

Dr. Tyler Wagner

U.S. Geological Survey
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Education

PhD, Michigan State University, 2006.
Major: Fisheries Management

MS, University of Idaho, 2000.
Major: Fisheries/Limnology

BS, University of Idaho, 1999.
Major: Fisheries Management

Professional Positions

Assistant Unit Leader, Pennsylvania Cooperative Fish and Wildlife Research Unit. (April 2008 - Present).

Professional Society Memberships and Activities

Member, Ecological Society of America (January 2002 - Present).

Member, American Fisheries Society (January 2000 - Present).

Member, North American Lake Management Society (January 1998 - Present).

President- PA Chapter of AFS, American Fisheries Society (July 2010 - July 2011).

Student Activities subcommittee chair for AFS 2010, American Fisheries Society (December 2009 - 2010).

TEACHING

Teaching Experience

Quantitative Methods in Ecology, (January 10, 2011 - May 5, 2011).

Non-Credit Instruction

An Introduction to R. (August 14, 2008 - August 15, 2008).

Directed Student Learning

Major Advisor

Faulk, Evan – Master's

DeMario, Devin - Master's (August 2009 – Present).

Smith, Lori - Master's (June 2011 - Present).

Salvesen, Kelley - Master's (January 2011 - Present).

Kepler, Megan - Master's (January 2011 - Present).

Deweber, Jefferson - PhD (August 2010 - Present).

Mollenhauer, Robert - Master's (August 2008 - December 2011).

Graduate Committee Member

Reed, Brendan - MS (May 2012 - Present).

Fergus, Emi - PhD (January 2012 - Present).

Ikis, Didem - PhD (August 2010 - Present).

Kirby, Jeff - PhD (August 2010 - Present).

Grassie, Cairsty - PhD (August 2009 - Present).

Petprakob, Krittika - PhD (August 2009 - Present).

Hill, Jason - PhD (January 2009 - Present).

Price, Keith - PhD (August 2008 - Present).

Fost, Brooks - PhD (January 2008 - Present).

May, Melissa - MS (August 2009 - May 2011).

Norton, Andrew - MS (May 2008 - May 2011).

Stainbrook, David - MS (August 2008 - May 2011).

Williamson, Neihl - MS (August 2008 - May 2010).

Rummel, Shawn - PhD (August 2005 - August 2009).

Mason, Doris - MS (May 2008 - May 2009).

RESEARCH

Publications

Peer Reviewed

Rennie, M.D., Ebener, M.P., Wagner, T. Can migration mitigate the effects of ecosystem change? Patterns of dispersal, energy acquisition and allocation in Great Lakes lake whitefish (*Coregonus clupeaformis*). 2012. Proceedings of the 10th Annual Coregonid Symposium. *Advances in Limnology* 63:455-476.

