

GREGORY M. CHORAK, PHD

Montana State University
Plant Sciences Department
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<https://github.com/DrDoom-EvoGen>

EDUCATION

- 2017 - 2021** **Ph.D. Plant Science Plant Genetics**, Montana State University, Bozeman, MT
Department of Plant Science and Plant Pathology.
Areas of Concentration: Herbicide Resistance, Evolutionary Ecology, Genetics, Invasive Plants, Aquatic Plants
- 2015 - 2017** **M.Sc. Aquatic Biology**, Grand Valley State University, Allendale, MI
Thesis: Genetic stock structure of yellow perch in eastern Lake Michigan: what is the importance of drowned river mouth lakes?
Areas of Concentration: Evolution, Population Genetics, Fisheries
- 2009 - 2014** **B.Sc. Biology**, Grand Valley State University, Allendale, MI
- Dean's List

PROFESSIONAL APPOINTMENTS

- 2022 -** **Post-Doctoral Researcher**, Ryan Thum Lab, Montana State University, Bozeman, MT.
Research Focus: Aquatic plant evolutionary genomics. I am using whole genome sequencing and RNA sequencing to identify quantitative trait loci and transcriptional differences in aquatic plants to predict herbicide resistance. This position is funded by a US Army Corps of Engineers grant that I co-wrote during my PhD.

PUBLICATIONS

- Chorak G. M.**, Fernando H. Correr, Lachowicz J., Reynolds G., and Thum R. A. 2023
Transcriptional responses of Eurasian (*Myriophyllum spicatum*) and hybrid (*M. spicatum* × *M. sibiricum*) watermilfoil with differing sensitivity to 2,4-D herbicide treatment. *Aquatic Botany*. 186:0304-3770.
- Chorak G. M.** and Thum R. A. 2020. Identification of resistant clones of Eurasian (*Myriophyllum spicatum*) and hybrid (*Myriophyllum spicatum* X *Myriophyllum sibiricum*)

- watermilfoil to an operational rate of fluridone. *Invasive Plant Science and Management*. 13:247-251.
- Thum, R. A. and **Chorak, G. M.** 2020. Herbicide resistance and resistance management of aquatic plants. In L. A. Gettys, W. T. Haller, and D. G. Petty (Eds.), *Biology and Control of Aquatic plants: A Best Management Practices Handbook 4th Edition* (pp. 179-184). *Aquatic Ecosystem Restoration Foundation*.
- Senegal, T., Ruetz, C. R. III, **Chorak G. M.**, Janetski D. J., Clapp D. F., Bowen G. J., and Höök, T. O. 2020. Differential habitat use patterns of yellow perch *Perca flavescens* in eastern Lake Michigan and connected drowned river mouth lakes. *Canadian Journal of Fisheries and Aquatic Sciences*. 46(5):1412-1422.
- Thum RA, **Chorak GM**, Newman R, Eltawely J, Latimor J, Elgin E, Parks S, McNair J. 2020. Genetic Diversity and differentiation in populations of invasive eurasian (*Myriophyllum spicatum*) and hybrid (*M. spicatum* × *M. sibiricum*) watermilfoil. *Invasive Plant Science and Management*. 13(2):59-67.
- Dumke, J. D., **Chorak G. M.**, Ruetz, C. R. III, Thum R. A., Wesolek J. N. 2020. Identification of Black Bullhead (*Ameiurus melas*) and Brown Bullhead (*A. nebulosus*) from the Western Great Lakes: Recommendations for Small Individuals. *American Midland Naturalist*. 183:89-103.
- Chorak, G. M.**, Dodd, L. L., Rybicki, N., Ingram, K., Buyukyoruk, M., Kadono, Y., Chen, Y. Y., and Thum, R. A. 2019a. Cryptic introduction of water chestnut (*Trapa*) in the northeastern United States. *Aquatic Botany*. 155:32-37.
- Chorak, G. M.**, Ruetz, C. R. III, Thum, R. A., Partridge, C. G., Janetski, D. J., Clapp, D. F. 2019b. Yellow perch genetic structure and habitat use among connected habitats in eastern Lake Michigan. *Ecology and Evolution*. 00:1-11.

