

Dr. Ryan A. Thum
Montana State University
Department of Plant Science and Plant Pathology

Academic Preparation

- PhD, Dartmouth College. *Advisor: Mark McPeck* (1999 - 2004).
- Research Assistant, Savannah River Ecology Laboratory. *Advisor: Travis Glenn* (1998 - 1999).
- BSc, Florida State University. *Advisor: Frances James* (1997 - 1998).

Professional Positions Held

- Department Head, Montana State University Department of Plant Science and Plant Pathology. (July 1, 2025 - present).
- Professor, Montana State University Department of Plant Science and Plant Pathology. (July 1, 2024 - present).
- Associate Professor, Montana State University Department of Plant Science and Plant Pathology. (July 1, 2020 – June 30, 2024).
- Assistant Professor, Montana State University Department of Plant Science and Plant Pathology. (August, 2014 – June 30, 2020).
- Assistant Professor, Grand Valley State University Robert B. Annis Water Resources Institute. (2009 - 2014).
- Senior Research Scientist, Grand Valley State University Robert B. Annis Water Resources Institute. (2007 - 2009).
- Postdoctoral fellow, University of Illinois at Urbana- Champaign. *Advisor: Carla Cáceres* (2006 - 2007).
- Postdoctoral fellow, Cornell University. *Advisors: Nelson Hairston, Jr and Richard Harrison* (2004 - 2006).

Relevant Leadership Experience

- Department Head, Montana State University Department of Plant Science and Plant Pathology. (July 1, 2025 - present).
- LEAD21 class 21 (October 2025 – present) LEAD21 “develops leaders in land grant institutions who link research, academics, and extension to effectively lead in complex environments, either in their current position or as they aspire to other positions.”
- University Graduate Council, Montana State University – (September 2024 – present)
 - Curriculum Subcommittee (AY 24-25)
 - Policies and Procedures Subcommittee (AY 25-26)
- Aquatic Plant Management Society Board of Directors, including Vice President, President-Elect, President, and Past President Officer roles. (July 2015 – July 2023).
- Midwest Aquatic Plant Management Society Board of Directors, including Vice President, President-Elect, President, and Past President Officer roles (February 2015 - March 2, 2022)
- Western Aquatic Plant Management Society, Student Affairs Committee Chair. (2017 - 2019).

Professional Awards

1. T Wayne Miller Distinguished Service Award, Aquatic Plant Management Society. (July 26, 2023).
2. Outstanding journal contribution, Journal of Aquatic Plant Management (August 2023)
3. Award of Excellence for Transformative Teaching, Montana State University College of Agriculture. (May 2023).
4. Teaching Award of Merit, North American College Teachers of Agriculture. (May 11, 2020).
5. Teaching Award of Excellence, Montana State University. (February 2019).
6. Outstanding journal contribution, Journal of Aquatic Plant Management (August 2018)

7. Outstanding Research/Technical Achievement Award, Aquatic Plant Management Society (July 2017)
8. Scientist of the Year, Northeastern Aquatic Plant Management Society (2013).
9. GVSU Distinguished Early-Career Scholar Award (2010).

Professional Development Activities (Select)

LEAD21 Class 21 Participant

- LEAD21 "develops leaders in land grant institutions who link research, academics, and extension to effectively lead in complex environments, either in their current position or as they aspire to other positions."
- My aspirational leadership statement from the program is "I aspire to be a leader who cultivates open and creative environments and teams to lead adaptive change in academics, research, extension, and governance to foster discovery of meaning, purpose, and joy."

Montana State University Center for Faculty Excellence Programs

1. Mindful Mentoring Program (September – December, 2023)
2. Center for Faculty Excellence Program, "ECFS Learning Community Session 3," Montana State University, Bozeman, MT, United States. (November 14, 2023).
3. "ECFS Learning Community Session 8" (April 5, 2023).
4. "Teaching Large Enrollment Courses" (March 2023 - present).
5. "The Less-Stress Grading Structure" (March 23, 2023).
6. "ECFS Learning Community Session 7" (March 8, 2023).
7. "What Your Students Want You To Know...About Belonging" (February 22, 2022).
8. "What Your Students Want You To Know...About Being a Graduate Student" (October 13, 2020).
9. Weekly Writing Group (October, 2016 – May, 2017)
10. "Active Learning Faculty Learning" (September 14, 2016)
11. "Advising Graduate Students." (October 6, 2015).
12. "Strategic Directions for MSU Researchers" (October 7, 2014).

Other Teaching and Mentoring Workshops, Symposia, and Training

1. "Bobcat Culture of Mentoring Symposium" Montana State University (March 28, 2023).
2. "Entering Mentoring Facilitator Training" Center for the Improvement of Mentored Experiences in Research. (January 4, 2021 - January 8, 2021).
3. D2L Workshop. (August 19, 2015).
4. "Flip it! Flip your Classroom Teaching," Grand Valley State University Faculty Teaching and Learning Center. (February 11, 2014).
5. Workshop, "Glue them to their seats," Grand Valley State University Faculty Teaching and Learning Center. (February 4, 2014).
6. Workshop, "What the best students can do," Grand Valley State University Faculty Teaching and Learning Center. (September 9, 2013).

Diversity, Equity, and Inclusion

1. "DIV100: Exploring Cultural Identity," MSU Human Resources and Counseling and Psychological Services. (October 5, 2020).
2. "Mandatory Reporter Training," Office of Institutional Equity. (May 14, 2019).
3. "Inclusive Language / Inclusive Leadership," MSU Diversity and Student Inclusion Commons. (April 3, 2019).
4. Diversity and Equity Professional Development, "Reflecting on aspects of cultural identity that are salient for faculty and staff and how they impact their work" (October 22, 2018)

Other Professional Training

1. "Supervisor Training," Montana State University (November 28, 2018 - December 19, 2018).
2. "Worker Protection Standards Training" Montana State University (January 17, 2017)
3. Coursework, "National Science Foundation Innovation Corps," National Science Foundation,

- New York, New York. (April 2, 2013 - May 15, 2013).
4. "First Aid Training," American Red Cross. (May 31, 2012).

Working Groups

1. "Michigan Aquatic Invasive Species Monitoring and Management: Statewide Strategy," Michigan Department of Environmental Quality, Lansing, MI. (November 6, 2014 - November 7, 2014).
2. "Coordination of environmental DNA research efforts for threatened, imperiled, and invasive species," US Fish & Wildlife Service. (February 13, 2012).
3. "Starry Stonewort Task Force." (2010).
4. Working group on aquatic plant management issues in the upper Midwest, Army Corps of Engineers/Michigan Department of Natural Resources and Environment, Lansing, MI, USA. (September 23, 2010).

Grants & Contracts

Active

1. Oppedisano, T. (Principal), Chorak, G. M. (Co-Principal), Thum, R. (Co-Principal), "Insecticide Resistance Evolution, Surveillance, and Integrated Strategies for Sustainable Alfalfa Weevil Management", Under Review at USDA National Institute of Food and Agriculture (NIFA). (July 1, 2026 - June 30, 2029). (\$749,042)
2. Thum, R. (Principal), "Genetic screening tools to improve Eurasian watermilfoil herbicidal management outcomes", Sponsored by Michigan Department of Natural Resources (MICDEP). (May 15, 2025 - April 30, 2027). (\$250,800)
3. Thum, R. (Principal), "Resolving Species Boundaries of Closely Related Myriophyllum Species for Improved Native Identification", Sponsored by Aquatic Plant Management Society Inc (AQUPLA). (January 1, 2025 - December 31, 2026) (\$40,000)
4. Thum, R. (Principal), "Identifying, developing, and testing molecular markers to identify herbicide resistance versus susceptibility in Eurasian and hybrid watermilfoil (W912HZ-22-BAA-01 EL-34: Aquatic Plant Control)," Sponsored by Army Corps of Engineers (ARMYCOR), Federal. (October 1, 2023 - September 30, 2026). (\$991,222)
5. Chorak, G. M. (Principal), Thum, R. (Co-Principal), "Genetic Characterization of Curlyleaf Pondweed (*Potamogeton crispus*) in the United States and Identification of Genes Responsible for Turion Production," Sponsored by Minnesota State University, Mankato (MINSTA003). (June 1, 2024 - June 1, 2027). (\$664,127)
6. Thum, R.A "Genetic Identification and Mapping of Native and Introduced Eelgrass (*Vallisneria*)" Sponsored by Florida Fish and Wildlife Conservation Commission (June, 2024 – May, 2026). (\$163,786)
7. Thum, R. (Principal), "Genetic characterization of introduced European frogbit and water soldier (*Hydrocharis morsus-ranae* and *Stratiotes aloides*) to support management and biological control development," Sponsored by Army Corps of Engineers (ARMYCOR), Federal. (October 1, 2023 - September 30, 2026). (\$100,000)
8. Lachowiec, J. A. (Principal), Burrows, M. (Co-Principal), McPhee, K. E. (Co-Principal), Mumey, B. (Co-Principal), Neeley, V. (Co-Principal), Sherman, J. (Co-Principal), Thum, R. (Co-Principal), "ALLIUM Fellows: Accessible Leadership Learning through Interdisciplinary Unified Mentoring," Sponsored by USDA National Institute of Food and Agriculture (NIFA), Federal. (June 15, 2021 - June 14, 2026).

Previously awarded

9. Thum, R. (Principal), "Aquatic Ecosystem Restoration Foundation Undergraduate Summer Research Internship," Sponsored by Aquatic Ecosystem Restoration Foundation (AQUECO001), Private. (June 9, 2022 - June 30, 2024). (\$5,000)

10. Thum, R. (Principal), "Building a centralized database of watermilfoil strain geographic distribution and herbicide response for use in management decision-making," Sponsored by US Fish and Wildlife Service (USFWS), Federal. (October 1, 2021 - September 30, 2024). (\$299,742)
11. Thum, R. (Principal), "Genetic and hybrid characterization of water chestnut in the US," Sponsored by Army Corps of Engineers (ARMYCOR), Federal. (August 19, 2021 - August 18, 2023). (\$29,922)
12. Thum, R. (Principal), "Short and long term approaches to using genetic markers to inform best management practices for invasive aquatic plants (EL-33: Aquatic Plant Control)," Sponsored by Army Corps of Engineers (ARMYCOR), Federal. (September 24, 2020 – December 31, 2021). (\$868,032)
13. Thum, R. (Principal), "Genetics to improve hybrid and Eurasian watermilfoil management", Sponsored by Minnesota Environmental and Natural Resources Trust Fund; subcontract from University of Minnesota. (July, 2019 – June, 2021) \$101,000 (\$236,436 total).
14. Thum, R. (Principal), "Identifying high-risk hybrid and Eurasian watermilfoil genotypes to improve control", Sponsored by Michigan Department of Natural Resources. (April 1, 2018 - March 31, 2021). \$211,747 (\$371,295 total).
15. Thum, R. (Principal), Chorak, G. M. (Co-Principal), "Identifying Eurasian and hybrid watermilfoil gene expression differences in response to frequently used herbicides for improved adaptive management", Sponsored by Aquatic Plant Management Society. (August 1, 2018 - July 31, 2020). \$40,000
16. Thum, R. (Principal), "Genetic Characterization of Introduced Floating Hearts to Support Biological Control Development", Sponsored by US Army Research Office. (August 23, 2018 - September 1, 2019). \$40,000
17. Thum, R. (Principal), "Eurasian and hybrid watermilfoil genotype distribution in Minnesota", Minnesota Environmental and Natural Resources Trust Fund; subcontract from University of Minnesota. (July 7, 2017 - June 30, 2019). \$89,004 (\$231,375 total).
18. Thum, R. (Principal), "Spatial and temporal patterns of genotypic variation in watermilfoils: Field studies of resistance evolution potential," Sponsored by Wisconsin Department of Natural Resources. \$87,719 (February 15, 2015 – December 31, 2019). \$87,719.
19. Thum, R. (Principal), "Investigations into Water Chestnut - Genetics and Ecology," Sponsored by Army Corps of Engineers (ARMYCOR). (May 15, 2016 - September 30, 2018). \$40,000
20. Thum, R. (Principal), "Growth and efficacy of herbicide treatment on pure and hybrid Eurasian watermilfoil in Jefferson Slough, Montana", Sponsored by Jefferson County, Montana (September, 2015 – March, 2017) \$15,000.
21. Thum, R. (Principal), "Growth, spread, and herbicide treatment efficacy of pure versus hybrid Eurasian watermilfoil in Noxon Reservoir", Sponsored by Sanders County (SANCOU), Private. (June 27, 2016 - October 31, 2017). \$15,000
22. Thum, R. (Principal), "Growth, spread, and herbicide treatment efficacy of pure versus hybrid Eurasian watermilfoil in Noxon Reservoir," Sponsored by Montana Department of Natural Resources & Conservation. (May 1, 2016 - April 30, 2017). \$20,000
23. Thum, R. (Principal), "Occurrence and Distribution of Eurasian, Northern and Hybrid Watermilfoil in Lake Minnetonka and Christmas Lake: genetic analysis," Sponsored by Minnehaha Creek Watershed District. (January 15, 2016 - March 31, 2017). \$19,000
24. Thum, R. (Principal), "Yellow perch stock assessment in drowned river mouth lakes and nearshore Lake Michigan," Sponsored by Grand Valley State University (GRAVAL), University. (January 1, 2015 - December 31, 2017). \$9,495.
25. Thum, R. (Principal), "Integrated Invasive Aquatic Plant Management: Evaluating, refining and expanding the management tool box," Sponsored by Michigan Department of Natural Resources; subcontract from Central Michigan University. (May 20, 2015 - October 30, 2016). \$32,196 (\$126,327 total)
26. Thum, R. (Principal), "Occurrence and Distribution of Eurasian, Northern and Hybrid Watermilfoil in Lake Minnetonka and Christmas Lake: plant community and sample collection," Sponsored by Minnehaha Creek Watershed District (MINCRE001), Private. (May 1, 2015 - March 31, 2016). \$10,000

