CURRICULUM VITAE – GUST M. ANNIS

GREAT LAKES RESEARCH SPECIALIST, THE NATURE CONSERVANCY IN MICHIGAN

101 EAST GRAND RIVER AVE   PHONE: (517) 316-2272
LANSING, MI 48906

EDUCATION

Western Illinois University

M.A., Geography, 1998

Thesis: *Michigan and Wisconsin Stream Restoration: An Investigation of the Factors Affecting Project Monitoring and Evaluation*

Northern Michigan University

Post Baccalaureate Course Work, Geography, 1993 – 1994

B.S. Elementary Education, 1992

PROFESSIONAL EXPERIENCE

Great Lakes Research Specialist (*2012-present)*
The Nature Conservancy, Michigan Chapter

Aquatic Resources Coordinator (2005-2012)
Missouri Resource Assessment Partnership, University of Missouri

Research Associate (GIS Specialist) (1998-2005)
Missouri Resource Assessment Partnership, University of Missouri

GRANTS AWARDED

2012   Aquatic Threat Analysis in the Middle Rockies Ecoregion ($20,000)

2011   Aquatic Species Distribution Modeling and Threat Analysis in the Northwestern Plains Ecoregion ($18,487)

2011   The Imperiled Coldwater Crayfish (Orconectes eupunctus) in the Black River Drainage of Missouri and Arkansas: Factors Affecting Distribution and Decline, Data Development ($15,000)

2010   Midwest Glacial Lakes Partnership (MGLP) Data Suite Integration ($8,000)

2010   Midwest Glacial Lakes Partnership (MGLP) Lakeshed Delineations for North Dakota and South Dakota ($60,000)

2010   Modeling Fish Distributions throughout the Arkansas/White/Red River Basins and Gathering Fish Community Collection Data ($223,300)

2009   Upper Mississippi River Basin Data Development and Aquatic Gap Analysis and Missouri River Basin Aquatic Gap Analysis ($146,650)

PUBLICATIONS

Sowa, S. P., Herbert, M., Mysorekar, S., **Annis, G.**, Hall, K., Nejadhashemi, A.P., Woznicki, S.A., Wang L., Doran, P., In Press. How much conservation is enough? Defining implementation goals for healthy fish communities. J. Great Lakes Res.

Beletsky, D., Beletsky, M., Rutherford, E., Sieracki, J., Bossenbroek, J., Chadderton, W.L., Wittmann, M.E., **Annis, G.M.**, Lodge, D.M., Submitted. Predicting spread of aquatic invasive species by lake currents. J. Great Lakes Res.

Kramer, A., **G. Annis**, M. Wittmann, W. Chadderton, E. Rutherford, D. Lodge, L. Mason, D. Beletsky, C. Riseng, J. Drake. (In review) Suitability of Great Lakes for invasive species based on global species distribution models and local aquatic habitat. Ecosphere.

Keitzer, S.C., S.A. Ludsin, S.P. Sowa, A.M. Sasson, **G. Annis**, J.G. Arnold, A. Brennan, P. Daggupati, A.M. Froehlich, M.E. Herbert, M.V. Johnson, C. Vollmer-Sanders, M.J. White, C. J. Winslow, and H. Yen. 2016. Quantifying the Potential Water Quality Benefits of Agricultural Conservation Practices for Stream Conservation in the Western Lake Erie Basin. Final Report submitted to NRCS Conservation Effects Assessment Project. 63 pp.

Keitzer, S. Conor, Stuart A. Ludsin, Scott P. Sowa, **Gust Annis**, Jeff G. Arnold, Prasad Daggupati, August M. Froehlich et al. "Thinking outside of the lake: Can controls on nutrient inputs into Lake Erie benefit stream conservation in its watershed?." Journal of Great Lakes Research (2016).