GRANTS

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| 2020 | Co-PI on US Army Corps of Engineers Grant: BAA #19-0068 Short and long term approaches to using genetic markers to inform best management practices for invasive aquatic plants (EL-33: Aquatic Plant Control)
\$869,904 over 3 years. |
| 2018 | Aquatic Plant Management Society Graduate Student Research Fellowship.
\$40,000 over 2 years. |
| 2018 | 1 st place in the Midwest Aquatic Plant Management Societies Robert L. Johnson Memorial Research Grant competition.
\$7,500 over 1 year. |

2016 Grand Valley State University's Presidential Research Grant.
\$2,500 over 2 years.

TALKS AND PRESENTATIONS

* = Presenter

Gregory M. Chorak, Josh P. Clevenger, Alex E. Harkess, and Ryan A. Thum. Identifying a QTL for fluridone resistance in Eurasian watermilfoil (*Myriophyllum spicatum*) using an F₁ cross and low coverage whole genome sequencing. Plant and Animal Genome Conference 2023. San Diego, CA. *Poster Presentation*.

Thum R. A. and **Chorak G. M.*** Genetic and Genomic Tools to Improve Eurasian Watermilfoil Management Planning and Evaluation. International Weed Genomics Consortium 2021. Kansas City, MO. *Poster Presentation*.

Gregory M. Chorak*, Jennifer Lachowiec, Gillian Reynolds, and Ryan A. Thum. Gene expression responses to 2,4-D herbicide treatment differ between two strains of Eurasian and hybrid watermilfoil. Aquatic Plant Management Society 2021 Annual meeting. New Orleans, LA. *Oral Presentation*.

Chorak G. M.* And Thum R. A. Integrating Genetics and Herbicide Studies to Improve Watermilfoil Management Outcomes. North American Lake Management Society Annual Meeting 2020. Virtual. *Oral presentation*.

Chorak G. M.* And Thum R. A. Integrating Genetics and Herbicide Studies to Improve Watermilfoil Management Outcomes. Michigan Inland Lakes Partnership Meeting 2020. Virtual. *Oral presentation*.

Chorak G. M. And Thum R. A.* Fluridone resistant watermilfoil identified in several lakes in Michigan by genetic markers. Midwest Aquatic Plant Management Society 2020 Annual meeting. Indianapolis, IN. *Oral Presentation*.

Chorak G. M.* And Thum R. A. Identifying Gene Expression Differences to Improve Adaptive Management Outcomes of Eurasian Watermilfoil. Aquatic Plant Management Society 2019 Annual Meeting. San Diego, CA. *Oral Presentation*.

Chorak G. M.* And Thum R. A. Identifying Gene Expression Differences to Improve Adaptive Management Outcomes of Eurasian Watermilfoil. Midwest Aquatic Plant Management Society 2019 Annual Meeting. Chicago, IL. *Oral Presentation*.

Gregory M. Chorak*, Ryan A. Thum, Nancy Rybicki, Lynde L. Dodd, Kадiera S. Ingram, and Yasuro Kadono. 2018. A cryptic introduction of *Trapa* into the northeastern United States. RM-CESU 2018 Meeting – Colorado State University. Fort Collins, CO. *Invited Oral Presentation*.

Gregory M. Chorak*, Ryan A. Thum, Nancy Rybicki, Lynde L. Dodd, Kадiera S. Ingram, and Yasuro Kadono. 2018. A cryptic introduction of *Trapa* into the northeastern United States. Ecological Society of America – New Orleans, LA. *Oral Presentation*.

Chorak, G. M. and Thum R. A.* 2018. Detecting a cryptic introduction of *Trapa* sp. in the northeastern United States. Aquatic Plant Management Society. *Poster*.

Chorak, G. M.* and Thum R. A. 2018. Detecting a cryptic introduction of *Trapa* sp. in the northeastern United States. Western Aquatic Plant Management Society – Reno, NV. *Poster*

Taylor Senegal*, Carl Ruetz, Tomas Hook, David J Janetski, **Gregory Chorak**. Morphological variation in Yellow Perch in Lake Michigan and Drowned River Mouth Lakes. International Association for Great Lakes Research 2018. *Poster*.

Taylor Senegal*, Carl Ruetz, David Janetski, Tomas Höök, **Gregory Chorak**. Morphological variation in Yellow Perch *Perca flavescens* in Lake Michigan and Drowned River Mouth Lakes. Midwest Fish and Wildlife 2018. *Poster*.