27. Thum, R. (Principal), Mangold, J. (Co-Principal), "Evaluation of invasiveness and control for pure versus hybrid Eurasian watermilfoil in Montana," Sponsored by Montana Department of Natural Resources & Conservation (MTDNRC), State. (May 12, 2015 - September 30, 2016). \$11,550
28. Thum, R. (Principal), "Incorporating Genetic Monitoring into Fresh Water Vegetation Mapping to Improve Adaptive Management of Lakes," Sponsored by Grand Valley State University (GRAVAL), University. (May 1, 2015 - December 1, 2015). \$5,000
29. Thum, R. (Principal), "Comparative Study of Seed Germination Rate in Hybrid vs. Eurasian and Northern Watermilfoil," Sponsored by Dickinson Conservation District (DICCON), Other. (February 11, 2015 - December 30, 2015). \$14,150
30. Thum, RA, Parks, S, Chamberlain, L "Commercialization of genetic identification services for aquatic plant management," Michigan Economic Development Corporation, Technology Transfer Talent Network (T3N) (January 2014). \$50,000.
31. Thum, RA "A quantitative genetics approach for identifying the genetic architecture of herbicide susceptibility, tolerance, and resistance in hybrid watermilfoils (*Myriophyllum spicatum* x *M. sibiricum*)", Aquatic Plant Management Society (August, 2013). \$40,000
32. Thum, RA. "Environmental DNA detection of Eurasian watermilfoil from experimental mesocosms and natural populations" Missoula County Weed District \$12,000 (August 2013)
33. Thum, RA, "Genetic inference of dispersal pathways by introduced hydrilla (*Hydrilla verticillata*)" United States Environmental Protection Agency Great Lakes Restoration Initiative (subcontract from The Nature Conservancy) (July 2013). \$19,505.
34. Thum, RA. "Development and testing of molecular markers that are capable of distinguishing invasive aquatic plants from other taxa" Teton County Weed and Pest District/Missoula County Weed District (June 2013) \$7,500.
35. Thum, RA, McNair, J, Hruska, A "Comparative Study of Seed Germination Rate in Hybrid vs. Eurasian and Northern Watermilfoil", We Energies (March 2013). \$53,231
36. Thum, RA, Parks, S, Chamberlain, L "Commercialization of Genetic Technologies for Predictive Herbicide Susceptibility Screening and Operational Treatment of Invasive Aquatic Plants," National Science Foundation (March 2013). \$50,000.
37. Ostrom, P, Ostrom, N, Thum, RA, Biddanda, BB, Lennon, J "Building Partnerships in Water Research between Grand Valley State University and Michigan State University: The Molecular Genetic Basis for Invasiveness of Milfoils and A Time-series Lake Observatory for Investigating Ecosystem Metabolism in Muskegon Lake", Michigan State University (December 2011) \$99,996
38. Thum, RA. "Evolutionary and ecological importance of hybridization and cryptic diversity in a rapidly expanding aquatic plant," Sponsored by National Science Foundation, (August 2009 - July 2011) \$149,500
39. Thum, RA, Henshaw, M, Graham, D, Patel, O "MRI: Acquisition of an automated genetic analyzer for interdisciplinary research and teaching at Grand Valley State University, an undergraduate institution," National Science Foundation, (August 2009 - July 2012) \$289,866.
40. Thum, RA. "Are hybrid Eurasian watermilfoils resistant to current control efforts?," Michigan Department of Environmental Quality \$67,646.
41. Thum, RA, Hruska, A. "Determining genetic change in Eurasian water milfoil and its relationship to management effort efficacy in the Upper Menominee River Basin," We Energies Mitigation and Enhancement Fund (January 2010 - December 2011) \$57,000.
42. Thum, RA, "Genetic Characterization and Predictive Aquatic Herbicide Susceptibility Screening for Assessment and Operational Treatment of Hybrid Milfoil Lineages," SePRO Corporation (August 2010 - June 2012) \$92,000.
43. Ruetz III, C, Thum, RA "Lake sturgeon population dynamics in the Kalamazoo River", Gun Lake Tribe, (May 2012 - April 2013) \$50,000.
44. Thum, RA and D Grimm. "Laboratory crossing studies to test hypotheses about the evolution of invasiveness by hybridization", Grand Valley State University, \$6,000.00
45. LaRue, E., Thum, RA. "Are Eurasian Watermilfoil Hybrids Less Susceptible to Herbicides than the Eurasian Watermilfoil?," Midwestern Aquatic Plant Management Society, \$2,000.
46. LaRue, E., Thum, RA. "Herbicide resistance in invasive Eurasian watermilfoil hybrids," West Michigan Chapter of the Air & Waste Management Association, \$2,000.
47. LaRue, E., Thum, RA. "The Evolution of Herbicide Resistance in the Invasive Eurasian Watermilfoil," Michigan Space Grant Consortium, \$5,000.

48. Tavalire, H., Thum, RA. "How do genotypes and biogeochemical environments interact to determine the abundance and impacts of an invasive aquatic plant?," Michigan Space Grant Consortium, \$5,000.
49. Tavalire, H., Thum, RA. "The role of genotype and environment in an aquatic plant invasion," Midwestern Aquatic Plant Management Society, \$750.
50. Tavalire, H., Thum, RA. "Does gene flow among ecologically distinct lineages fuel adaptation in an invasive aquatic plant species?," Grand Valley State University Office of Graduate Studies, \$1,000.
51. Tavalire, H., Thum, RA. "Implications of genetics and environment for management: are certain lineages of variable leaf watermilfoil more apt to grow invasively?," Northeastern Aquatic Plant Management Society, \$5,000.
52. Zuellig, M., Thum, RA. "Improved genetic methods for identification and genetic analysis of Eurasian, northern, and hybrid milfoils," Midwest Aquatic Plant Management Society, \$2,000.
53. Thum, RA. Biogeochemistry and Biocomplexity Initiative Postdoctoral Fellowship (\$80,000). Academic sponsors: Nelson G. Hairston, Jr., Richard G. Harrison, Brian Lazarro. Cornell University (2004-2006)
54. Thum, RA. "Development of molecular markers for two invasive watermilfoils: *Myriophyllum heterophyllum* and *M. spicatum*" (\$7,500). Northeast Aquatic Plant Management Society (2005 - 2006)
55. Thum, RA and JT Lennon. "Using dispersal and environmental variables to predict milfoil occurrence and susceptibility to invasion by non-native milfoil in New Hampshire lakes" New Hampshire Dept. of Environmental Services (2005) \$50,000.
56. Thum, RA and JT Lennon. "Molecular characterization of native and invasive water-milfoils in New Hampshire lakes" New Hampshire Dept. of Environmental Services (2001-2003) \$6,500.

Publications (superscripts 1 and 2 are graduate and undergraduate authors, respectively)

1. Hannay¹, D., Chorak, G. M., Harkess, A., Clevenger, J., Hale, H., Aközbeke, L., Meharg, Z., Carey, S., Meyers, Z., Cuperus, J., Thum, R. Trait mapping utilizing a newly constructed genome for allohexaploid invasive Eurasian watermilfoil (*Myriophyllum spicatum*) reveals a non-target site QTL associated with fluridone resistance. Accepted to *Evolutionary Applications*.
2. Wolfe¹, A., Bacjz, A. W., Newman, R. M., Thum, R. (2025). MilfoilMapper: A web-based tool to inform Eurasian watermilfoil management. *Invasive Plant Science and Management* 18: e31.
3. Kuzniar¹, Z. J., Harms, N. E., Ward, S. M., Thum, R. (2024). Clonal diversity of invasive *Nymphoides cristata* in the southeastern United States. *Invasive Plant Science and Management* 17: 281-286.
4. McNair, J. M., Frobish, D., Rice, E. K., Thum, R. Alternative study designs and nonparametric statistical methods for adaptive management studies of invasive plants. *Invasive Plant Science and Management* 17: 157–171. doi: 10.1017/inp.2024.17.
5. Beets¹, J. P., Sperry, B. P., Thum, R. A., & Richardson, R. J. Mesocosm evaluation of growth differences between *Vallisneria* taxa. *Journal of Aquatic Plant Management* 63: 41-44.
6. Gebhart¹, M. G., Schmid¹, S., Turner, S., Webb, D., Thum, R. A., Beets, J. P., & Turnage, L. G. Invasive Eelgrass Hybrid, *Vallisneria* × *pseudorosulata* in the Southeastern United States. Accepted to *Invasive Plant Science and Management* 18:e2. doi:10.1017/inp.2024.37
7. Beets¹, J. P., Haug, E. J., Sperry, B. P., Thum, R. A., & Richardson, R. J. Response of four *Vallisneria* taxa to aquatic herbicides. *Invasive Plant Science and Management* 17: 297-304.
8. Tippery, NP, Harms, NE, Purcell, M, Hong, SH, Hafliger, P, Killooy², K, Wolfe¹, A, Thum, RA Assessing the genetic diversity of *Nymphoides peltata* in the native and adventive range using microsatellite markers. Accepted pending minor revision to *Biological Invasions* 25:3949-3963. 10.1007/s10530-023-03151-y
9. Thum, RA, Sperry, BP, Chorak, GM, Leon, RG, Ferrell, J. (2023) Confusion and ambiguity with the terms resistance and tolerance in aquatic plant management. *Weed Science*. doi:10.1017/wsc.2023.28.
10. Chorak¹, GM, Correr, FH, Lachowicz, JA., Reynolds, G, Thum, RA (2023). Transcriptional responses to 2,4-D herbicide treatment of a Eurasian (*Myriophyllum spicatum*) and a hybrid (*M.*

- spicatum* × *M. sibiricum*) genotype of watermilfoil that differ in their sensitivity to 2,4-D. *Aquatic Botany* 186: 103631. <https://doi.org/10.1016/j.aquabot.2023.103631>
11. Gannon¹, KA, Newman, RM, Thum, RA (2022). Integrating DNA fingerprinting of invasive watermilfoil strains into aquatic vegetation monitoring and assessment. *Journal of Aquatic Plant Management* 60: 1-9.
 12. Hoff¹, HK, Thum, RA (2022). Hybridization and invasiveness in Eurasian watermilfoil (*Myriophyllum spicatum*): Is prioritizing hybrids in management justified? *Invasive Plant Science & Management* 15: 3-8.
 13. Harms, NE, Thum, RA, Gettys, LA, Markovich, IJ, French², A, Simantel², L, Richardson, R (2021). Hybridization between native and invasive *Nymphoides* species in the United States. *Biological Invasions* 23: 3003–3011.
 14. Wersal, RM, Madsen, JD, Thum, RA, Welch, M, Phuntumart, V, Schmid, SA (2021). The identification of watermilfoil, discovery of hybrid watermilfoil, and their implications for aquatic plant management in the Clark Fork River, western MT, USA. *Journal of Freshwater Ecology* 36: 111-124.
 15. Jones, A, Thum, RA (2021). Molecular confirmation of hybridization with invasive curly-leaf pondweed (*Potamogeton crispus*) in the Sacramento-San Joaquin Delta, California. *Journal of Aquatic Plant Management* 59: 1-6.
 16. Chorak¹, GM, Thum, RA (2020) Identification of resistant clones of Eurasian (*Myriophyllum spicatum*) and hybrid (*M. spicatum* × *M. sibiricum*) watermilfoil to an operational rate of fluridone. *Invasive Plant Science and Management* 13: 247-251. <https://doi.org/10.1017/inp.2020.34>
 17. Eltawely¹, JA, Newman, RM, Thum, RA (2020) Factors influencing the distribution of invasive hybrid (*Myriophyllum spicatum* × *M. sibiricum*) watermilfoil and parental taxa in Minnesota. *Diversity* 12: 120.
 18. Thum, RA, Chorak¹, GM (2020). Herbicide resistance and resistance management of aquatic plants. In Lyn A. Gettys, William T. Haller and David G. Petty (Ed.), *Biology and Control of Aquatic Plants* (4th ed.). <http://aquatics.org/bmp.html>
 19. Ortiz¹, M, Nissen, S, Thum, RA, Heilman, M, Dayan, F (2020). Current status and future prospects of herbicide for aquatic weed management. *Outlooks on Pest Management* 31: 270-275.
 20. Thum, RA, Chorak¹, GM, Newman, RM, Eltawely¹, JA, Latimore, J, Elgin, E, Parks, S (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: 59-67.
 21. Canavan, K, Canavan, S, Harms, NE, Lambertini, C, Paterson, I, Thum, RA (2020). The potential for biological control on cryptic plant invasions. *Biological Control* 144: 104243.
 22. Pashnick¹, J, Thum, RA (2020). Comparison of molecular markers to distinguish genotypes of Eurasian watermilfoil, northern watermilfoil, and their hybrids. *Journal of Aquatic Plant Management* 58: 61-66.
 23. Chorak, GM¹, Dodd, L, Rybicki, N, Ingram, K, Buyukyoruk, M², Kadono, Y, Chen, YY, Thum, RA (2019) Cryptic introduction of water chestnut (*Trapa*) in the northeastern United States. *Aquatic Botany* 155: 32-27.
 24. Thum, RA, McNair, JN (2018). Inter- and intraspecific hybridization affects vegetative growth and invasiveness in Eurasian watermilfoil. *Journal of Aquatic Plant Management* 56: 24-30.
 25. Guastello, PR¹, Thum, RA (2018). Mesocosm and field evaluation of Eurasian and hybrid watermilfoil response to endothall in Jefferson Slough, Montana. *Journal of Aquatic Plant Management* 56: 63-67.
 26. Thum, RA (2018). Genetic variation and aquatic plant management: key concepts and practical implications. *Journal of Aquatic Plant Management*, 56S: 101-106.
 27. Thum, RA, Parks, S¹, McNair, JN, Tying, P, Hausler, P, Chadderton, L, Tucker, A, Monfils, A (2017). Survival and vegetative regrowth of Eurasian and hybrid watermilfoil following operational treatment with auxinic herbicides in Gun Lake, Michigan, USA. *Journal of Aquatic Plant Management*, 55: 103-107.
 28. Taylor, LA¹, McNair, JN, Guastello, P¹, Pashnick, J¹, Thum, RA (2017). Heritable variation for vegetative growth rate in ten distinct genotypes of hybrid watermilfoil. *Journal of Aquatic Plant Management* 55: 51-57.