Forsyth, Danielle K., Catherine M. Riseng, Kevin E. Wehrly, Lacey A. Mason, John Gaiot, Tom Hollenhorst, Craig M. Johnston, Conrad Wyrzykowski, Gust Annis, Chris Castiglione, Kent Todd, Mike Robertson, Dana M. Infante, Lizhu Wang, James E. McKenna, and Gary Whelan, 2016. The Great Lakes Hydrography Dataset: Consistent, Binational Watersheds for the Laurentian Great Lakes Basin. Journal of the American Water Resources Association (JAWRA) 1–21. DOI: 10.1111/1752-1688.12435.

Wittmann, M., **G. Annis**, A. Kramer, L. Mason, C. Riseng, E. Rutherford, W. Chadderton, D. Beletsky, J. Drake, D. Lodge. (In review) Refining species distribution model outputs using landscape-scale habitat data: Forecasting Grass Carp and Hydrilla establishment in the Great Lakes region.

Fore, J.D., Sowa, S.P., Galat, D.L., **Annis, G.M.**, Diamond, D.D. and Rewa, C., 2014. Riverine threat indices to assess watershed condition and identify primary management capacity of agriculture natural resource management agencies. Environmental management, 53(3), pp.567-582.

Annis G., M. DeBacker, D. Diamond, L. Elliott, A. Garringer, P. Hanberry, K. James, R. Lee, S. Leis, M. Morey, D. Pursell, and C. Young. 2011. George Washington Carver National Monument Natural Resource Condition Assessment. Natural Resource Report NPS/HTLN/NRR—2011/425. National Park Service, Fort Collins, Colorado.

Annis G., M. DeBacker, D. Diamond, L. Elliott, A. Garringer, P. Hanberry, K. James, R. Lee, S. Leis, M. Morey, and D. Pursell. 2011. Pea Ridge National Military Park Natural Resource Condition Assessment. Natural Resource Report NPS/HTLN/NRR—2011/426. National Park Service, Fort Collins, Colorado.

Annis G., M. DeBacker, D. Diamond, L. Elliott, A. Garringer, P. Hanberry, K. James, R. Lee, M. Morey, D. Pursell, and C. Young. 2011. Wilsons Creek National Battlefield Natural Resource Condition Assessment. Natural Resource Report NPS/HTLN/NRR—2011/427. National Park Service, Fort Collins, Colorado.

Annis, G. M., D. Millican, C. Gallipeau, E. Inlander, D. Diamond, S. Sowa, M. Morey, P. Hanberry, A. Garringer, K. Mabrey. Developing Stream Reach-Scale Predicted Distribution Models for Fish Species in Arkansas. 2011. Final Report, submitted to the USGS National Gap Analysis Program. 1,079 pp.

Annis, G. M., S. P. Sowa, D. D. Diamond, A. Garringer, P. Hanberry, and M. E. Morey. 2010. A GAP Analysis for Riverine Ecosystems of the Missouri River Basin. Final Report (draft), submitted to the USGS National Gap Analysis Program. 1,351 pp.

Annis, G. M., S. P. Sowa, D. D. Diamond, M. D. Combes, K. E. Doisy, A. J. Garringer, and P. Hanberry. 2010. Developing Synoptic Human Threat Indices for Assessing the Ecological Integrity of Freshwater Ecosystems in EPA Region 7. Final Report, submitted to Environmental Protection Agency. 192 pp.

Annis, G. M., S. P. Sowa, D. D. Diamond, A. Garringer, P. Hanberry, and M. E. Morey. 2009. Completing and Integrating Core Aquatic GAP Geospatial Data Layers for the Missouri River Basin. Final Report, submitted to the USGS National Gap Analysis Program. 1,259 pp.

Sowa, S.P., **Annis, G.**, Morey, M.E. and Garringer, A., 2008. Improving Predicted Distribution Models for Riverine Species: An Example from Nebraska. Publications of the US Geological Survey. Paper 27. http://digitalcommons.unl.edu/usgspubs/27

Sowa, S.P., D.D. Diamond, **G.M. Annis**, A.J. Garringer, P.A. Hanberry, R.D. Lea, and D.L. Pursell. 2008. Effigy Mounds National Monument Ecological Condition Assessment. Final Report, submitted to the National Park Service.

