic Design; Sustainable Waste Management Engineering; Water Policy; Policy and Science of Global Environmental Change; Vadose Zone Hydrology; GIS and Spatial Analysis; Remote Sensing of Natural Resources and the Environment; Research Problems in Spatial Data Analysis

# SELECTED AWARDS

- ➤ Graduate
  - Bergsrud Graduate Fellowship, UMN Bioproducts and Biosystems Engineering (May 2017 Aug. 2017)
  - Doctoral Dissertation Fellowship, University of Minnesota (Sept. 2016 May 2017)
  - MNDRIVE Undergraduate Scholar Research Grant (\$5k), University of Minnesota (Jan. 2015)
  - Bill Wilcke Graduate Fellowship, UMN Bioproducts and Biosystems Engineering (Aug. 2014 Aug. 2016)
- ➤ Undergraduate
  - O. Gordon Scholarship, UMN CFANS (Spring 2010)
  - Izaak Walton League of America Scholarship (2009-2010 academic year)
  - Augustus Searles Scholarship, UMN CFANS (2009-2010 academic year)
  - Jay Hokenstrom Scholarship, UMN CFANS (Summer 2009

# **OUTREACH ACTIVITIES**

- > CFANS Orientation to Fisheries and Wildlife, Guest Speaker, Topic: Watershed Planning and Consulting (Oct. 2018)
- BBE Sneak Peak for Potential New Students, Tour Presenter, Topic: Bioreactors (Oct. 2017)
- > BBE Orientation Session Leader, Topic: Agricultural Nutrients and Bioreactors (Oct. 2016)
- > UMN Sustainability Action! Open House Exhibitor, Topic: Bioreactors (Aug. 2016)
- CSE Discover STEM K-12 Outreach Program: Camp Lesson Leader, Topic: Agricultural Nutrients (Aug. 2016)
- University of Minnesota BBE Graduate Student Selection Committee, Student Representative (Jan. 2016)
- University of Minnesota BBE Faculty Search Committee, Student Representative (March June 2015)
- > University of Minnesota Water Resources Science Seminar Presentation, Topic: Two-Stage Ditch (Feb. 2015)
- Self-sustaining Ditch in Mower County, MN: Roundtable Discussion and Field Day; Adams, MN (June 2011)

# **ACADEMIC PRESENTATIONS**

- > Drainage Research Forum (2017); Ames, IA: Novel Bioreactor Media Experiments to Enhance Microbial Denitrification
- International Drainage Symposium (2016); Minneapolis, MN: Novel Bioreactor Designs for Removing Nitrate in Agricultural Drainage Waters
- Nutrient Management and Edge of Field Monitoring Conference (2015); Memphis, TN: Prioritizing watersheds for BMP placement: southern Minnesota case study
- Society of Ecological Restoration Symposium (2014); St. Paul, MN: Ecological Implications of Agricultural Drainage Ditch Restoration through a Two-Stage Design (Mower County, Minnesota)
- Driftless Area Symposium (2012); LaCrosse, WI: Air-water temperature relationships in the trout streams of the Driftless Area of southeastern Minnesota
- Water Resources Conference (2011); St. Paul, MN: Air-water temperature relationships in the trout streams of Southeastern Minnesota's carbonate landscape

## PUBLICATIONS\*

## **Peer-Reviewed**

- DeZiel, B. A., L. Krider, B. Hansen, J. Magner, B. Wilson, G. Kramer and J. Nieber. 2019. Habitat improvements and fish community response associated with an agricultural two-stage ditch in Mower County, Minnesota. Journal of the American Water Resources Association 55(1):154-188. DOI: 10.1111/1752-1688.12713.
- Krider, L., J. Magner, B. Hansen, B. Wilson, G. Kramer, J. Peterson, and J. Nieber. 2017. Improvements in fluvial stability associated with two - stage ditch construction in Mower County, Minnesota. Journal of the America Water Resources Association 53(4): 886-902. DOI: 10.111/1752-1699.12541.
- Krider, L. B. Wilson, and J. Magner. 2016. Design and Construction of a Reduced Temperature Testing Apparatus for Denitrification. 10th Int. Drainage Symp. St. Joseph, MI: ASABE.
- Peterson, J., B. Wilson, M. Titov, L. Krider, and J. Strock. 2014. Hydrologic impacts of side inlet storage modifications in an artificially drained agricultural landscape. American Society of Agricultural and Biological Engineers. Paper Number: 1909229.
- Krider, L. A., J. Perry, J. A. Magner, B. Vondracek, and L. C. Ferrington, Jr. 2013. Air-water Temperature Relationships in the Trout Streams of Southeastern Minnesota's Carbonate - Sandstone Landscape. Journal of the American Water Resources Association 49(4): 896-907. DOI:10.1111/jawr.12046.

## Other

- Lenhart, C., B. Gordon, J. Peterson, W. Eshenaur, L. Gifford, B. Wilson, J. Stamper, L. Krider, and N. Utt. 2017. Agricultural BMP Handbook for Minnesota, 2<sup>nd</sup> Edition. St. Paul, MN: Minnesota Department of Agriculture.
- Krider, L., B. Wilson and J. Nieber. 2013. Assessment and Selection of Sentinel Watersheds: Final Report. Prepared by the University of Minnesota, Department of Bioproducts and Biosystems Engineering for the Minnesota Department of Agriculture.
- Krider, L., J. Peterson, K. Bear, M. Titov, G. Kramer, B. Wilson, J. Strock, and G. Sands. 2013. Side Inlets to Improve Water Quality: Final Report. Prepared by the University of Minnesota, Department of Bioproducts and Biosystems Engineering for the Minnesota Board of Soil and Water Resources.

\*My former last name is Krider