29. Parks, S¹, McNair, JN, Hausler, P, Tynning, P, Thum, RA (2016). Divergent responses of cryptic invasive watermilfoils to treatment with auxinic herbicides in a large Michigan Lake. *Lake and Reservoir Management* 32, 366–372.
30. Moody, ML, Palomino, PS, Weyl, PS¹, Coetzee, JA, Newman, RM, Liu, X, Xu, X, Harms, NE, Thum, RA (2016). Unraveling the biogeographic history of the Eurasian watermilfoil invasion in North America. *American Journal of Botany* 103: 709-718.
31. Weyl, PS¹, Thum, RA, Moody, ML, Newman, RM, Coetzee, JA (2016). Was *Myriophyllum spicatum* L. (Haloragaceae) recently introduced to South Africa from Eurasia? *Aquatic Botany* 128: 7-12.
32. Newton, J, Sepulveda, A, Sylvester, K, Thum, RA (2016). Potential utility of environmental DNA for early detection of Eurasian watermilfoil (*Myriophyllum spicatum*). *Journal of Aquatic Plant Management* 54: 46-49.
33. Borrowman, K¹, Sager, E, Thum, RA (2015). Growth and developmental performance of the milfoil weevil on distinct lineages of Eurasian watermilfoil and northern x Eurasian hybrid. *Journal of Aquatic Plant Management* 53: 81-87.
34. Borrowman¹, K, Sager, E, Thum, RA (2014) The distribution of biotypes and hybrids of *Myriophyllum spicatum* and associated *Euhrychiopsis lecontei* in lakes of Central Ontario. *Lake and Reservoir Management* 30: 94-104.
35. LaRue¹, EA, Grimm², D, Thum, RA (2013) Invasive hybrid watermilfoils are sexually viable: evidence from laboratory crosses and genetic analysis of natural populations. *Aquatic Botany* 109: 49-53.
36. LaRue¹, EA, Zuellig¹, MP, Netherland, MD, Heilman, MA, Thum, RA. (2013) Hybrid watermilfoil lineages are more invasive and less sensitive to a commonly used herbicide than their exotic parent (Eurasian watermilfoil). *Evolutionary Applications* 6: 462-471.
37. Tavalire¹, HF, Bugbee, GE, LaRue¹, EA, Thum, RA (2012) Hybridization and the evolution of invasiveness: Introduced hybrids are more invasive than introduced parental genotypes of variable leaf watermilfoil. *Evolutionary Applications* 5: 892-900.
38. Thum, RA, Wcisel, DJ, Zuellig¹, MP, Heilman, M, Hausler, P, Tynning, P, Huberty, L, Netherland, MD. (2012) Field documentation of decreased herbicide response by a hybrid watermilfoil population. *Journal of Aquatic Plant Management* 50: 141-146.
39. Zuellig¹, MP, Thum, RA (2012) Multiple introductions of invasive Eurasian watermilfoil and recurrent hybridization with native northern watermilfoil in North America. *Journal of Aquatic Plant Management* 50: 1-19.
40. Poovey, AG, Mudge, CR, Thum, RA, James², C., Getsinger, KD (2012) Evaluations of contact aquatic herbicides for controlling two populations of submersed flowering rush. *Journal of Aquatic Plant Management* 50: 48-54.
41. Thum, RA, Mercer, AT², Wcisel, DJ (2012). Loopholes in the regulation of invasive species: genetic identifications identify mislabeling of prohibited aquarium plants. *Biological Invasions* 14: 929-937.
42. Thum, RA, Zuellig¹, MP, Moody, M, Johnson, R, Vossbrinck, C. (2011). Molecular markers reconstruct the invasion history of variable leaf watermilfoil (*Myriophyllum heterophyllum*) and distinguish it from closely related species *Biological Invasions* 13: 1687-1709
43. Vossbrinck, C, LaRue, EA², Thum, RA, o. a. (2010) Isolation of microsatellite markers for the watermilfoil weevil *Euhrychiopsis lecontei*. *Molecular Ecology Resources* 10: 1106-1108.
44. Thum, RA, Lennon, JT. (2010). Comparative ecological niche models predict the invasive spread of variable-leaf milfoil (*Myriophyllum heterophyllum*) and its potential impact on closely related native species *Biological Invasions* 12: 133-143
45. Thum, RA., and Lennon, JT. (2006) Is hybridization responsible for aggressive growth of non-indigenous water-milfoils? *Biological Invasions* 8: 1061-1066.
46. Thum, RA, Lennon, JT, Connor, J, and Smagula, AP. (2006) A DNA fingerprinting approach for distinguishing among native and non-native milfoils. *Lake and Reservoir Management* 22: 1-6.
47. Allen, MR, Thum, RA, VanDyke, JN, and Cáceres, CE. (2012) Trait sorting in *Daphnia* colonizing man-made lakes. Submitted, *Freshwater Biology* 57: 1813-1822.
48. Allen, M, Thum, RA, Cáceres, CE. (2010). Does resource monopolization explain genetic differentiation in *Daphnia* populations? *Molecular Ecology* 19: 3076-3087

49. Thum, RA, Harrison, RG. (2009). Deep genetic divergences among morphologically similar and parapatric *Skistodiaptomus* (Copepoda: Calanoida: Diaptomidae) refute the hypothesis of Pleistocene speciation *Biological Journal of the Linnean Society* 96 150-165
50. Thum, RA, Derry, A. (2008). Contrasting patterns of mitochondrial DNA sequence divergences in two morphospecies of diaptomid copepods: taxonomic implications *Hydrobiologia* 614 197-207
51. Thum, RA. (2007) Reproductive interactions and the maintenance of parapatry in *Skistodiaptomus* copepods. *Oikos* 116: 759-768.
52. Thum, RA, and Stemberger, RS. (2006) Pure spatial and spatially-structured environmental variables explain copepod range limits. *Canadian Journal of Fisheries and Aquatic Sciences* 63: 1397-1404.
53. Turgeon, J, Stoks, R, Thum, RA, Brown, JM, and McPeck, MA. (2005) Simultaneous quaternary radiations of three damselfly clades across the holarctic. *American Naturalist* 165: E78-E107.
54. Thum, RA. (2004) Using 18S rDNA to resolve diaptomid copepod (Copepoda: Calanoida: Diaptomidae) phylogeny: an example with the North American genera. *Hydrobiologia* 519: 135-141.
55. James, FC, Hess, CA, Kicklighter, BC and Thum, RA. (2001) Ecosystem management and the niche gestalt of the red-cockaded woodpecker in longleaf pine forests. *Ecological Applications* 11: 854-870.
56. Dumke, JD, Chorak¹, GM, Ruetz, CR, Thum, RA, Wesolek, JN (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: 90-104.
57. Chorak¹, GM, Ruetz, C, Thum, RA, Partridge, C, Janetski, D, Höök, T, Clapp, D (2019). Yellow perch genetic structure and habitat use among connected habitats in eastern Lake Michigan. *Ecology and Evolution* 9: 8922–8932.
58. Homola, J¹, Ruetz III, C, Kohler, S, Thum, RA (2016). Complex post-glacial recolonization inferred from a sedentary fish: mottled sculpin *Cottus bairdii* in western Michigan, U.S.A. rivers. *Journal of Fish Biology* 89: 2234–2250.
59. Homola¹, J, Ruetz III, C, Kohler, S, Thum, RA (2014) Weak effects of a microsporidian parasite on mottled sculpin in Michigan streams. *Canadian Journal of Fisheries and Aquatic Sciences* 71: 915-926.
60. LaRue², EA, Stacey², MB, Ruetz III, C, Thum, RA. (2011). Population genetic structure of the round goby in Lake Michigan: implications for dispersal of invasive species *Hydrobiologia* 663: 71-82

Non-refereed publications

61. Latimore, J, Elgin, E, McNair, J, Parks, S, Thum, RA (2023). Identifying and managing invasive Eurasian and hybrid watermilfoils in Michigan lakes: A response to differential sensitivity to herbicides. *Michigan State University Extension*. <https://www.canr.msu.edu/resources/identifying-and-managing-invasive-eurasian-and-hybrid-watermilfoils-in-michigan-lakes-a-response-to-differential-sensitivity-to-herbicides>
62. Parks¹, S, Thum, R, Pashnick¹, J, Tynning, P, Huberty, L (2014). Incorporating genetic identifications of watermilfoils into aquatic vegetation mapping to inform management decisions. *The Michigan Riparian* 49: 22-25.
63. Thum, RA, Zuellig¹, M. *Myriophyllum heterophyllum*. In CABI International (Ed.), *Compendium of invasive species* (<http://www.cabi.org/isc>)

Presentations

Invited

1. Thum, Ryan, Invasive Plant Management 10th Biennial Research Review, "Genetic Identification and Mapping of Native and Non-native Eelgrass (*Vallisneria*)", Florida Fish Wildlife and Conservation Commission, Orlando, FL. (March 26, 2025).