Sowa, S.P., D.D. Diamond, **G.M. Annis**, A.J. Garringer, P.A. Hanberry, R.D. Lea, and D.L. Pursell. 2008. Ozark National Scenic Riverways Ecological Condition Assessment. Final Report, submitted to the National Park Service.

Brewer, S.K., C.F. Rabeni, S.P. Sowa, and **G. Annis**. 2007. Natural Landscape and Stream Segment Attributes Influencing the Distribution and Relative Abundance of Riverine Smallmouth Bass in Missouri. North American Journal of Fisheries Management 27:326-341.

Sowa, S.P., **G. Annis**, M. Morey, and D. Diamond. 2007. A Gap Analysis and Comprehensive Conservation Strategy for Riverine Ecosystems of Missouri. Ecological Monographs 77(3):301-334.

Sowa, S.P., **G.M. Annis**, A.J. Garringer, and M.E. Morey. 2006. Developing Predicted Distribution Models for Fish Species in Nebraska. U.S. Geological Survey, National Gap Analysis Program, Moscow, Idaho.

Whitledge, G.W., C. Rabeni, **G. Annis**, and S.P. Sowa. 2006. Riparian Shading and Groundwater Enhance Growth Potential for Smallmouth Bass in Ozark Streams. Ecological Applications 16(4):1461-1473.

Sowa, S. P., **G. M. Annis**, D. D. Diamond, D. Figg, M. E. Morey, and T. Nigh. 2005. Missouri Department of Conservation Aquatic Biodiversity Assessment. Final Report, Missouri Department of Conservation.

Sowa, S.P., D.D. Diamond, R. Abbitt, **G. Annis**, T. Gordon, M.E. Morey, G.R. Sorensen, and D. True. 2005. A Gap Analysis for Riverine Ecosystems of Missouri. U.S. Geological Survey, National Gap Analysis Program, Moscow, Idaho.

Sowa, S. P., **G. M. Annis**, D. D. Diamond, D. Figg, M. E. Morey, and T. Nigh. 2004. An Overview of the Data Developed for the Missouri Aquatic GAP Project and an Example of how it is Being Used for Conservation Planning. Gap Analysis Bulletin 12:7-19.

Sowa, S. P., D. D. Diamond, R. Abbitt, **G. M. Annis**, T. Gordon, M. E. Morey, G. R. Sorensen, and D. True. 2004. The Aquatic Component of Gap Analysis: A Missouri Prototype. Final Report, U.S. Department of Defense Legacy Program, Washington, D.C.

SELECT PRESENTATIONS

EPA Wetland Program Capacity Building Workshop, Kansas City, Missouri (November 2011)
Presentation title: "Developing Human Threat Indices for Assessing the Ecological Integrity of Freshwater Ecosystems in EPA Region 7" (Invited)

American Fisheries Society Annual Meeting, Seattle, Washington (September 2011)
Presentation title: "An Aquatic Gap Analysis of Riverine Ecosystems throughout the Missouri River Basin"

Midwest Fish & Wildlife Conference, Minneapolis, Minnesota (December 14, 2010)
Presentation title: "Developing Human Threat Indices for Assessing the Ecological Integrity of Freshwater Ecosystems in EPA Region 7"

Missouri Natural Resources Conference, Lake of the Ozarks, Missouri (February 2010)
Workshop title: Identifying and Conserving Aquatic Natural Areas
Presentation title: "Selecting Candidate Aquatic Natural Areas Using a GIS-based Aquatic Threat Data Model within an Aquatic Ecological Classification Framework" (Invited)

Natural Areas Conference, Lake of the Ozarks, Missouri (October 26, 2010)
> Presentation title: "An Aquatic Gap Analysis of Riverine Ecosystems throughout the Missouri River Basin"

