

# Dr. Michael L Bessert

Concentration Director, University of Wisconsin-Stout

Program Director, University of Wisconsin-Stout

Associate Professor, University of Wisconsin-Stout

Biology Department

College of Science, Technology, Engineering,

Mathematics and Management

Office: 325 Jarvis Hall-Science Wing

Phone: 715-232-2559

Email: [bessertm@uwstout.edu](mailto:bessertm@uwstout.edu)

**Research Interests:** I am interested in fish evolution, systematics, and conservation. Much of my current work is focused on molecular systematics, population genetics, and phylogeography in the North American freshwater fish genus *Cyprinella* (blue suckers), a group that inhabits large rivers in the Mississippi, Rio Grande, and Mobile basins of North America. I am the first researcher to investigate genetic structure (on multiple levels) in the genus. Mitochondrial data clearly indicate the presence of a new, undescribed species from the Rio Grande basin. In addition, nuclear markers have revealed impacts of dams on genetic structure in the Missouri River as well as incomplete lineage sorting (in particular, an allophyletic condition) between the two described species. This work has important conservation implications as the genus occurs in 22 states but none of the three species are considered stable in any of them (S3, vulnerable > SX, presumed extirpated). I have also initiated or participated in other molecular genetic-based investigations in ecology, evolution, and behavior, such as research to characterize molecular evolution of HIV-Clade C in Zambian mother/infant pairs. More recent efforts include a project to examine cloning frequency in a native plains thistle (*Cirsium undulatum*), studies of genetic mating systems in the nurseryfish (*Kurtus gulliveri*) of Australia and fathead minnow (*Pimephales promelas*) of North America, phylogeographic studies in the plains topminnow (*Fundulus sciadicus*), and initiation of a long-term ichthyomonitoring project (incl. effects of drought) of fish assemblages in the Platte River forks of western Nebraska. A new project that is taking shape here at Stout involves the assessment of genetic structure in native brook trout (*Salvelinus fontinalis*) populations of the Driftless Area in western Wisconsin. This is a developing collaboration between Dr. Chuck Bomar, John Sours and others in the Wisconsin Department of Natural Resources (WDNR), and Trout Unlimited (TU), a private organization. UW-Stout lies on the northern rim of the Driftless Area, a region that was encircled - but untouched - by ice sheets during the last glacial maximum. The degree to which this 'pocket' within the ice acted as a refugium for aquatic organisms is largely unknown. It is possible that brook trout populations survived within. This species is popular among fly fishing enthusiasts and has been stocked in many regional drainages. Still, there are a number of disjunct areas that contain populations which have never been stocked. These are of highest interest to the WDNR because stocked trout tend not to survive well in many (most?) streams. From an applied

management standpoint, the WDNR would like to know how 'genetically unique' these endemic populations really are and, secondly, how much hybridization occurs in stocked streams. Additional basic questions involve ascertainment of historical demographic patterns and an estimation of divergence time between unstocked endemics and other populations outside the Driftless Area. Using molecular techniques, we can directly test the refugium hypothesis. If the area did serve in this capacity, it is plausible that there are one or more cryptic, undescribed species in the region. I actively seek the participation of undergraduates in all of my research endeavors – both in the field and in the laboratory. As a professional educator, I know the value of hands-on, inquiry-based experiences. If you are interested in working in my lab.

## Education

- **Ph D Biological Science**  
University of Nebraska  
Lincoln, NE, 2006
- **MS Biological Science**  
University of Nebraska  
Lincoln, NE, 2002
- **BA Biology**  
Concordia University  
Seward, NE, 1992
- **BS Biology, Physical Education**  
Concordia University  
Seward, NE, 1992

## Work Experience

### Academic - Post-Secondary

- **University of Wisconsin-Stout**, Aquatic Biology  
Concentration Director  
July 2015 -
- **University of Wisconsin-Stout**, P.S.M Conservation Biology  
Program Director  
July 2015 -
- **University of Wisconsin- Stout**  
Associate Professor  
Present
- **University of Wisconsin- Stout**  
Assistant Professor  
Present

## Intellectual Contributions

### Journal Article

- Bessert, M. L., Mayden, R. L., & Burr, B. (In Preparation; Not Yet Submitted). A new species of *Cycleptus* from the Rio Grande basin. *Zootaxa*.
- Bessert, M. L., Brock, C., & Li, C. (In Preparation; Not Yet Submitted). Ichthyofaunal changes in the forks of the Platte River following five years of drought in western Nebraska . *Great Plains Research*.
- Li, C., Bessert, M. L., Macrander, J., & Ortí, G. Low variation but strong population structure in mitochondrial, *Fundulus sciadicus*. *Conservation Genetics*.