2. Thum, Ryan, Wolfe, Ashley L., Aquatic Invasive Species Detectors Webinar, "Integrating genetics and herbicide studies to improve watermilfoil management outcomes", Minnesota Department of Natural Resources, virtual. (March 13, 2025).
3. Thum, Ryan, Wolfe, Ashley L., Bajcz, Alex, Newman, Raymond M., Statewide Invasive Species Program Meeting, "Current and Future Genetic Tools for Watermilfoil Management", Minnesota Department of Natural Resources, virtual. (January 28, 2025).Thum, RA, Regional Invasive Aquatic Plant Control Prioritization and Needs Assessment Workshop, "Short and long term approaches to using genetic markers to inform best management practices for invasive aquatic plants," Virtual. (January 25, 2023).
4. Thum, R, Newman, R. M., McNair, J. Great Lakes Panel on Aquatic Nuisance Species, "Building a Centralized Database of Watermilfoil Strain Geographic Distribution and Herbicide Response for Use in Management Decision Making," Virtual. (November 2, 2022).
5. Thum, R., Aquatic Plant Control Research Program FY 22 Review, "Short and long term approaches to using genetic markers to inform best management practices for invasive aquatic plants (EL-33: Aquatic Plant Control)," United States Army Corps of Engineers, virtual. (October 5, 2022).
6. Thum, R., Newman, R. M., Latimore, J., Great Lakes Panel on Aquatic Nuisance Species, "Building a Centralized Database of Watermilfoil Strain Geographic Distribution and Herbicide Response for Use in Management Decision Making," Great Lakes Panel on Aquatic Nuisance Species, Virtual. (October 26, 2021).
7. Thum, R., Aquatic Plant Control Research Program FY 21 Review, "Short and long term approaches to using genetic markers to inform best management practices for invasive aquatic plants (EL-33: Aquatic Plant Control)," United States Army Corps of Engineers, virtual. (October 6, 2021).
8. Thum, R., Webinar, "Building a Centralized Database of Watermilfoil Strain Geographic Distribution and Herbicide Response for Use in Management Decision Making," Michigan State University Extension, virtual. (May 6, 2021).
9. Chorak, G., Thum, R., Michigan Inland Lakes Partnership Webinar, "Integrating genetics and herbicide studies to improve watermilfoil management outcomes," Michigan Inland Lakes Partnership, Virtual. (December 15, 2020).
10. Thum, R., US Army Corps of Engineers Invasive Species Leadership Team Seminar Series, "Integrating genetics and herbicide studies to improve watermilfoil management outcomes," US Army Corps of Engineers Engineer Research and Development Center, Virtual. (November 12, 2020).
11. Thum, R., Newman, R., MAISRC Showcase, "Integrating genetics and herbicide studies to improve watermilfoil management outcomes," Minnesota Aquatic Invasive Species Research Center, Minneapolis, MN. (September 23, 2020).
12. Thum, R., Chorak, G., Latimore, J., Elgin, E., Michigan Inland Lakes Convention, "Integrating genetics and herbicide studies to improve watermilfoil management outcomes," Michigan Inland Lakes Partnership, East Lansing, MI. (September 17, 2020).
13. Thum, R., Newman, R., "Hybrid happenings: the latest on hybrid watermilfoil in Minnesota," Minnesota Aquatic Invasive Species Research Center, Webinar. (May 22, 2020).
14. Thum, R., University of Minnesota Fisheries, Wildlife, and Conservation Biology Seminar Series, "Ecological Genetics of Invasive Eurasian Watermilfoil, and its Implications for Precision Management," (April 9, 2019)
15. Thum, R., Institute on Ecosystems Rough Cut Seminar Series, "Precision Weed Management in Natural Systems," MSU Bozeman. (April 3, 2019).
16. Thum, R., Bair Ranch Foundation Seminar Series, "Precision Weed Management," MSU Animal and Range Sciences Department, MSU Bozeman. (February 14, 2019).
17. Thum, Ryan, Agronomy Seminar Series, "Genetic Variation and Management of Eurasian and Hybrid Watermilfoil", University of Florida, Gainesville, FL. (September 18, 2018).
18. Thum, Ryan, MAISRC Showcase, "Genetic Variation and Management of Eurasian and Hybrid Watermilfoil in Minnesota", Minnesota Aquatic Invasive Species Research Center, University of Minnesota (Minneapolis, MN). (September 12, 2018).

19. Thum, Ryan, 15th International Symposium on Aquatic Plants, "What Genetic Variation Can Tell Us About Aquatic Plant Diversity, Invasions, and Management", International Symposium on Aquatic Plants, Queenstown, New Zealand. (February 19, 2018).
20. Thum, Ryan, Annual Meeting, "Genetic variation and management of Eurasian and hybrid watermilfoil", Western Regional Panel on Aquatic Nuisance Species, Jackson, WY. (October 20, 2016).
21. Thum, Ryan, Conference, "Genetic variation and management of Eurasian and hybrid watermilfoil", Northern Rockies Invasive Plant Council, Boise, ID. (October 19, 2016).
22. Grimm, D. (Author & Presenter), Thum, R. (Author), Annual Conference, "Hybrid watermilfoil management in Montana," Montana Weed Control Association, Great Fall, MT. (January 13, 2016).
23. Thum, R., Annual Meeting, "Prospects for (Meaningfully) Integrating Molecular Biology into Aquatic Plant Management," Aquatic Plant Management Society, Myrtle Beach, SC. (July 13, 2015).
24. Thum, R. (Author & Presenter), "Evolutionary Ecology to Inform & Enhance Invasive Aquatic Plant Management," Land Resources and Environmental Sciences, Bozeman, MT. (October 6, 2014).
25. Thum, RA, Newton, J, Sepulveda, A, Ray, A, North American Congress for Conservation Biology, Missoula, MT, "environmental DNA detection of Eurasian watermilfoil in experimental mesocosms and natural populations", (July 2014).
26. Parks, S., Thum, R., Michigan Lakes and Streams Association Annual Meeting, "Benefits of incorporating genetic identification of watermilfoils into aquatic vegetation mapping," Michigan Lakes and Streams Association, Boyne, MI. (May 2, 2014).
27. Thum, R., Seminar, "Using evolutionary genetics to inform and enhance invasive aquatic plant management," Montana State University Plant Science and Plant Pathology Department, Bozeman, MT. (March 26, 2014).
28. Thum, R., Great lakes Science in Action, "Using genetic research to manage invasive aquatic plants: a public-private partnership," Central Michigan University Institute for Great Lakes Research, Mount Pleasant, MI. (April 4, 2014).
29. Thum, RA & Grimm, D, Midwestern Aquatic Plant Management Society, Chicago, IL, "Artificial crosses between Eurasian and northern watermilfoil confirm first-generation hybrid vigor as a cause of increased seed germination and vegetative growth", (March 2014).
30. Thum, RA & Grimm, D, Midwestern Aquatic Plant Management Society, Chicago, IL, "Intraspecific hybridization between distinct Eurasian watermilfoil biotypes results in vigorous genotypes of "pure" Eurasian watermilfoil", (March 2014).
31. Thum, RA & Parks, S, Northeastern Aquatic Plant Management Society, Connecticut "Different invasion potential by visually cryptic watermilfoils stresses the importance of accurate identifications" (January 23, 2014)
32. Thum, RA, Michigan Department of Environmental Quality, "Hybrid watermilfoils: an emerging issue for aquatic invasive species management in Michigan," Lansing, MI. (November 7, 2013).
33. Thum, RA, "Patterns of growth, reproduction, and herbicide sensitivity in natural and synthetic populations of hybrid watermilfoils," Michigan Chapter of the North American Lake Management Society Lunch and Learn Seminar Series. (November 1, 2013).
34. Thum, RA, Midwest Aquatic Plant Management Society "Genetic and ecological diversity of hybrid watermilfoils," Cleveland, OH. (March 5, 2013).
35. Thum, RA, Michigan Department of Environmental Quality, "Hybrid watermilfoils: biology and management," Lansing, MI. (January 30, 2013).
36. Thum, R., Michigan Chapter of the North American Lake Management Society annual conference, Tustin, MI, "Hybrid Eurasian watermilfoil: research, challenges, and perceptions", (September 21, 2012).
37. Thum, RA. "Hybridization and the evolution of invasiveness in watermilfoil" Western Michigan University (November 2011)
38. Thum, RA. "Genetic approaches to studying herbicide resistance: where we're at, and where we might go". Special session on herbicide resistance at the Aquatic Plant Management Society's Annual Meeting (July 2011)

39. Thum, RA., "Molecular ecology of watermilfoil invasions," Central Michigan University, (November 2010).
40. Thum, RA., "Molecular Ecology of Cryptic Invasive Aquatic Plants," Grand Valley State University (February 2008).
41. Thum, RA. "Integrating historical biogeography, ecology, and evolution with invasion biology," Michigan State University's Kellogg Biological Station (November 2007).
42. Thum, RA. "Zooplankton community assembly at local and regional scales.", University of Wisconsin, Madison (2007).
43. Thum, RA "Integrating historical biogeography and evolution with ecological studies of species ranges and co-occurrence.", Wells College (2006)
44. Thum, RA. "The influences of environmental gradients and reproductive interactions on the maintenance of parapatry in *Skistodiaptomus* copepods.", Cornell University (2004)
45. Thum, RA. "Molecular phylogenetics and phylogeography of diaptomid copepods.", Lehigh University (2000).

Contributed (*since faculty member status in 2008 only)

46. Chorak, Gregory M. (Author & Presenter), Knight, Ian, Weyl, Philip, Hafliger, Patrick, Humair, Laureline, Thum, Ryan, Annual Meeting, "Genetic Diversity and Geographic Origin of Water Soldier (*Stratiotes aloides*) in Canada", Aquatic Plant Management Society, Providence, RI. (July 16, 2025).
47. Chorak, Gregory M. (Author & Presenter), Thum, Ryan, Annual Meeting, "Genetic Identification and Diversity of Native and Introduced Eelgrass (*Vallisneria*)", Aquatic Plant Management Society, Providence, RI. (July 16, 2025).
48. Kaiser, Mallory (Author & Presenter), Wersal, Ryan, Weyl, Philip, Thum, Ryan, Annual Meeting, "Characterization of the Genetic Diversity of Curlyleaf Pondweed (*Potamogeton crispus*) in the Contiguous United States and Canada", Aquatic Plant Management Society, Providence, RI. (July 15, 2025).
49. Hannay, Del (Author & Presenter), Thum, Ryan, Annual Meeting, "Resolving Species Boundaries of Closely Related Myriophyllum Species for Improved Native Identification", Aquatic Plant Management Society, Providence, RI. (July 15, 2025).
50. Hannay, Del (Author & Presenter), Chorak, Gregory M., Harkess, Alex, Clevenger, Josh, Akozbek, Laramie, Meharg, Zachary, Carey, Sarah, Thum, Ryan A., Annual Meeting, "Trait mapping reveals a non-target site QTL associated with fluridone resistance in Eurasian watermilfoil", Aquatic Plant Management Society, Providence, RI. (July 15, 2025).
51. Hannay, Del (Author & Presenter), Chorak, Gregory M., Harkess, Alex, Clevenger, Josh, Akozbek, Laramie, Meharg, Zachary, Carey, Sarah, Thum, Ryan A., Annual Meeting, "Trait mapping reveals a non-target site QTL associated with fluridone resistance in Eurasian watermilfoil", Society for the Study of Evolution, Athens, GA. (June 23, 2025).
52. Wolfe, Ashley L. (Author & Presenter), Thum, Ryan, Annual Meeting, "Characterizing fluridone response in Eurasian watermilfoil using small scale herbicide assays", Midwest Aquatic Plant Management Society, Chicago, IL. (February 25, 2025).
53. Hannay, Del (Author & Presenter), Thum, Ryan, Annual Meeting, "Resolving Species Boundaries of Closely Related Myriophyllum Species for Improved Native Identification", Society for the Study of Evolution, Athens, GA. (June 22, 2025).
54. Wolfe, A. L., Newman, R., Thum, R. A., Annual Conference, "A Centralized Database of Watermilfoil Strains Across the United States: Initial Insights, and Utility for Stakeholder Communication and Management Decision-Making," Midwest Aquatic Plant Management Society, Grand Rapids, MI. (March 15, 2023).
55. Chorak, G. M., Clevenger, J. P., Harkess, A. E., Thum, R. A., Annual Conference, "Identifying a QTL for fluridone resistance in Eurasian watermilfoil (*Myriophyllum spicatum*) using an F1 cross and low coverage whole genome sequencing," Midwest Aquatic Plant Management Society, Grand Rapids, MI. (March 15, 2023).
56. Kuzniar, Z. J., Thum, R. A., Annual Conference, "Clonal Diversity of Invasive Crested Floating Heart in the Southeastern United States," Western Aquatic Plant Management Society, Boise, ID. (March 2, 2023).