- Wagner, T., D. R. Diefenbach, A. S. Norton, and S. A. Christensen. 2011. Using multilevel models to quantify heterogeneity in resource selection. *Journal of Wildlife Management* 75:1788-1796.
- Wagner, T., Soranno, P.A., Webster K.E., and Spence Cheruvellil K. 2011. Landscape drivers of regional variation in the relationship between total phosphorus and chlorophyll in lakes. *Freshwater Biology* 56:1811-1824. doi:10.1111/j.1365-2427.2011.02621.x
- Soranno, P.A., Wagner, T. Martin, S., McLean, L., Novitski, L., Provence, C., and Rober, A. 2011. Quantifying regional reference conditions for freshwater ecosystem management: A comparison of approaches and future research needs. *Lake and Reservoir Management* 27:138-148.
- Wagner, T. and Sweka, J.A. 2011. Evaluation of hypotheses for describing temporal trends in Atlantic salmon parr densities in Northeast U.S. Rivers. *North American Journal of Fisheries Management* 31:340–351.
- Soranno, P. A., Spence Cheruvellil, K., Webster, K. E., Bremigan, M. T., Wagner, T., Stow, C. A. 2010. Freshwater Ecosystem Classification for Landscape-scale Management. *BioScience* 60:440-454.
- Wagner, T., Jones, M.L., Ebener, M.P., Arts, M.T., Brenden, T.O., Honeyfield, D.C., Wright, G.M., and Faisal, M. 2010. Spatial and temporal dynamics of lake whitefish (*Coregonus clupeaformis*) health measures: linking individual-based indicators to a management-relevant endpoint. *Journal of Great Lakes Research* 36:121-134.
- Miksis-Olds, J. L. and Wagner, T. 2010. Behavioral response of manatees to variations in environmental sound levels. *Marine Mammal Science* 27: 130–148
- Wagner, T., Vandergoot, C. S., and Tyson, J. 2009. Evaluating the Power to Detect Temporal Trends in Fishery-Independent Surveys: A Case Study Based on Gillnets Set in the Ohio Waters of Lake Erie for Walleye. *North American Journal of Fisheries Management* 29:805-816.
- Brenden, T. O., Wagner T., and Murphy B. R. 2008. Generalized linear mixed modeling as a framework for analyzing proportional size structure index data. *North American Journal of Fisheries Management* 28:1233-1242.
- Wagner, T. W., Benbow M.E., Brenden, T. O., Qi, J., and Johnson R. C. 2008. Buruli ulcer disease prevalence in Benin, West Africa: associations with land use/cover and the identification of disease clusters. *International Journal of Health Geographics* 7:25.
- Spence Cheruvellil, K., Soranno, P. A., Bremigan, M. T., Wagner, T., and Martin, S. L. 2008. Grouping lakes for water quality assessment and monitoring: the roles of regionalization and spatial scale. *Environmental Management* 41:425-440.
- Wagner, T. W., Benbow M.E., Burns, M., Merritt, R. W., Qi, J., and Small, P. L. C. Johnson R. C. 2008. A landscape-based model for predicting *Mycobacterium ulcerans* infection (Buruli ulcer) presence in Benin, West Africa. *EcoHealth*.
- Wagner, T., P.A. Soranno, K. Spence Cheruvellil, B. Renwick, K. Webster, P. Vaux, and R. Abbitt. 2008. Quantifying sample biases of inland lake sampling programs in relation to lake surface area and land use/cover. *Environmental Monitoring and Assessment* 131-147.
- Wagner, T., Bence, J. R., Bremigan, M. T., Hayes, D. B., and Wilberg, M. J. 2007. Regional trends in fish mean length at age: components of variance and the power to detect trends. *Canadian Journal of Fisheries and Aquatic Sciences* 64:968-978.

- Wagner, T., Bremigan, M. T., Spence Cheruvellil, K., Soranno, P. A., Nate, N. N., and Breck, J. E. 2007. A multilevel modeling approach to assessing regional and local landscape features for lake classification and assessment of fish growth rates. *Environmental Monitoring and Assessment* 130:437-454.
- Congleton, J. L. and Wagner T. 2006. Blood-chemistry indicators of nutritional status in juvenile salmonids. *Journal of Fish Biology* 69:473-790.
- Wagner, T. Jubar, A. K., and Bremigan, M. T. 2006. Can habitat alteration and spring angling explain black bass nest distribution and success? *Transactions of the American Fisheries Society* 135:843-852.
- Wagner, T., Hayes, D. B., and Bremigan, M. T. 2006. Accounting for multilevel data structures in fisheries data using mixed models. *Fisheries* 31:180-187.
- Zabel, R. W., Wagner T., Congleton J. L., Smith, S. G., Williams, S. G. 2005. Survival and selection of migrating salmon from capture-recapture models with individual traits. *Ecological Applications* 15:1427-1439.