MU Charles W. Schwartz Fisheries and Wildlife Seminar Series (October 23, 2009)
> Presentation title: "Using Aquatic Gap Analysis Data to Identify Aquatic Riverine Conservation Opportunity Areas in Missouri" (Invited)

Natural Areas Conference, Vancouver, Washington (September 18, 2009)
> Presentation title: "Identifying Aquatic Riverine Conservation Opportunity Areas"

Missouri Natural Resources Conference, Lake of the Ozarks, Missouri (Feb. 6, 2009)
> Presentation title: "Developing Synoptic Human Threat Indices for Assessing the Ecological Integrity of Freshwater Ecosystems across EPA Region 7"

2008 EPA Regional Wetlands and Watersheds Conference, Kansas City, Missouri (April 2008)
> Presentation title: "Developing Human Threat Indices for Assessing the Ecological Integrity of Freshwater Ecosystems Across EPA Region 7"

Ecological Society of America Conference, San Jose, California (Aug. 6-9, 2007)
> Presentation title: "Improvements in Core Aquatic Gap Data Sets"

Missouri Natural Resources Conference, Lake of the Ozarks, Missouri (Feb. 1, 2007)
> Workshop: Applications for Natural Resources Management
> Presentation title: "Missouri Aquatic GIS Data Sets: An Introduction and Use"

Association of American Geographers Annual Conference, Denver, Colorado (April, 2005)
> Presentation title: "Using Aquatic GAP data to assist with the development of statewide Comprehensive Wildlife Conservation Strategies: An Example from Missouri"

Midwest Fish and Wildlife Conference, Kansas City, Missouri (2003)
> Presentation title: "Classifying Stream Ecosystems into Distinct Ecological Units at Multiple Spatial Scales"

Missouri Natural Resources Conference, Lake of the Ozarks, Missouri (2002)
> Presentation title: "Classifying Stream Ecosystems Into Distinct Ecological Units At Multiple Levels"

11th Annual National Gap Analysis Program Meeting, Ames, Iowa (2001)
> Presentation title: "Classifying Stream Ecosystems into Distinct Ecological Units: The Missouri Aquatic GAP Pilot Project"

Maine Aquatic Biodiversity Workshop, Orono, Maine (August, 2000)
> Presentation title: "The Missouri Aquatic GAP Pilot Project" (Invited)

Missouri Natural Resources Conference, Lake of the Ozarks, Missouri (February, 2000)
> Presentation title: "Missouri Aquatic GAP Stream Valley Segment Classification"

COMMITTEE PARTICIPATION

Midwest Fish Habitat Partnership's Science Advisory Network (2009-2012)
Great Plains Fish Habitat Partnership's Science Assessment Team (2010-2012)
Fishers and Farmers Fish Habitat Partnership's Science Team (2009-2012)

MEMBERSHIPS IN SOCIETIES

- Association of American Geographers
- American Fisheries Society
- Society for Conservation Biology

SKILLS AND SOFTWARE EXPERIENCE

- Project management
- Data management
- GIS methodology and data development
- Arc Macro Language (AML) programming
- Species modeling
- Cartographic design and display
- ESRI's ArcGIS software
- SPSS statistical software
- Microsoft Office

JOB RELATED TRAINING

- Highly Effective Teams training (TNC), 2016
- Python Scripting for Map Automation (ESRI online), 2015
- Coaching for Supervisors (TNC webinar), 2014
- Python for Everyone (ESRI online), 2014
- Creating and Sharing GIS Content Using ArcGIS Online (ESRI online), 2014
- Species Modeling, Aquatic GIS Workshop, St. Louis University, 2011
- Introduction to Geoprocessing Scripts Using Python (ESRI), 2006
- Building Geodatabases II (ESRI), 2004
- Building Geodatabases I (ESRI), 2003
- Introductory and Intermediate Microsoft Visual Basic (University of Missouri), 1999