57. Wolfe, A. L., Newman, R., Thum, R. A., Annual Conference, "A Centralized Database of Watermilfoil Strains Across the United States: Initial Insights, and Utility for Stakeholder Communication and Management Decision-Making," Western Aquatic Plant Management Society, Boise, ID. (March 1, 2023).
58. Thum, R. A., Chorak, G. M., Annual Conference, "Whole-genome Sequencing of an Herbicide Selection Experiment Identifies a Chromosomal Region Associated with Fluridone Resistance in Eurasian Watermilfoil," Western Aquatic Plant Management Society, Boise, ID. (March 1, 2023).
59. Chorak, G., Clevenger, J., Harkess, A., Thum, R., Plant and Animal Genome Conference, "Identifying a QTL for fluridone resistance in Eurasian watermilfoil using an F1 cross and low coverage whole genome sequencing," San Diego, CA. (January 14, 2023).
60. Thum, R.A., Chorak, G. M., Annual Meeting, "Whole-genome sequencing of an herbicide selection experiment identifies a chromosomal region associated with fluridone resistance in Eurasian watermilfoil," Aquatic Plant Management Society, Greenville, SC. (July 21, 2022).
61. Thum, R.A., Chorak, G., Gannon, K., Hoff, H., Wolfe, A. International Conference on Aquatic Invasive Species, "Genetic and genomic tools to improve invasive watermilfoil management planning and evaluation in the US," virtual. (April 22, 2022).
62. Thum, R.A., Chorak, G., Gannon, K., Hoff, H., Newman, R. M., Wolfe, A., Annual Conference, "Building a Centralized Database of Watermilfoil Strain Geographic Distribution and Herbicide Response for Use in Management Decision Making," Midwest Aquatic Plant Management Society, Lake Geneva, Wisconsin. (March 1, 2022).
63. Hoff, H. K., Thum, R., Annual Meeting, "Hybridization and invasiveness in Eurasian watermilfoil (*Myriophyllum spicatum*): is prioritizing hybrids in management justified?," Midwest Aquatic Plant Management Society, Lake Geneva, Wisconsin. (March 1, 2022).
64. Thum, R., Chorak, G. M., Annual Conference, "Genetic and Genomic Tools to Improve Eurasian Watermilfoil Management Planning and Evaluation," International Weed Genomics Consortium, Kansas City, MO. (September 22, 2021).
65. Eastlund, I., Chorak, G. M., Hoff, H., Thum, R., Invasion Genomics, "Herbicide response in invasive Eurasian and hybrid watermilfoil: a genotype approach," Consortium for Plant Invasion Genomics, Lafayette, LA. (August 10, 2021).
66. Thum, R., Invasion Genomics, "Short and long-term approaches to integrate genetics into invasive aquatic plant," Consortium for Plant Invasion Genomics, Lafayette, LA. (August 10, 2021).
67. Hoff, H. K., Thum, R., Annual Meeting, "Hybridization and invasiveness in Eurasian watermilfoil (*Myriophyllum spicatum*): is prioritizing hybrids in management justified?," Aquatic Plant Management Society, New Orleans, LA. (July 29, 2021).
68. Hoff, H. K., Thum, R., Annual Conference, "Hybridization and invasiveness in Eurasian watermilfoil (*Myriophyllum spicatum*): Is prioritizing hybrids in management justified?," Ecological Society of America, virtual. (July 20, 2021).
69. Thum, R., Chorak, G. M., Wolfe, A., Newman, R. M., Annual Meeting, "Building a Centralized Database of Watermilfoil Strain Geographic Distribution and Herbicide Response for Use in Management Decision Making," Aquatic Plant Management Society, New Orleans, LA. (July 14, 2021).
70. Chorak, G. M., Lachowicz, J. A., Reynolds, G., Thum, R., Annual Meeting, "Gene Expression Responses to 2,4-D Herbicide Treatment Differ Between Two Strains of Eurasian and Hybrid Watermilfoil," Aquatic Plant Management Society, New Orleans, LA. (July 14, 2021).
71. Thum, R., Harms, N., Tippery, N., Killoy, K., Wolfe, A., Annual Meeting, "Genetic Diversity and Geographic Origins of Invasive Yellow Floating Heart (*Nymphoides peltata*) in the United States," Aquatic Plant Management Society, New Orleans, LA. (July 14, 2021).
72. Thum, R., Chorak, G., Newman, R. M., Latimore, J., Elgin, E., Weed Science Society of America Annual Conference, "Integrating genetics and herbicide studies to improve watermilfoil management outcomes," Weed Science Society of America, Virtual. (February 17, 2021).
73. Chorak, G., Thum, R., North American Lake Management Society Annual Conference, "Integrating genetics and herbicide studies to improve watermilfoil management outcomes," North American Lake Management Society, Virtual. (November 16, 2020).
74. Eltawely, J., Newman, R., Thum, R., North American Lake Management Society Annual Meeting, "Distribution of hybrid watermilfoil (*M. spicatum* x *M. sibiricum*) and parental taxa genotypes

- across lakes in Minnesota," North American Lake Management Society, Minneapolis, MN. (November 16, 2020).
75. Pashnick, J. (Author & Presenter), Chorak, G., Thum, R. (Author & Presenter), Annual Meeting, "The Eurasian Watermilfoil Genome Sequencing Project: Implications for Identifying Genes Associated with Herbicide Response," Midwest Aquatic Plant Management Society, Indianapolis, IN. (February 12, 2020).
 76. Chorak, G., Thum, R. (Author & Presenter), Midwest Aquatic Plant Management Society Annual Meeting, "Fluridone Resistant Watermilfoil Identified in Several Lakes in Michigan by Genetic Markers," Midwest Aquatic Plant Management Society, Indianapolis, IN. (February 12, 2020).
 77. Thum, R. (Author & Presenter), Chorak, G., Newman, R., Eltawely, J., Latimore, J., Elgin, E., Parks, S., McNair, J., Annual Meeting, "Spatial and temporal patterns of genetic variation in lakes with Eurasian and hybrid watermilfoil in the Upper Midwest," Aquatic Plant Management Society, San Diego, CA. (July 17, 2019).
 78. Newman, R., Eltawely, J., Thum, R. (Author & Presenter), Annual Meeting, "Distribution of Eurasian (*Myriophyllum spicatum*) and Eurasian x northern (*M. sibiricum*) hybrid watermilfoil in Minnesota," Aquatic Plant Management Society, San Diego, CA. (July 15, 2019).
 79. Haug, E., Hoyle, S., Richardson, R., Thum, R. (Author & Presenter), McNabb, T., Getsinger, K., Annual Meeting, "Herbicide concentration exposure time evaluations for Loon Lake, WA: invasive watermilfoil genotypes," Aquatic Plant Management Society, San Diego, CA. (July 15, 2019).
 80. Chorak, G. M. (Author & Presenter), Lachowicz, J. A. (Author), Thum, R. (Author), Western Aquatic Plant Management Society and Aquatic Plant Management Society 59th Annual Meeting, "Identifying gene expression differences to improve adaptive management outcomes of watermilfoil," Western Aquatic Plant Management Society and Aquatic Plant Management Society, San Diego. (July 14, 2019).
 81. Thum, Ryan (Author & Presenter), Chorak, Greg, Newman, Ray, Eltawely, Jasmine, McNair, James, Parks, Syndell, Latimore, Jo, Elgin, Erick, Annual Conference, "Management implications of genetic similarity and differentiation of Eurasian and hybrid watermilfoil in Michigan and Minnesota lakes", Midwest Aquatic Plant Management Society, Chicago, IL. (February 27, 2019).
 82. Chorak, Greg (Author & Presenter), Thum, Ryan, Annual Conference, "Identifying hybrid watermilfoil gene expression differences to improve adaptive management outcomes for watermilfoil control", Midwest Aquatic Plant Management Society, Chicago, IL. (February 26, 2019).
 83. Pashnick, J. (Author & Presenter), Thum, R., Plant and Animal Genome Conference, "Comparison of molecular markers to distinguish genotypes of Eurasian watermilfoil, northern watermilfoil, and their hybrids," San Diego, CA. (January 9, 2019).
 84. Eltawely, Jasmine (Author & Presenter), Thum, Ryan (Author), Newman, Ray (Author), Pashnick, Jeff (Author), Annual Conference, "Accuracy of visual identification of hybrid watermilfoil", Aquatic Plant Management Society. (July 16, 2018).
 85. Chorak, Greg (Author), Thum, Ryan (Author & Presenter), Annual Conference, "Detecting a cryptic invasion of *Trapa* sp. in the northeastern United States", Aquatic Plant Management Society, Buffalo, NY. (July 16, 2018).
 86. Chorak, Greg (Author & Presenter), Thum, Ryan, Annual Conference, "Detecting a cryptic invasion of *Trapa* sp. in the northeastern United States", Western Aquatic Plant Management Society, Reno, NV. (March 27, 2018).
 87. Thum, Ryan, Guastello, Paula (Author), Annual Conference, "Eurasian watermilfoil management in Montana", Western Aquatic Plant Management Society, Reno, NV. (March 27, 2018).
 88. Guastello, Paula (Author & Presenter), Thum, Ryan (Author), Annual Meeting, "Mesocosm and Field Evaluation of Eurasian and Hybrid Watermilfoil Response to Endothall in Jefferson Slough, Montana", Midwest Aquatic Plant Management Society, Cleveland, OH. (February 28, 2018).
 89. Thum, Ryan, 20th International Conference on Aquatic Invasive Species, "How do we identify high-risk genotypes for adaptive management of Eurasian and hybrid watermilfoil?", International Conference on Aquatic Invasive Species, Coral Springs, FL. (October 2017).
 90. Chorak, Gregory M. (Author & Presenter), Ruetz, Carl R. (Author), Thum, Ryan (Author), Partridge, C G. (Author), Clapp, D F. (Author), Janetski, D J. (Author), Annual Conference, "Genetic stock structure of yellow perch in drowned river mouths of eastern Lake Michigan.", Michigan American Fisheries Society. (2017).

91. Chorak, Gregory M. (Author & Presenter), Ruetz, Carl R. (Author), Thum, Ryan (Author), Partridge, C G. (Author), Clapp, D F. (Author), Janetski, D J. (Author), Annual Conference, "Habitat heterogeneity shapes population genetic structure of yellow perch (*Perca flavescens*) in eastern Lake Michigan", Ecological Society of America, Portland, OR. (August 2017).
92. Reidy, Darren M. (Author & Presenter), Harrison, S (Author), Jansen, M A. (Author), Thum, Ryan, Annual Meeting of Irish Freshwater Biologists, "Investigating the Genetic Diversity of *Myriophyllum aquaticum*, a High Risk Aquatic Invasive Species in Ireland", National Biodiversity Data Centre, Dundalk Institute of Technology, Ireland. (March 2017).
93. Guastello, Paula (Author & Presenter), Thum, Ryan (Author), Annual Meeting, "Evaluating efficacy of endothall treatment on Eurasian and hybrid watermilfoil in Jefferson Slough, Montana", Western Aquatic Plant Management Society, Coeur d'Alene, ID. (March 15, 2017).
94. Thum, Ryan, Fieldseth, Eric, Newman, Ray, Annual Meeting, "How do we identify "high-risk" Eurasian and hybrid watermilfoil genotypes?", Western Aquatic Plant Management Society, Coeur d'Alene, ID. (March 15, 2017).
95. Pashnick, Jeff (Author & Presenter), Thum, Ryan, Annual Meeting, "A comparison of molecular
96. Thum, Ryan, Fieldseth, Eric, Newman, Ray, Annual Meeting, "How do we identify "high-risk" Eurasian and hybrid watermilfoil genotypes?", Midwestern Aquatic Plant Management Society, Milwaukee, WI. (February 28, 2017).
97. Dodd, Lynde, Rybicki, Nancy, Thum, Ryan, Harms, Nathan, Annual Conference, "Investigations into water chesnut (*Trapa* spp.): genetics and ecology", Northeastern Aquatic Plant Management Society. (January 11, 2017).
98. Tucker, Andrew, Chadderton, Lindsay, Monfils, Anna, Cahill, Blake, Dame, Heather, Tynning, Pam, Hausler, Paul, Thum, Ryan, McNair, James, Annual Conference, "Going to the Mat: Biodegradable benthic mats for invasive aquatic plant control", Upper Midwest Invasive Species Conference, La Crosse, WI. (October 16, 2016).
99. Fieldseth, Eric, Newman, Ray, Thum, Ryan, Annual Conference, "Occurrence and Distribution of Eurasian, Northern and Hybrid Watermilfoil in Lake Minnetonka and Christmas Lake: Genetic Analysis", Upper Midwest Invasive Species Conference, La Crosse, WI. (October 16, 2016).
100. Monfils, Anna, Cahill, Blake, Dame, Heather, Chadderton, Lindsay, Tucker, Andrew, Tynning, Pam, Hausler, Paul, Thum, Ryan, McNair, James, Annual Conference, "Starry Stonewort (*Nitellopsis obtusa*): Research efforts towards an integrated management plan", Upper Midwest Invasive Species Conference, La Crosse, WI. (October 16, 2016).
101. McNair, J., Thum, R., Parks, S., Annual Conference, "Modeling lake invasions by cryptic watermilfoil taxa and their eco-evolutionary responses to management," Society for Freshwater Science, Sacramento, CA. (May 25, 2016).
102. Grimm, D., Thum, R., Annual Conference, "How general is the trend of increased invasiveness of hybrid watermilfoil, and do hybrid and Eurasian watermilfoil show equal response to endothall?," Midwestern Aquatic Plant Management Society, Grand Rapids, MI. (March 8, 2016).
103. Thum, R., Parks, S., McNair, J., Tynning, P., Hausler, P., Monfils, A., Dame, H., Chadderton, L., Tucker, A., Annual Conference, "Monitoring sources of regrowth of Eurasian watermilfoil following auxinic herbicide treatment in Gun Lake, MI," Midwestern Aquatic Plant Management Society, Grand Rapids, MI. (March 8, 2016).
104. Parks, S., Thum, R., McNair, J., Tynning, P., Hausler, P., Monfils, A., Chadderton, L., Tucker, A., Annual Conference, "Response of pure versus hybrid Eurasian watermilfoil under operational management with auxinic herbicides and implications for adaptive management program planning," Midwestern Aquatic Plant Management Society, Grand Rapids, MI. (March 8, 2016).
105. Dame, H., Monfils, A., Chadderton, L., Tucker, A., Tynning, P., Hausler, P., Thum, R., McNair, J., Annual Conference, "Starry Stonewort (*Nitellopsis obtusa*): Research efforts towards an integrated management plan," Midwestern Aquatic Plant Management Society, Grand Rapids, MI. (March 7, 2016).
106. Moody, M. L. (Author & Presenter), Mohl, J. (Author), Palomino, N. (Author), Thum, R. A. (Author), Weyl, P. (Author), Annual Meeting, "Unraveling the history of the North American Eurasian watermilfoil invasion using traditional and RADseq data," American Botanical Society. (July 27, 2015).
107. Pashnick, J. (Author & Presenter), Parks, S. (Author), Chorak, G. (Author), Thum, R. (Author), Annual Meeting, "Evaluating the Potential for Herbicide Resistance Evolution in Hybrid