Technical Reports

- Irwin, B. J., T. Wagner, M. V. Kepler, W. Liu, J. R. Bence, D. B. Hayes, and N. Lester. 2011. Spatial and temporal components of variation in Great Lake percid populations: implications for conservation and management. Great Lakes Fish and Wildlife Restoration Act, Project Completion Report.
- Diefenbach, D. R., B. J. Irwin, and T. Wagner. 2011. Summary of outcomes for the structured decision making workshop for catch and release trout regulations. State College, PA.
- Lorantas, R., Wagner, T., Arnold, D., Detar, J., Kaufmann, M., Kuhn, K., Lorson, R., Wnuk, R., and Woomer, A. 2010. Smallmouth Bass Electrofishing Catch Rate in Large Pennsylvania Rivers and Examination of Smallmouth Bass Recruitment Indices. Technical Report, Pennsylvania Fish and Boat Commission.
- Kristine, D., Detar, J., Lorantas, R., Lorson, R., Wagner, T., and DeMario, D. 2010. Biological Assessment of Experimental Panfish Enhancement Regulations on Select Pennsylvania Impoundments. Technical Report, Pennsylvania Fish and Boat Commission.
- Jones, M. L., Arts, M. T., Faisal, M., Ebener, M P., Wagner, T., Brenden T. O., Honeyfield D., and Wright, G. 2008. Magnitude and potential causes of mortality in four lake whitefish populations in Lakes Michigan and Huron: a multidisciplinary approach. Great Lakes Fishery Trust Project Completion Report.
- Wagner, T. 2007. The Statistical Power to Detect Temporal Trends in Catch per Unit Effort from Annual Gillnet Surveys for Walleye in Lake Erie. Supplement I. Technical report prepared for the Ohio Department of Natural Resources, Division of Wildlife, Lake Erie Fisheries Unit, Sandusky Fisheries Research Unit. Quantitative Fisheries Center Technical Report T2007-02.
- Wagner, T. 2007. The Statistical Power to Detect Temporal Trends in Catch per Unit Effort from Annual Gillnet Surveys for Walleye in Lake Erie. Technical report prepared for the Ohio Department of Natural Resources, Division of Wildlife, Lake Erie Fisheries Unit, Sandusky Fisheries Research Unit. Quantitative Fisheries Center Technical Report T2007-01.

Presentations Given

Invited Seminars

We're 90% certain you will want to be a Bayesian after this seminar, Pennsylvania State University, United States (February 17, 2012).

Hierarchical Models, Michigan State University, United States (June 27, 2011).

Linking lakes and landscapes: applying principles of landscape limnology to the management of inland lakes, Pennsylvania State University, United States (December 14, 2009).

Buruli ulcer disease: insights into a 110 year mystery using landscape-based models, Pennsylvania State University (May 9, 2008).

Partitioning variability in ecological data: how can it help us understand and manage aquatic ecosystems?, Michigan State University, United States (October 1, 2007).

Presentations

Detar, J., D. Kristine, T. Greene, and T. Wagner. 2012. Evaluation of Catch and Release Regulations for Wild Brook Trout in Pennsylvania Streams. East Coast Trout Management and Culture Workshop V, Frostburg, MD, June 11 – 13. (Author Only, Contributed).

Wagner, T., B.J. Irwin, J.R. Bence, W. Lui, D.B. Hayes. 2012. Developing Expectations for Detecting Temporal Change in Freshwater Fisheries Surveys. 68th Annual Northeast Fish and Wildlife Conference. April 15 - 17, 2012, Charleston, West Virginia. (Presenter & Author, Contributed).

DeMario, D.A., Iwanowicz, L.R., Wagner, T., Kepler, M.V., and Honeyfield, D. C. 2011. Effects of Dietary Restriction on PCB Congener Dynamics and Their Association with Health in Channel Catfish. American Fisheries Society 141st Annual Meeting. Seattle, WA, September 4 – 8. (Author Only, Contributed).

Sweka, J.A., Wagner, T., Detar, J. 2011. Determination of a Representative Reach to Estimate Brook Trout Biomass in Pennsylvania Streams. American Fisheries Society 141st Annual Meeting. Seattle, WA, September 4 – 8. (Author Only, Contributed).

Irwin, B.J., Wagner, T., Liu, W., Bence, J.R., and Hayes, D.B. 2011. Developing Negative Binomial Mixed Models to Partition Variance in Fishery-Independent Survey Data. American Fisheries Society 141st Annual Meeting. Seattle, WA, September 4 – 8. (Author Only, Contributed).