- Bessert, M. L., & Ortí, G. (In Preparation; Not Yet Submitted). Molecular systematics of the freshwater fish genus *Cycleptus* (Teleostei: Catostomidae) as inferred from Mitochondrial DNA. *Copeia*.
- Sommer, J. A., Berra, T. M., Li, C., Bessert, M. L., & Brozek, C. Paternity assessment reveals low genetic variation in a Northern Australian population of *Kurtus gulliveri*, (Perciformes: Kurtidae). *Copeia*.
- Bessert, M. L., & Ortí, G. (In Preparation; Not Yet Submitted). Rangewide population structure and intermediate polyphyly in the genus *Cycleptus* (Teleostei: Catostomidae). *Molecular Ecology*.
- Bessert, M. L., & Ortí, G. (2008). Genetic effects of habitat fragmentation on blue sucker populations in the upper Missouri River (*Cycleptus elongatus* Lesueur, 1918). *Conservation Genetics*.
- Bessert, M. L., Sitzman, C., & Ortí, G. (2007). Avoiding paralogy: diploid loci for allotetraploid blue sucker fish (*Cycleptus elongatus*, Catostomidae). *Conservation Genetics*, 8, 995-998.
- Li, C., Bessert, M. L., Macrander, J., & Ortí, G. (2007). Microsatellite loci for the Plains topminnow (*Fundulus sciadicus*, Fundulidae). *Molecular Ecology Notes*, 7, 691-693.
- Bessert, M. L., & Ortí, G. (2007). Nest resource limitation affects modes of cuckoldry in the fathead minnow, *Pimephales promelas* (Teleostei: Cyprinidae). *Journal of Heredity*, 98, 716–722.
- Bessert, M. L., & Ortí, G. (2003). Microsatellite loci for paternity analysis in the fathead minnow, *Pimephales promelas* (Teleostei: Cyprinidae).. *Molecular Ecology Note* 3, 532-534.

## Presentations

### Local - Student

- Veith, R., Yang, B., Little, A. M., Bessert, M. L., & Demezas, D. (2012). Allelopathic effects of garlic mustard (*Alliaria petiolata*) on soil bacteria. UW-Stout Research Day, Menomonie, WI.

### Uncategorized

- Bessert, M. L. (July, 2007). Genetic effects of habitat fragmentation on blue sucker populations in the Upper Missouri River (*Cycleptus elongatus* Lesueur, 1918). American Society of Ichthyologists and Herpetologists Annual Meeting, St. Louis, MO.
- Bessert, M. L. (July, 2007). Phylogeography and Conservation Genetics of the Plains Topminnow (*Fundulus sciadicus*) in Nebraska and Missouri [Actinopterygii: Fundulidae],. American Society of Ichthyologists and Herpetologists Annual Meeting, St. Louis, MO.
- Bessert, M. L. (July, 2007). Rangewide population structure and intermediate polyphyly in the genus *Cycleptus* (Teleostei: Catostomidae). American Society of Ichthyologists and Herpetologists Annual Meeting, St. Louis, MO.
- Bessert, M. L. (December, 2006). Rapid divergence? Isolation by impoundments = (genetic) isolation by distance in the upper Missouri River. Midwest Fish and Wildlife Conference, Omaha, NE.
- Bessert, M. L. (July, 2006). Conservation genetics of the Plains Topminnow (*Fundulus sciadicus*). American Society of Ichthyologists and Herpetologists Annual Meeting, New Orleans, LA.
- Bessert, M. L. (July, 2006). Population genetics of the blue sucker (*Cycleptus elongatus*) in the Upper Missouri River. American Society of Ichthyologists and Herpetologists Annual Meeting, New Orleans, LA.
- Bessert, M. L. (October, 2005). Blue sucker genetics. Missouri River Natural Resources Committee Meeting, St. Charles, MO.
- Bessert, M. L. (July, 2005). Phylogenetic structure in the genus *Cycleptus*. American Society of Ichthyologists and Herpetologists Annual Meeting, Tampa, FL.
- Bessert, M. L. (January, 2005). Molecular systematics of the genus *Cycleptus* – an update. Mississippi Interjurisdictional Cooperative Resources Association Annual Meeting, St. Louis, MO.
- Bessert, M. L. (September, 2004). Longterm ichthyofaunal monitoring in the forks of the Platte River, Nebraska. Initiative for Ecological and Evolutionary Analysis Annual Workshop, Lincoln, NE.
- Bessert, M. L. (September, 2004). Only one haplotype left in Nebraska? Conservation genetics of *Fundulus sciadicus*. Initiative for Ecological and Evolutionary Analysis Annual Workshop, Lincoln, NE.
- Bessert, M. L. (July, 2004). Systematics and population structure in the genus *Cycleptus*. Society for the Study of Evolution Annual Meeting, Fort Collins, CO.