- Watermilfoil using a Temporal Genetic Analysis Pre- Versus Post-treatment with Auxinic Herbicides," Aquatic Plant Management Society, Myrtle Beach, SC. (July 14, 2015).
108. Grimm, D. (Author & Presenter), Thum, R. (Author), Annual Meeting, "Laboratory Crosses Demonstrate that Interspecific and Intraspecific Hybridization Can Lead to Rapid Increases in Invasive Growth," Aquatic Plant Management Society, Myrtle Beach, SC. (July 14, 2015).
 109. Rybicki, N. B. (Author & Presenter), Striano, E. (Author), Thum, R. (Author), Annual Meeting, "A Novel Invasive Species of Water Chestnut Found in the Potomac River near Washington, D.C.," Aquatic Plant Management Society, Myrtle Beach, SC. (July 13, 2015).
 110. Parks, S. (Author & Presenter), Thum, R., Annual Meeting, "Impacts of Herbicide Management on Watermilfoil Species Dynamics in a Field Setting," Aquatic Plant Management Society, Myrtle Beach, SC. (July 13, 2015).
 111. Parks, S. (Author & Presenter), Thum, R., Great Lakes Aquatic Nuisance Species Panel Meeting, "How Genetic Methods Can Influence the Way We Assess Watermilfoil," Aquatic Plant Management Society. (April 17, 2015).
 112. Thum, R. (Author & Presenter), Parks, S., Schulte, L., McNair, J., Annual Conference, "A numerical simulation model to evaluate management strategies and the risk of herbicide resistance in Eurasian watermilfoil," Midwestern Aquatic Plant Management Society, Indianapolis, IN. (February 24, 2015).
 113. Parks, S., Thum, R., Annual Conference, "Changes in the relative distribution and abundance of pure versus hybrid watermilfoil during operational management on a large Michigan lake," Midwestern Aquatic Plant Management Society, Indianapolis, IN. (February 24, 2015).
 114. Schulte, L., Thum, R., Annual Conference, "Why are some hybrid genotypes more invasive than others?: Genetic variation for 2,4-D sensitivity in Eurasian and northern watermilfoil genotypes," Midwestern Aquatic Plant Management Society, Indianapolis, IN. (February 24, 2015).
 115. Dumke, J., Ruetz, C., Chorak, G. (Author & Presenter), Thum, R. (Author), Wesolek, J., Annual Meeting, "New Information Regarding Identification of Young Brown and Black Bullheads," American Fisheries Society - Wisconsin Chapter, Eau Claire, WI. (February 25, 2015).
 116. Chorak, G. (Author & Presenter), Ruetz, C., Thum, R. (Author), Wesolek, J., Dumke, J., Annual Meeting, "Identification of Brown and Black Bullheads: Evaluating Genetic Barcoding," American Fisheries Society. (January 20, 2015).
 117. Parks, S. (Author & Presenter), Thum, R. (Author), Annual Meeting, "Potential impacts of genetic methods on invasive plant management," North American Lake Management Society, Duluth, MN. (November 17, 2014).
 118. Parks, S. (Author & Presenter), Thum, R. (Author), Upper Midwest Invasive Species Conference, "Potential impacts of genetic methods on invasive plant management," Duluth, MN. (October 15, 2014).
 119. Parks, S. (Author & Presenter), Thum, R., Annual Meeting, "Benefit of Incorporating Genetic Identification into Aquatic Vegetation Mapping," Aquatic Plant Management Society, Savannah, GA. (July 14, 2014).
 120. Schulte, L.-A. (Author & Presenter), Thum, R., Annual Meeting, "Potential for herbicide resistance evolution in hybrid watermilfoil," Aquatic Plant Management Society, Savannah, GA. (July 14, 2014).
 121. Schulte, L.-A. (Author & Presenter), Thum, R. (Author), Joint Aquatic Sciences Meeting, "Potential for adaptive evolution in invasive watermilfoil," Portland, OR. (May 20, 2014).
 122. Thum, R. (Author & Presenter), Grimm, D. (Author), Schulte, L.-A. (Author), McNair, J. (Author), Joint Aquatic Sciences Meeting, "Sexual reproduction and rapid evolution in a clonal invasive aquatic plant species," Portland, OR. (May 20, 2014).
 123. Schulte, L. (Author & Presenter), Grimm, D. (Author), Parks, S. (Author), Thum, R. (Author), McNair, J. (Author), Great lakes Science in Action, "Data, models, and management: Collectively working together," Central Michigan University Institute for Great Lakes Research, Mount Pleasant, MI. (April 4, 2014).
 124. Thum, R., Great lakes Science in Action, "Using genetic research to manage invasive aquatic plants: a public-private partnership," Central Michigan University Institute for Great Lakes Research, Mount Pleasant, MI. (April 4, 2014).
 125. Thum, R., Grimm, D., Midwestern Aquatic Plant Management Society Annual Conference, "Artificial crosses between Eurasian and northern watermilfoil confirm first-generation hybrid vigor

- as a cause of increased seed germination and vegetative growth," Midwest Aquatic Plant Management Society Annual Conference, Chicago, IL. (March 3, 2014).
126. Parks, S., Thum, R., Midwest Aquatic Plant Management Society Annual Conference, "Benefits of incorporating genetic identification of watermilfoils into aquatic vegetation mapping," Midwest Aquatic Plant Management Society Annual Conference, Chicago, IL. (March 3, 2014).
 127. Schulte, L., Thum, R., Midwest Aquatic Plant Management Society Annual Conference, "Genetic variation for 2,4-D sensitivity in Eurasian, northern, and hybrid watermilfoil," Midwest Aquatic Plant Management Society Annual Conference, Chicago, IL. (March 3, 2014).
 128. Thum, R., Grimm, D., Midwest Aquatic Plant Management Society Annual Conference, "Intraspecific hybridization between distinct Eurasian watermilfoil biotypes results in vigorous genotypes of "pure" Eurasian watermilfoil," Midwest Aquatic Plant Management Society Annual Conference, Chicago, IL. (March 3, 2014).
 129. Wesolek, J. N. (Presenter), Ruetz III, C. (Author), Thum, R. (Author), Annual Meeting, "Genetic structure of yellow perch in coastal areas of Lake Michigan," Michigan Chapter of the American Fisheries Society, Holland, Michigan. (February 25, 2014).
 130. Sepulveda, A. (Author & Presenter), Thum, R. (Author), Newton, J. (Author), Ray, A. (Author), Conference, "Using environmental DNA for the early detection of Eurasian watermilfoil (*Myriophyllum spicatum*)," Northern Rockies Invasive Plant Council, Spokane, WA. (February 12, 2014).
 131. Parks, S., Thum, R., Northeastern Aquatic Plant Management Society Annual Conference, Northeastern Aquatic Plant Management Society, Connecticut. (January 23, 2014).
 132. Thum, RA & LaRue, EA, Ecological Society of America Annual Meeting, "Hybridization and the evolution of invasiveness in herbicide-managed lakes," Minneapolis, MN. (August 2013).
 133. Thum, RA, North American Lake Management Society, Madison, WI, "Reduced herbicide susceptibility in hybrid watermilfoils: research and management", (November 9, 2012)
 134. Thum, RA, LaRue, EA, Zuellig, MP, Society for the Study of Evolution, Ottawa, Ontario, Canada, "Hybridization and rapid evolution of invasive aquatic plants in herbicide-treated lakes", (July 2012).
 135. Thum, R.A, LaRue, EA, Midwest Aquatic Plant Management Society, Milwaukee, WI, "Evidence for reduced sensitivity to 2,4-D among hybrid watermilfoils in Michigan's Upper and Lower Peninsulas", (February 28, 2012).
 136. Heilman, M., Thum, RA., Netherland, M. D., Zuellig, M. P., Wcisel, D. , Berger, S., "Differential Aquatic Herbicide Responses in Eurasian X Northern Watermilfoil Hybrids (*Myriophyllum spicatum* X *M. sibiricum*) and Implications for Future Management," North American Lake Management Society, Spokane, WA.
 137. Thum, RA., Zuellig, M. Annual Meeting - Society for the Study of Evolution, "Rapid adaptation to anthropogenic environments via hybridization?: Invasive hybrid watermilfoil genotypes are more common than parental genotypes in herbicide-treated lakes," Society for the Study of Evolution, Norman, OK. (June 18, 2011).
 138. Thum, RA. "Update on research efforts on hybrid milfoil responses to herbicides," Midwest Aquatic Plant Management Society, Grand Rapids, MI. (March 2, 2011).
 139. Thum, RA., Zuellig, M., Tavalire, H. "Uncovering even more genetic diversity and hybridization in variable-leaf watermilfoil and its close allies," Aquatic Plant Management Society, Bonita Springs, FL. (July 2010).
 140. Thum, RA., Zuellig, M. "Diversification and species boundaries in endemic North American watermilfoils," Society for the Study of Evolution, Portland, OR. (June 2010).
 141. Thum, RA. "Why understanding genetics might be important for aquatic plant management," Midwest Aquatic Plant Management Society, Indianapolis, IN. (March 1, 2010).
 142. Thum, RA. "Genetic diversity and geographic origins of invasive variable leaf water milfoil," Aquatic Plant Management Society, Milwaukee, WI. (July 2009).
 143. Thum, RA. "Genetic diversity and geographic origins of invasive variable leaf water milfoil," Society for the Study of Evolution, Moscow, ID. (June 2009).
 144. Smith, J., Thum, RA., Allen, M., Caceres, C. "Lakes as complex adaptive systems?: species & phenotypic diversity of *Daphnia* communities in newly established ponds," Ecological Society of America, Milwaukee, WI. (August 2008).

145. Thum, RA. "The effect of reproductive isolation and historical biogeography on copepod distribution and co-occurrence" (Special Session) American Society of Limnology & Oceanography, Santa Fe, NM (2007)
146. Thum, RA "Geographic patterns of multilocus genetic variation in the invasive macrophyte *Myriophyllum heterophyllum*." Northeast Aquatic Plant Management Society (2007)
147. Thum, RA "Reproductive interference can maintain species ranges: an empirical example from two ecologically similar copepod species" Ecological Society of America (2006)
148. Thum, RA. "Historical biogeography of copepod assemblages", Ecological Society of America (2005)
149. Thum, RA. "The use of molecular genetic markers to identify morphologically cryptic, invasive water-milfoils", Northeast Aquatic Plant Management Society (2005)
150. Thum, RA. "Reproductive interactions among *Skistodiaptomus* copepods", Society for the Study of Evolution (2004).
151. Thum, RA. "The influences of spatial versus environmental factors on *Skistodiaptomus* occurrences.", Ecological Society of America (2003)
152. Thum, RA. "Ancient divergence in morphologically similar *Skistodiaptomus* copepods", Society for the Study of Evolution (2003)
153. Thum, RA and JT Lennon. "Hybrid vigor does not explain the invasion of variable-leaf water-milfoil (*Myriophyllum heterophyllum*) in New Hampshire lakes" North American Lake Management Society (2003)
154. Thum, RA and TC Glenn. "Patterns of genetic variation in Largemouth Bass (*Micropterus salmoides*) populations on the Savannah River Site, SC", Society for the Study of Evolution (1999)
155. Sylvester, K & Thum, RA, West Michigan Regional Undergraduate Science Research Conference, "eDNA Detection of an Invasive Aquatic Plant Species," Grand Rapids, MI. (November 2013).
156. Grimm, D, LaRue, EA & Thum, RA, Grand Valley State University Student Scholarship Day, "Invasive hybrid watermilfoils are sexually viable: evidence from laboratory crosses and genetic analysis of natural populations," (April 10, 2013).
157. Grimm, D, LaRue, EA, Thum, RA, Midwest Aquatic Plant Management Society Annual Meeting, "Laboratory crosses and genetic analysis of natural populations demonstrate sexual viability of invasive hybrid watermilfoils (*Myriophyllum spicatum* x *M. sibiricum*)," Cleveland, OH. (March 4, 2013). (Winner of the student contributed paper competition)
158. Homola, JJ, Ruetz III, C, Thum, RA, Kohler, SL., "Landscape genetics of mottled sculpin: insights into historic stream colonization," Michigan Chapter of the American Fisheries Society, Gaylord, Michigan. (February 20, 2013).
159. Grimm, D, Thum, RA, Grand Valley State University Student Summer Scholars Showcase, Grand Rapids, MI "Re-creating Invasive Hybrids: Experimental crosses, seed germination, and seedling development in Eurasian watermilfoil", (August 1, 2012)
160. LaRue, EA, Thum, RA, Aquatic Plant Management Society, Salt Lake City, UT, "Hybrid watermilfoils exhibit reduced sensitivity to 2,4-D in comparison to parental Eurasian watermilfoil in a laboratory assay experiment", (July 2012).
161. LaRue, EA, Zuellig, MP, Thum, RA, Graduate Student Showcase, Grand Valley State University, Grand Rapids, MI, "Hard to kill: hybrid watermilfoil are less sensitive to a commonly used herbicide", (April 10, 2012).
162. LaRue, EA, Zuellig, MP, Thum, RA, Midwestern Aquatic Plant Management Society, Milwaukee, WI, "Distribution patterns and response of hybrid and Eurasian watermilfoil to 2,4-D in the Menominee River Watershed", (February 28, 2012).
163. LaRue, E, Stacey, M, Ruetz III, C, Thum, RA. "Population structure of the invasive round goby in Lake Michigan: implications for dispersal of invasive species," Society for the Study of Evolution, Norman, OK. (June 2011).
164. Tavalire, H., Bugbee, G., LaRue, E., Thum, RA. "The roles of hybridization and cryptic ecological diversity in a biological invasion," Society for the Study of Evolution, Norman, OK. (June 18, 2011).