Wagner, T., B.J. Irwin, J.R. Bence, W. Liu, and D.B. Hayes. 2011. The Role of Variance Components and Survey Design in Detecting Trends in Recreational Fisheries Monitoring Data. 6th World Recreational Fishing Conference, Berlin, Germany, August 1 - 4. (Presenter & Author, Contributed).

Mollenhauer, R., Sweka, J., Kepler, M. and Wagner, T. 2011. Seasonal movement and habitat use of wild brook trout in central Pennsylvania. Pennsylvania Chapter of AFS Spring Technical Meeting, April 22. (Author Only, Invited).

Mollenhauer, R., Sweka, J., Kepler, M. and Wagner, T. 2011. Habitat use of wild brook trout in central Pennsylvania. 67th Annual Northeast Fish and Wildlife Conference, Manchester, New Hampshire, April 17 – 19. (Author Only, Contributed).

Sweka, J., Wagner, T., and Detar, J. 2011. Determination of a Representative Sample Reach for Estimation of Native Brook Trout Biomass in Pennsylvania Streams. 67th Annual Northeast Fish and Wildlife Conference, Manchester, New Hampshire, April 17 – 19. (Author Only, Contributed).

Sweka, J. and T. Wagner. 2011. Evaluation of hypotheses for describing temporal trends in Atlantic salmon parr densities in Northeast U.S. Rivers. The Connecticut River Research Forum. (Author Only, Invited).

Diefenbach, D. R., T. Wagner, R. D. Brubaker, E. H. Just. Managing white-tailed deer to restore and maintain plant species diversity. Presented at the Annual Conference of The Wildlife Society, 4 October 2010, Snowbird, Utah. (Author Only, Invited).

Diefenbach, D. R., T. Wagner, S. A. Christensen, A. S. Norton. Using Multilevel Models to Quantify Heterogeneity in Resource Selection. Presented at the Annual Conference of The Wildlife Society, Snowbird, Utah, 2 October 2010. (Author Only, Contributed).

Detar, J., Kristine, D., Greene, R.T., Weber, R. and Wagner, T. Evaluation of brook trout enhancement regulations in Northcentral Pennsylvania. Annual Meeting of the American Fisheries Society. September 12 – 16. (Author Only, Contributed).

Sweka, J.A. and Wagner, T. Evaluation of hypotheses for explaining temporal trends in Atlantic salmon parr densities in Northeast U.S. Rivers. Annual Meeting of the American Fisheries Society. September 12 – 16. (Author Only, Contributed).

Kepler, M.V., Wagner, T., Irwin, B.J., Bence, J.R., Hayes, D.B., and Lester, N.P. 2010. Spatial and Temporal Variation in Great Lakes Percid Catch-Per-Effort Data. Annual Meeting of the American Fisheries Society. September 12 – 16. (Author Only, Contributed).

K.S. Cheruvellil, P.A. Soranno, K.E. Webster, M.T. Bremigan, T.Wagner, C.A. Stow. 2010. Landscape limnology: Integrating freshwater, terrestrial, and human landscapes for ecological understanding, natural resource management and conservation. ASLO/NABS Summer Meeting, June 6 – 11, Santa Fe, New Mexico. (Author Only, Contributed).

Rennie, M. D., M.P. Ebener, and T. Wagner. 2010. Can migration mitigate the effects of ecosystem change? Patterns of dispersal, energy acquisition and allocation in Great Lakes lake whitefish (*Coregonus clupeaformis*). International Association for Great Lakes Research. May 17-21, Toronto, Canada. (Author Only, Contributed).

Wagner, T. K. Spence Cheruvellil, P.A. Soranno, K.E. Webster. A hierarchical Bayesian approach to modeling regional variation in total phosphorus – chlorophyll a relationships. North American Lake Management Society. October 2009. (Presenter & Author, Contributed).