Chorak G. M.*, C. R. Ruetz III, R. A. Thum, C. G. Partridge, D. F. Clapp, D. J. Janetski. Habitat heterogeneity shapes population genetic structure of yellow perch (*Perca flavescens*) in eastern Lake Michigan. Ecological Society of America 2017. Portland, OR. *Oral Presentation*.

Chorak G. M.* 2017. Yellow perch genetic stock structure in eastern Lake Michigan: what is the importance of drowned river mouth lakes? *Master's Thesis Defense, Oral Presentation*.

Chorak G. M.*, C. R. Ruetz III, R. A. Thum, C. G. Partridge, D. F. Clapp, D. J. Janetski. Genetic stock structure of yellow perch in drowned river mouths of eastern Lake Michigan. Michigan American Fisheries Society Conference 2017. *Oral Presentation*.

Colasante, J. M., **G. M. Chorak***, D. J. Janetski, C. R. Ruetz III, D. F. Clapp. Size at age comparison of yellow perch across coastal drowned river mouth lakes. Michigan American Fisheries Society Conference 2017. *Poster*.

Chorak, G. M.*, C. R. Ruetz, D. J. Koopmans, A. D. Weinke, D. J. Janetski, and B. Biddanda. Hypolimnetic hypoxia across a gradient of Lake Michigan drowned river mouth lakes. MidWest Fish and Wildlife Conference / Michigan American Fisheries Society Conference 2016. Grand Rapids, MI. *Poster*.

Pashnick J.*, R. Thum, **G. Chorak**, S. Parks. Genetic variation in natural populations of hybrid watermilfoil shows potential for adaptation and evolution of herbicide resistance. Aquatic Plant Management Society Meeting 2015. *Oral Presentation*.

Chorak, G. M.* Yellow perch population structure in drowned river mouth lakes and near-shore Lake Michigan. AWRI Holiday Seminar 2015. *Oral Presentation*.

Chorak, G. M.*, C. R. Ruetz, R. A. Thum, J. Wesolek, J. D. Dumke. Identification of Brown and Black Bullheads: Evaluating DNA Barcoding. Coastal Wetlands Monitoring Meeting (EPA/GLRI) 2015. *Poster*.

Chorak, G. M.*, C. R. Ruetz, R. A. Thum, J. Wesolek, J. D. Dumke. Identification of Brown and Black Bullheads: Evaluating DNA Barcoding. Michigan American Fisheries Society Conference 2015. *Poster*.

AWARDS

- 2021** Graduate Excellence Award in Scholarship Excellence from the Montana State University Graduate School
- 2018** Rocky Mountain Cooperative Ecosystem Studies Unit Student Award
- 2018** Western Aquatic Plant Management Society Barbra H. Mullin Student Scholarship. Covered all meeting attendance expenses
- 2018** Montana State University Plant Sciences and Plant Pathology Department Student Travel Award. **\$500**

TEACHING

Teaching Assistant – General Genetics

Montana State University Course Number: BIOB-375

Duties: Sole instructor for recitation sections, held office hours, and guest lectured when primary instructor was away.

Teaching Assistant – Evolution

Montana State University Course Number: BIOB-420

Duties: Sole instructor for recitation sections, held office hours, and guest lectured when primary instructor was away.

Teaching Assistant – Population Genetics

Montana State University Course Number BIOB-484

Duties: Sole instructor for recitation sections twice a week, held office hours, and guest lectured when primary instructor was away.

SERVICE

- 2022 -** **Member**, Montana State University Ecology Seminar Committee
- 2020 - 2021** **Student Representative**, Aquatic Plant Management Society
- 2019 - 2021** **Student Representative**, Midwest Aquatic Plant Management Society
- 2017 - 2019** **Treasurer**, Ecological Society of America, Student Section

2016 - 2017 **Treasurer**, Grand Valley Biology Graduate Club

MEDIA

Grand Valley Magazine, Sustainability, Winter 2016. Research may influence regulations of yellow perch in Michigan waters. *Article on M.Sc. Thesis.*

MEMBERSHIPS

Society for the Study of Evolution
Ecological Society of America
Aquatic Plant Management Society
Western Aquatic Plant Management Society
Midwest Aquatic Plant Management Society