165. Phillips, P., Thum, RA, Student Scholarship Day, Grand Valley State University, "Characterization of the phytoene desaturase gene in invasive watermilfoil populations that exhibit different sensitivities to the herbicide fluridone", (April, 2011)
166. Hayward, H., Thum, RA, Student Scholarship Day, Grand Valley State University, "Uncovering cryptic diversity in the invasive aquatic plant species, Eurasian watermilfoil, using DNA fingerprinting", (April, 2011)
167. Tavalire, H., Thum, RA. "Implications of genetics and environment for management: are certain lineages of variable leaf watermilfoil more apt to grow invasively?," Midwest Aquatic Plant Management Society, Grand Rapids, MI. (March 2, 2011).
168. Zuellig, M., Thum, RA. "Hybrid watermilfoils are more common in lakes treated with herbicides," Midwest Aquatic Plant Management Society, Grand Rapids, MI. (March 1, 2011).
169. Tavalire, HF, Bugbee, G., Thum, RA. "Are certain lineages of variable leaf watermilfoil more apt to grow invasively?," Northeastern Aquatic Plant Management Society, Massachusetts. (January 20, 2011).
170. Tavalire, H. F., Thum, RA. Michigan Space Grant Consortium, "Distinct genetic lineages and environments interact to determine the abundance and spread of an invasive aquatic plant," (November 2010).
171. Zuellig, M., Thum, RA. "Identifying Unique Biotypes Of Eurasian Watermilfoil With Genetic Methods," Aquatic Plant Management Society, Bonita Springs, FL. (July 2010).
172. Zuellig, M., Thum, RA. "A Genetic Survey of Invasive Myriophyllum spicatum in North America," Society for the Study of Evolution, Portland, OR. (June 2010).
173. Tavalire, H., Thum, RA. "Genetic Impacts on Invasive Potential: a Pilot Study in Myriophyllum Species," Society for the Study of Evolution, Portland, OR. (June 2010).
174. Zuellig, M. , Thum, RA. "Hybridization between Eurasian and northern watermilfoil: how many? how often?," Midwest Aquatic Plant Management Society, Indianapolis, IN. (March 1, 2010).
175. LaRue, EA, MP Zuellig, and RA Thum. "Distribution patterns and response of hybrid and Eurasian watermilfoil to 2,4-D in the Menominee River Watershed", Midwestern Aquatic Plant Management Society, Milwaukee, WI, (February 28, 2012).
176. LaRue, E. A., Ruetz III, C., Thum, RA. "Population structure of the invasive round goby in Lake Michigan," Michigan Chapter of the American Fisheries Society, Grayling, MI. (February 24, 2010).
177. LaRue, E., Thum, RA., Ruetz III, C. "Population genetic differentiation of invasive round goby in Lake Michigan," Midwest Fish & Wildlife Society, MI. (December 2009).
178. LaRue, E., Thum, RA., Ruetz III, C. West Michigan Regional Undergraduate Science Research Conference, "Population structure of the invasive round goby in Lake Michigan," Grand Rapids. (October 31, 2009).
179. Zuellig, M., Thum, RA. "Frequency of hybridization between Eurasian and northern watermilfoils - a pilot study," Aquatic Plant Management Society, Milwaukee, WI. (July 2009).
180. Zuellig, M., Thum, RA. "Frequency of hybridization between Eurasian and northern watermilfoils - a pilot study," Society for the Study of Evolution, Moscow, ID. (June 2009).
181. Stacey, M., Thum, RA., Ruetz III, C. "Dispersal and gene flow in invasive round goby in Lake Michigan," Midwest Fish & Wildlife Society, MI. (December 2008).

Teaching & Mentoring

Courses taught at Montana State University

PSPP 591/501 Navigating Graduate School (2019, 2021, 2022, 2023, 2024, 2025)
 BIOB 375, General Genetics, Every Fall semester in odd years (2015, 2017, 2019, 2021).
 BIOB 420, Evolution, Every Spring semester (2015-2025), Fall semester 2025.
 BIOB 484 Population Genetics, Every Fall semester in even years (2018, 2020, 2022).

Grand Valley State University

Molecular Ecology (Winter term each year; I developed this course at GVSU) (2009-2014)

Graduate Committee Chair

1. Olivia Schwartz (MSc) Title TBD (January 2025 – present).
2. Ulysses Oles (PhD) Title TBD (August 2024 – present).
3. Umer Masood (PhD) Title TBD (August 2023 – present).
4. Zach Kuznar (PhD) "Population genomics of non-model aquatic weeds" (August 2019 – present).
5. Del Hannay (PhD) Title TBD (August 2022 – present).
6. Ashley Wolfe (MSc) MILFOILMAPPER: A web-based tool built to aid in Eurasian watermilfoil management plans (August 2022 – December 2024).
7. Gregory Chorak (PhD) "Using Genetic and Genomic Techniques to Uncover Cryptic Diversity for Improving Invasive Aquatic Plant Management." (August 2017 – December 2021).
8. Jeffrey Pashnick (PhD) "Management of invasive species provides a unique opportunity to study evolutionary processes in natural populations." (August 2014 – May 2021).
9. Hannah Hoff (MSc) "Hybridization and Invasiveness in Eurasian Watermilfoil (*Myriophyllum spicatum*): Is Prioritizing Hybrids in management Justified?." (August 2019 – December 2021).
10. Kathryn Gannon (MSc) "Integrating DNA Fingerprinting of Invasive Watermilfoil Strains Into Aquatic Vegetation Monitoring and Assessment." (May 2020 – December 2021).
11. Paula Guastello (MSc) "Genetic Surveys in Combination with Laboratory Studies on Growth and Response to Herbicide Can Help Design, Evaluate, and Optimize Eurasian Watermilfoil Management Plans" (January 2016 – May 2018).
12. Daniell Grimm (MSc) "The role of hybridization and introgression in the evolution of invasiveness of Eurasian watermilfoil." (August 2014 – July 2016; *did not complete degree).
13. Syndell Parks (MSc; Grand Valley State University), "Integrating genetic identification of cryptic watermilfoils into aquatic vegetation mapping to inform management decisions." (September 2012 - December 2015).
14. Lindsey Taylor (MSc; Grand Valley State University), "Evolutionary potential for herbicide resistance in Eurasian, northern, and hybrid watermilfoils." (August 2013 - April 2015).
15. Elizabeth LaRue (MSc; Grand Valley State University), "Hybridization facilitates the rapid evolution of reduced herbicide sensitivity in the widely-managed invasive aquatic plant, Eurasian watermilfoil." (August 2010 - August 2012).
16. Hannah Tavalire (MSc; Grand Valley State University), "The roles of hybridization and cryptic ecological diversity in an invasive species: a study of *Myriophyllum heterophyllum*." (August 2009 - August 2011).
17. Matthew Zuellig (MSc; Grand Valley State University), "Development and implementation of a new molecular approach for identifying unique genetic lineages of Eurasian watermilfoil." (August 2008 - May 2011).

Graduate Committee Member (including other universities)

1. Samuel Decker (PhD; Montana State University), "Creating and utilizing genomic and genetic resources for *Camelina sativa* to advance understanding of genetic systems regulating agronomic traits" (Graduated December 2025).
2. John Kole (PhD; Montana State University), TBD (August 2024 – present).
3. Jason Gregg (MSc; Montana State University), TBD (August 2024 – present).
4. Charles Miller (MSc; Montana State University), "Regulation of NAC transcription factor gene expression in *Camelina sativa* leaves during early seed filling: Influence of nitrogen nutrition and leaf age" (Graduated August 2025)
5. Anastasia Mozharova (PhD; University of Massachusetts-Boston) "Intercontinental variation in population genetics and life-history traits in native and invasive populations of the aquatic plants *Myriophyllum spicatum* and *Myriophyllum sibiricum*" (Graduated December 2025)
6. Monika Parajuli (MSc; Montana State University), TBD (January 2025 – present)
7. Maxwell Gebhardt (PhD; Mississippi State University), "Understanding and developing the biology, ecology, and management of *Vallisneria* species in the United States" (August 2024 – present)

8. Mallory Kaiser (MSc; Minnesota State University-Mankato) "Genetic analysis of curlyleaf pondweed (*Potamogeton crispus*) in the contingent United States of America" (August 2024 – present)
9. Ian Markovich (MSc; University of Florida), "Biology, ecology and management of floatinghearts (*Nymphoides* spp.) in Florida" (2019 - Present).
10. Mirella Ortiz (PhD; Colorado State University). (September 2020 - July 2021).
11. Michael Durham (PhD; University of Florida), "Documentation, Characterization and Proposed Mechanisms of Diquat, Flumioxazin, and Fluridone Resistance in *Landoltia punctata*." (2019 – 2020; *withdrew from degree program).
12. Jasmine Eltawely (MSc; University of Minnesota), "Distribution of Eurasian and hybrid watermilfoil in Minnesota." (2017 - 2019).
13. Joshua Haslun (PhD; Michigan State University), "Identification of local adaptation in *Porites astreoides* inhabiting the Florida Reef Tract: biotic stress, a disregarded force of change affecting coral reefs." (September 2012 - December 2015).
Gregory Chorak (MSc; Grand Valley State University), "Yellow perch stock assessment in drowned river mouth lakes and nearshore Lake Michigan." (September 2015 – August 2017).
14. Kallie Kessler (MSc; Colorado State University), "Exploring the Physiological Basis of 2,4-D Tolerance in Northern Watermilfoil Eurasian Watermilfoil Hybrids,." (2014 - 2016).
15. Jesse Wesolek (MSc; Grand Valley State University), "Genetic structure of yellow perch populations in coastal areas of eastern Lake Michigan." (December 2014).
16. Lara Rakatenetz (PhD; University of Akron), "Genetic analysis of watermilfoil weevils, *Eurychiopsis lecontei*." (March 2012 - December 2014).
17. Deborah Dila (MSc; Grand Valley State University), "Genomes and biomes: Microbes and carbon flux in a Great Lakes watershed." (August 2009 - August 2014).
18. Jared Homola (MSc; Grand Valley State University), "Disease ecology of a microsporidian parasite and its effects on mottled sculpin." (April 2011 - August 2013).
19. Jesse Lincoln (MSc; Grand Valley State University), "A Genetic High-jacking: How *Ailanthus altissima* (Tree-of-Heaven) is Inducing Phenotypic Variability in Legumes." (May 2008 - 2011).

Directed Student Learning (*)in current position at Montana State University only)**

Undergraduate Research/Lab Assistant Supervision

1. Ava Yazdian (May 2025 – December 2025)
2. True Crane (May 2024 – October 2025)
3. Lillian Wick (January 2024 – present)
4. Gwyn Watson (May 2024 – December 2024)
5. Emily Tuck (September 2023 – December 2023)
6. Amber Musskopf (May 2023 – May 2024)
7. Theodore Hardmeyer (May 2023 – May 2024)
8. Katelin Weiss (September 2020 – May 2024)
9. Madison Wolfe (September 2022 – May 2023)
10. Sabrina Morgan (September 2021 - August 2022)
11. Patrick Douglas (September 2021 - December 2021)
12. Colin Hipona (May 2021 - May 2022)
13. Ashley Wolfe (September 2020 - December 2020)
14. Anna French (September 2017 - May 2020)
15. Arden Engel (August 2018 – May 2019)
16. Leah Simantel (May 2018 – March 2019)
17. Jeffrey Korff (May 2017 – May 2018)
18. Bryce Gill April (2017 - August 2017)
19. Cara Still (May 2016 - December 2016)
20. Mitchell Herbert (May 2016 - August 2016)
21. Benjamin Stablow (May 2016 – June 2016)
22. Paula Guastello (May 2015 - December 2015)
23. Emily Martin (May 2015 - August 2015)

McNair Scholar Faculty Mentor, Madison Martinez (September 2020 - August 15, 2021).

Undergraduate Scholars Program Mentor, Katelin Killoy "Identifying the Number of Introductions and Geographic Origins of Invasive Yellow Floating Heart." (January 2020 - August 2020).

Optional Professional Training for Turkish Dual-degree Program, Murat Buyukyoruk (May 2016 – June 2017)

Undergraduate Research Credit PSPP 490R, Michaela Hillam "Optimization of microsatellite loci for Eurasian watermilfoil." (August 2015 - December 2015)

National Science Foundation REU Students Mentored

1. Isaac Eastlund (University of Alabama) "Herbicide response in invasive Eurasian and hybrid watermilfoil." (June 1, 2021 - August 8, 2021).
2. Cecilia Knowles (University of Massachusetts, Amherst) "Building a Centralized Database of Watermilfoil Distribution and Herbicide Response Information." (June 1, 2022 - August 8, 2022).
3. Isaac Turney (Eckerd College) "Identifying Herbicide Resistance Genes in Invasive Watermilfoil." (June 1, 2022 - August 8, 2022).