Cheruvellil, K.S., P.A. Soranno, K.E. Webster, M.T. Bremigan, T. Wagner, C.A. Stow. Freshwater Ecosystem Classification for Landscape-scale Management. Oral presentation at the 57th Annual Meeting of the North American Benthological Society. Grand Rapids, MI. May, 2009. (Author Only, Contributed).

DeMario D., Wagner T., Miko D., Lorantas R., Lorson R., Detar J., Kristine D., Weigle J. Evaluation of Panfish Enhancement Regulations in Pennsylvania Lakes. 65th Northeastern Fish and Wildlife Conference, April 26 – 28, Lancaster, PA. (Author Only, Contributed).

Wagner T., Soranno P. A., Bremigan M. T., Spence Cheruvellil K., Webster K. E., Stow C. A. Freshwater Ecosystem Classification for Landscape-scale Management. 65th Northeastern Fish and Wildlife Conference, April 26 – 28, Lancaster, PA. (Presenter & Author, Contributed).

M. Bremigan, P. Soranno, M. Gonzalez, B. Bunnell, K. Arend, W. Renwick, R. Stein, and M. Vanni, K.S. Cheruvellil, K. Webster, C. Stow, and T. Wagner. Linking Foodweb and Landscape Models: Hydrogeomorphic Mediation of Land-use Effects on Reservoirs. Invited talk: 69th Midwest Fisheries and Wildlife Conference, Dec. 14-17, Columbus OH. (Author Only, Contributed).

Wagner, T., Jones, M. L., Ebener, M. P., Arts, M. P., Brenden, T. O., Honeyfield, D. C., Wright, G. M., Faisal, M. 2008. Spatial and temporal dynamics of lake whitefish health indicators: linking individual-based indicators to a management-relevant endpoint. 69th Midwest Fisheries and Wildlife Conference, Dec. 14-17, Columbus OH. (Presenter & Author, Contributed).

Bremigan, M., Spence Cheruvellil, K., Wagner, T., Soranno, P., Webster, K., and Alger, B. 2008. Landscape scale management for lakes: connecting lake landscapes to water chemistry and fishes (Author Only, Contributed).

Soranno P.A., Spence Cheruvellil K., Webster K.E., Bremigan M.T., and Wagner T. 2008. The effect of land use on lake chemistry: The role of spatial scale and landscape position (Author Only, Contributed).

Arts M.T., Blukacz A., Claramunt R., Ebener M., Faisal M., Fitzsimmons J., Honeyfield D., Hoyle J., Johnson T., Jones M., Kinnunen R.E., Koops M.A., Mezek T., Muir A.M., Richards A., Sutton T.M., Wagner T., and Wright G. 2008. Fatty acid profiles of lake whitefish (*Coregonus clupeaformis*) in the ever-changing Great Lakes. American Society of Limnology and Oceanography Aquatic Sciences Meeting. (Author Only, Contributed).

Wagner, T., B. Irwin, J. R. Bence, D. B. Hayes, and N. Lester. 2008. Spatial and temporal components of variation in Great Lakes fish populations: implications for management and conservation. Annual meeting of the Great Lakes Fishery Commission's Fishery Research Board, Ann Arbor, MI. (Presenter & Author, Invited).

Arts M.T., Blukacz A., Claramunt R., Ebener M., Faisal M., Fitzsimmons J., Honeyfield D., Hoyle J., Johnson T., Jones M., Kinnunen R.E., Koops M.A., Muir A.M., Sutton T.M., Wagner T., and Wright G. 2007. Spatial and temporal patterns in fatty acid profiles of lake whitefish (*Coregonus clupeaformis*) in the Great Lakes in relation to fish condition and inferred diet. Plenary talk. Societas Internationalis Limnologia (SIL) 30th Congress. Montreal, Canada. Aug. 12-18. (Author Only, Invited).

M. Eric Benbow, Tyler Wagner, Travis Brenden, Patrick Suykerbuyk, Meghan Burns, R. Christian Johnson, Mollie McIntosh, Ryan Kimbirauskas, Rebecca Kolar, Heather Williamson, Richard W. Merritt, Jiaguo Qi, Pamela L.C. Small, Daniel Boakye, Charles Quaye, Françoise Portaels. New frontiers into the ecology of Buruli ulcer disease – an update on using satellite imagery to quantify landscape-ecology linkages with disease occurrence in West Africa. World Health Organization: Annual meeting of the Global Buruli Ulcer Initiative, Geneva, Switzerland, 2-4 April 2007. (Author Only, Invited).