- Bessert, M. L. (July, 2003). Microsatellite parentage assessment in *Pimephales promelas*. Society for the Study of Evolution Annual Meeting, Chico, CA.

## Grants, Contracts, and Sponsored Research

### Grant

- Bessert, M. L. Xcel Energy LCR Conservation Fund. \$26527.
- Bessert, M. L. NSF Portals of Discovery DUE Grant. \$996768.
- Bessert, M. L. Just-in-Time (Course Dvlp). \$1000.
- Bessert, M. L. Research Services (Prof Dvlp). \$5153.
- Bessert, M. L. UW-Stout FRI (Brook Trout Genetics) . \$8000.
- Bessert, M. L. USFWS/ Nebraska State Wildlife Grant. \$4300.
- Bessert, M. L. IEEA (Fundulus Project w/C. Li). \$1923.
- Bessert, M. L. IEEA (Travel Support). \$250.
- Bessert, M. L. NSFWS/ Nebraska State Wildlife Grant. \$10000.
- Bessert, M. L. Sigma Xi (Travel Support). \$150.
- Bessert, M. L. Center for Great Plains Studies (Fundulus project w/ C. Li). \$400.
- Bessert, M. L. IEEA (Fundulus Project w/C. Li). \$1001.
- Bessert, M. L. USFWS/ Nebraska State Wildlife Grant. \$12000.
- Bessert, M. L. American Museum of Natural History (Roosevelt Fund). \$2000.
- Bessert, M. L. Center for Great Plains Studies. \$450.
- Bessert, M. L. Initiative for Ecological & Evolutionary Analysis (biomonitoring project). \$5000.
- Bessert, M. L. Initiative for Ecological & Evolutionary Analysis (Travel Support). \$228.
- Bessert, M. L. Sigma Xi (Research Support). \$465.
- Bessert, M. L. Sigma Xi (Travel Support). \$300.
- Bessert, M. L. UNL SBS Special Funds (coauthored Fundulus project w/C. Li). \$1500.
- Bessert, M. L. UNL SBS Special Funds (Cycleptus project) . \$500.
- Bessert, M. L. UNL SBS Special Funds (travel support). \$383.
- Bessert, M. L. Initiative for Ecological & Evolutionary Analysis (Research Support). \$1520.
- Bessert, M. L. Initiative for Ecological & Evolutionary Analysis (Travel Support). \$100.
- Bessert, M. L. Initiative for Ecological & Evolutionary Analysis (Travel Support). \$200.
- Bessert, M. L. UNL SBS Special Funds (travel support). \$492.
- Bessert, M. L. UNL SBS Special Funds (Research support). \$3845.
- Bessert, M. L. Center for Great Plains Studies. \$500.

## Professional Memberships

- American Genetic Association (A.G.A)
- Public Population Project in Genomics
- American Fisheries Society
- American Native Fishes Association (N.A.N.F.A)
- Sigma Xi Scientific Society
- Society for the Study of Evolution
- American Society of Ichthyologists and Herpetologists

## Service

### Community

- BMB Program Development Committee (2013 - Present)
- STEM Council (2013 - Present)
- Environmental Science Program Committee (2012 - Present)
- **Aquatic Biology Concentration Coordinator**, Environmental Science Program (2012 - Present)
- Institutional Animal Care and Use Committee (2012 - Present)
- **Development Team**, Professional Science Masters in Conversation Biology (2012 - Present)
- Biotechnology Committee (2008 - Present)
- Faculty Senate (2011 - 2014)
- Faculty Senate Executive Committee (2012 - 2013)
- **Chairperson**, General Education Committee (2012 - 2013)
- General Education Committee (2009 - 2013)
- Biology Chemical Safety Committee (2011 - 2011)