Non-MSU Graduate Students Hosted for Research Experience

1. Jens Beets (Masters; University of Florida) "Genetic diversity of Eurasian and hybrid watermilfoil accessions." (June 2017 - August 2017).
2. Darren Reiddy (Doctoral; University College Cork). October 16, 2016 - December 3, 2016

Service

Department (***)Montana State University Plant Sciences and Plant Pathology only)

Faculty Mentoring Committees

1. Anne Brown, (October 2024 - Present)
2. Benjamin Fuhrman, (October 2024 - Present)
3. Claire Luby (Chair) (January 2023 - Present).
4. Sue Mondal (January 2023 – present)
5. Jason Cook (January 2022 - Present).
6. Qing Yan (January 2018 - Present).

Department Committees

1. Committee Member, Retention Tenure and Promotion Committee, (AY 2024-2025)
2. Committee Chair, Plant Systematist Faculty Replacement Search, (November – December 2024)
3. Diversity, Equity, and Inclusion. (member - September 2021 – Present; Chair - March 2018 – August 2021).
4. Strategic Planning. (May 2019 - Present).
5. Student Academic Coordinator Position Search. (March 5, 2020 - December 31, 2020).
6. Statistical Genomics Faculty Search. (December 15, 2016 - March 2017).

Faculty Reviews

1. In-depth teaching review of BIOB 375 (Sue Mondal). (March 20, 2023 - May 9, 2023).
2. Ad hoc teaching review of Landscape Architecture 335 (Kirsten Ostberg). (April 17, 2023).
3. Ad hoc teaching review of Entomology 525 (Mike Ivie). (March 11, 2020).
4. Ad hoc teaching review of BIOB 375 (Michelle Fleniken). (June 5, 2018 - June 18, 2018).
5. Montana Agricultural Experiment Station Proposal (Mark Young). (November 22, 2019).

6. Montana Agricultural Experiment Station Proposal (Bill Dyer). (December 14, 2016)

Miscellaneous

1. Pollinator Garden Volunteer, Pollinator Garden Volunteer Days. (July 7, 2023).
2. In-depth teaching review of Sue Mondal BIOB 375. (March 20, 2023 - May 9, 2023).
3. Ad hoc review of Landscape Architecture 335. (April 17, 2023).
4. Contributed article about 15th International Symposium on Aquatic Plants, PSPP Newsletter. (February 25, 2018).
5. Genetic identification of aquatic plants, Schutter Diagnostic Laboratory, (October 2016)
6. Contributed article about Board of Directors, PSPP Newsletter. (April 2016).
7. Contributed article about conference attendance, PSPP Newsletter. (March 2015).

Entering Mentoring Facilitator Trainings. (November 2, 2021) (October 19, 2021) (September 7, 2021).

College (***)Montana State University College of Agriculture only)

Montana Agricultural Experiment Station Proposals

1. Mike Giroux (December 2025)
2. John Knowles (December 2025)
3. Uta McKelvy (December 2025)
4. Lance McNew (March 2025)
5. Kelsey Larson (November 2025)
6. Jane Mangold. (December 13, 2022).
7. Lance McNew. (January 8, 2020).
8. Scott Powell. (December 19, 2018).
9. Lance McNew, (November 18, 2016).

Ad hoc Retention Review, Animal and Range Sciences. (September 12, 2022).

Judge for student presentations, Land Resources and Environmental Sciences Research Colloquium, (April 25, 2017) (April 26, 2016).

Guest at watershed committee meeting, Big Hole Watershed Committee. (November 19, 2014).

University (***)Montana State University only)

Faculty Mentor for Vijaya Tamla Rai (September 2023 - Present).

Faculty Mentor for Cascade Tuholske. (September 2022 - Present).

Committee Member, Ecology and Environmental Science Program Advisory Board. (January 2018 - Present).

MSU Operations and Maintenance – Plant Identification for Irrigation Operations. (July 20, 2018).

Professional

Advisory Boards and Boards of Directors

1. Aquatic Plant Management Society Board of Directors, including Vice President, President-Elect, President, and Past President Officer roles. (July 2015 – July 2023).
2. Midwest Aquatic Plant Management Society Board of Directors, including Vice President, President-Elect, President, and Past President Officer roles (February 2015 - March 2, 2022)
3. Western Aquatic Plant Management Society, Committee Chair Student Scholarships. (2017 - 2019).
4. Midwest Aquatic Plant Management Society, Member Student Affairs Committee. (March

- 2023 - present).
5. Task Force Member, Aquatic Ecosystem Restoration Foundation. (April 2022 - present).
 6. Upper Missouri River Headwaters Eurasian Watermilfoil Technical Advisory Committee, Montana. (2014 - 2019).
 7. Sanders County (Montana) Aquatic Invasive Plant Task Force, MT. (September 2015 - Present).

Editorial Roles

1. Invasive Plant Science and Management, (June 2024 – July 2025)
2. Journal of Aquatic Plant Management (December 2022 – July 2025)
3. Frontiers in Plant Science (May 2023 – July 2025)

Grant Reviews:

Panel Member, National Science Foundation. (November 2022).
Panel Member, National Science Foundation. (March 2016).
Panel Member, National Science Foundation. (October 2011).
Ad hoc reviewer, Pennsylvania Sea Grant, (July 25, 2017)
Ad hoc reviewer, USDA-ARS. (December 17, 2014).
Ad hoc reviewer, NSERC Canada. (February 2012).
Ad hoc reviewer, National Science Foundation. (November 11, 2014).
Ad hoc reviewer, National Science Foundation. (April 18, 2011).
Ad hoc reviewer, Netherlands Organization for Scientific Research. (January 17, 2011).
Ad hoc reviewer, National Science Foundation. (February 2009).
Aquatic Ecosystem Restoration Foundation. (August 21, 2020)
Aquatic Ecosystem Restoration Foundation. (July 28, 2020).

Journal Article Reviews (since 2010):

Journal of Freshwater Ecology, (May 13, 2025), Current Issues in Molecular Biology, (February 11, 2025), Global Ecology and Conservation, (January 23, 2025), Lake and Reservoir Management. (April 4, 2023), Plants. (January 12, 2023), Journal of Aquatic Plant Management. (December 19, 2022), Biological Invasions. (November 5, 2022), Aquatic Botany. (October 18, 2022), Plants. (September 19, 2022), Heredity. (May 21, 2022), Biological Invasions. (April 19, 2022), Journal of Aquatic Plant Management. (April 18, 2022), Biological Invasions. (December 1, 2021), Diversity. (February 12, 2021), Biological Invasions. (January 26, 2021), Invasive Plant Science and Management. (July 1, 2020), Aquatic Botany. (June 22, 2020), Canadian Journal of Chemical Engineering. (May 13, 2020), Freshwater Biology. (March 28, 2020), Freshwater Biology. (January 22, 2020), Journal of Aquatic Plant Management. (August 21, 2019), Aquatic Botany. (May 29, 2019), Freshwater Biology. (March 7, 2019), Aquatic Botany. (May 29, 2019), Freshwater Biology. (March 7, 2019), Hydrobiologia. (January 17, 2019), Pest Management Science. (November 28, 2019), Aquatic Toxicology. (December 18, 2018), Aquatic Botany. (October 1, 2018), Hydrobiologia. (July 21, 2018), Freshwater Science. (July 14, 2018), Aquatic Botany. (January 3, 2018), Molecular Ecology. (December 26, 2017), Aquatic Botany. (July 6, 2017), Lake and Reservoir Management, (May 21, 2017), Limnology and Oceanography, (April 26, 2017), Molecular Ecology, (April 10, 2017), American Journal of Botany, (March 31, 2017), Journal of Aquatic Plant Management, (March 16, 2017), Science of the Total Environment, (February 7, 2017), Limnology and Oceanography, (October 9, 2016), Hydrobiologia, (June 26, 2016), Journal of Aquatic Plant Management, (June 22, 2016), Molecular Ecology. (April 25, 2016), Hydrobiologia. (March 16, 2016), PLoS ONE. (March 8, 2016), PLoS ONE. (December 10, 2015), Hydrobiologia. (September 25, 2015), Freshwater Science. (July 19, 2015), Hydrobiologia. (July 18, 2015), American Journal of Botany. (April 24, 2015), Biological Journal of the Linnean Society. (April 23, 2015), Biological Journal of the Linnean Society. (March 7, 2015), Canadian Journal of Botany. (August 17, 2014), Molecular Phylogenetics & Evolution. (March 28, 2014), American Journal of Botany. (March 21, 2014), Northeastern Naturalist. (September 19, 2013), Annals of Botany. (September 17, 2013),

Biological Invasions. (August 10, 2013), Annals of Botany. (July 22, 2013), Journal of Aquatic Plant Management. (July 16, 2013), Journal of the Torrey Botanical Society. (July 2, 2013), Journal of Aquatic Plant Management. (May 28, 2013), Molecular Ecology. (April 7, 2013), Aquatic Botany. (March 2013), Aquatic Botany. (January 16, 2013), Northeastern Naturalist. (October 10, 2012 - October 30, 2012), Journal of Aquatic Plant Management. (October 18, 2012), Biological Invasions. (July 17, 2012 - August 18, 2012), Molecular Ecology. (July 17, 2012 - July 31, 2012), Oecologia. (July 1, 2012 - July 17, 2012), Molecular Phylogenetics & Evolution. (June 10, 2012 - July 2, 2012), Biological Invasions. (December 15, 2011 - January 10, 2012), Biological Invasions. (August 1, 2011 - August 10, 2011), Fundamental and Applied Limnology. (July 1, 2011 - July 22, 2011), Weed Technology. (June 2011 - July 18, 2011), Diversity & Distributions. (February 7, 2011 - March 9, 2011), Oecologia. (December 29, 2010 - January 22, 2011), Biological Invasions. (April 16, 2010 - May 2010), BioScience. (April 6, 2010 - April 24, 2010), BMC Genetics. (March 10, 2010 - March 24, 2010).

Other:

External Examiner for PhD Dissertation - Rhodes University, South Africa. (December 29, 2022).
Ad Hoc Reviewer, US Army Corps of Engineers. (May 17, 2015).
Ad Hoc Reviewer, Grand Valley State University Tenure Review. (January 30, 2015).
Reviewer for Great Lakes Aquatic Invasive Species Regional Coordination and Invasive Aquatic Plant Control Prioritization and Needs Assessment Literature Review for Eurasian Watermilfoil, Great Lakes Panel on Aquatic Nuisance Species Research Coordination Committee, MI. (December 2022).
Reviewer/Referee, Michigan Department of Natural Resources "Status and Strategy for Eurasian Watermilfoil Management". (March 2017)
Montana Weed Management Plan: Reviewed and commented on "Plan Implementation and Evaluation" section (November 4, 2016).
Guest Speaker, Level 2 Noxious Weed Management Certification Program, (September 29, 2016)
Guest Speaker, Level 1 Noxious Weed Management Certification Program, Bozeman, MT. (September 22, 2015).
Reviewer/Referee, Montana Invasive Aquatic Plant Survey Protocol. (February 2015 - March 15, 2016).
Committee Member, Technical review committee for aquatic plant herbicide resistance. (May 2012 - June 2012).

Public Service

Reviewer, Ad Hoc Reviewer, Bill Rapai's book about Great Lakes aquatic invasive species. (February 4, 2015).
Entry for Aquatic Invasive Species website, University of Wisconsin Trout Lake Station Center for Limnology. (December 13, 2014).
Interviewed by high school students, Oxford Hills High School. (October 24, 2014).
Discussant, The Nature Conservancy - Adirondack Chapter & Adirondack Land Trust. (January 14, 2014).
Other, Sooper Yooper children's book series. (July 2011 - 2013).
Organizer, BASS Masters, Muskegon, MI. (September 27, 2013).
Guest Speaker, Gull Lake Quality Organization, West Bloomfield, MI. (September 24, 2013).
AWRI tour guide, Wyoming Park High School. (June 24, 2013).
Discussant, Upper Straits Clean Lake Association, West Bloomfield, MI. (April 25, 2013).
Discussant, Manitowac Lakes Group, Green Bay, WI. (April 10, 2013).
Guest Speaker, Montague High School. (October 3, 2012).
Attended luncheon with scientech junior high school students, Scientech. (June 16, 2012).
Guest Speaker, Wisconsin Department of Natural Resources, Wisconsin. (February 22, 2012).
Committee Member, Michigan Dunes Montessori Charter School Application Working Group, Muskegon, MI. (November 2010 - May 2011).

Guest Speaker, Northwest Michigan College Freshwater Summit, Traverse City, MI. (October 2, 2009).

Guest Speaker, Save the Yaphanks Lakes Organization, New York. (September 2008).

Guest Speaker, Timberland Charter Elementary School, Muskegon, MI. (September 2008).