Wagner, T. W., Benbow M.E., Burns, M., Kolar, R. E., Merritt, R. W., Qi, J., and Small, P. L. C. 2006. A landscape-based model for predicting *Mycobacterium ulcerans* infection (Buruli ulcer) presence/absence in Benin, West Africa. Ecology of Infectious Diseases – PI Network Meeting in conjunction with the American Society of Tropical Medicine and Hygiene annual meeting. (Presenter & Author, Invited).

Wagner, T., Bence, J. R., Bremigan, M. T., Hayes, D. B., and Wilberg, M. J. 2006. Regional trends in fish mean length at age: components of variance and the power to detect trends. Annual Meeting of the American Fisheries Society. (Presenter & Author, Contributed).

Posters

Deweber, J. T. and T. Wagner. 2011. Predicted Impacts of Climate Change on Stream Habitat and Brook Trout Populations in the Eastern United States. 6th World Recreational Fishing Conference, Berlin, Germany, August 1 -4. (Author Only)

DeMario, D. Iwanowicz, L., Blazer, V., Honeyfield, D., Kepler, M., and Wagner, T. Effects of dietary restriction on PCB congener dynamics and their association with innate immune function in Channel Catfish. Annual Meeting of the American Fisheries Society. September 12 – 16. (Author Only)

Lorantas, R.M., Wagner, T., Miko, D.A., Arnold, D.A., Detar, J., Kaufman, M.L., Kuhn, K., Lorson, R., and Wnuk, R.T. 2010. Evaluation of riverine smallmouth bass recruitment indices on Pennsylvania Rivers. Annual Meeting of the American Fisheries Society. September 12 – 16. (Author Only)

Contracts, Grants and Sponsored Research

Wagner, Tyler ((Principal Investigator), Brian Irwin (Co-Principal Investigator), Joe Zydlewski (Co-Principal Investigator), "Trans-boundary management and conservation: linking large-scale dynamics to ecological monitoring and management." (October 2012 – September 2014).

Irwin, Brian (Principal Investigator), Wagner, Tyler (Co-Principal Investigator), Bence, James R (Co-Principal Investigator), "Characterization of spatial and temporal variability in fishes in response to climate change." (September 1, 2012 - August 31, 2017).

Wagner, Tyler (Co-Principal Investigator), "The effects of cross-scale interactions on freshwater ecosystem state across space and time." (May 15, 2011 - May 15, 2016).

Wagner, Tyler (Principal Investigator), "Evaluation of Wild Trout Resources and Restoration Efforts in Pennsylvania." (July 1, 2011 - June 30, 2015).

Wagner, Tyler (Co-Principal Investigator), "Modeling species response to environmental change: development of integrated, scalable Bayesian models of population persistence." (March 1, 2012 - March 1, 2014).

Wagner, Tyler (Principal Investigator), "Comparative Energetics of Lake Trout Morphotypes." (November 2, 2010 - June 1, 2013).

Wagner, Tyler (Principal Investigator), "Habitat Use, Movement, and Genetic Composition of Lake Trout in the Niagara River and Niagara Bar." (October 28, 2010 - June 1, 2013).

Wagner, Tyler (Principal Investigator), "Nations Fish Habitat at Multiple Spatial Scales in a Rapidly Changing Climate." (December 31, 2009 - March 31, 2013).

Wagner, Tyler (Principal Investigator), "Distribution of PCB Congeners in Pennsylvania Streams and Fish: Implications for Risk Assessment and Fish Health." (September 9, 2009 - December 31, 2011).

Wagner, Tyler (Co-Principal Investigator), "Spatial and Temporal Components of Variation in Great Lakes Percid Populations." (April 1, 2009 - December 31, 2010).