

AMY ELANOR MYRBO, PH.D.

amy@myrbo.com | myrbo.com

ORCID 0000-0003-1686-7672

PROFESSIONAL PREPARATION

University of Minnesota	English, minor Geology	B.A., <i>magna cum laude</i> , 1996
University of Minnesota	Geology	Ph.D. 2006
University of Minnesota	Geology	Postdoctoral Associate 2006-2008

APPOINTMENTS

2019-present	Owner, Amiable Consulting
2019-present	Assistant Scientist, St. Croix Watershed Research Station, Science Museum of Minnesota
2019-present	Research Specialist, Department of Geosciences, University of Connecticut
2015-2019	Affiliated Graduate Faculty, Department of Earth Sciences, University of Minnesota
2014-2019	Director of Outreach, Diversity, and Education, Continental Scientific Drilling Coordination Office (CSDCO), University of Minnesota
2009-2019	Research Associate/Researcher 6, Department of Earth Sciences (formerly Geology and Geophysics), University of Minnesota
2002-2014	Core Laboratory Manager, LacCore (National Lacustrine Core Facility)
2006-2008	Postdoctoral Associate, Department of Geology and Geophysics, University of Minnesota
1996-2002	Research and teaching assistant, Department of Geology and Geophysics, University of Minnesota
2000	Summer employee, US Geological Survey
1997-1998	Summer employee, US Geological Survey
1995-1996	Peer advisor, College of Liberal Arts, University of Minnesota

PUBLICATIONS

Argiriadis, E., M. Bortolini, N.M. Kehrwald, M. Roman, C. Turetta, S. Hanif, E.O. Erhenhi, J.M. Ramirez Aliaga, D. B. McWethy, A. E. Myrbo, A. Pauchard, C. Barbante, D. Battistel, *in revision*. Easter Island Rano Raraku crater lake basin: geochemical characterization and implications for the Moai cult society. *PLOS ONE*.

Roman, M., D.B. McWethy, N. M. Kehrwald³, E. O. Erhenhi, A.E. Myrbo, J.M. Ramirez-Aliaga, A. Pauchard, C. Turetta, C. Barbante, M. Prebble, E. Argiriadis, D. Battistel, *in revision*. A multi-decadal geochemical record from Rano Aroi (Easter Island/Rapa Nui): implications for the environment, climate and humans during the last two millennia. *Quaternary Science Reviews*.

Loeffler, S., R.E. Roth, S. Goring, and A. Myrbo. 2021. Mobile UX design: learning from the Flyover Country mobile app. *Journal of Maps* 17(2), 39-50.

Matson, L., Ng, G.H.C., Dockry, M., Nyblade, M., King, H.J., Bellcourt, M., Bloomquist, J., Bunting, P., Chapman, E., Dalbotten, D., Davenport, M.A., Diver, K., Duquain, M., Graveen, w., Hagsten, K., Hedin, K., Howard, S., Howes, T., Johnson, J., Kesner, S., Kojola, E., LaBine, R., Larkin, D., Montano, M., Moore, S., Myrbo, A., Northbird, M., Porter, M., Robinson, R., Santelli, C., Schmitter, R., Shimek, R., Schuldt, N., Smart, A., Strong, D., Torgeson, J., Vogt, D., and Waheed, A., 2020. Transforming research and relationships through collaborative tribal-university partnerships on Manoomin (wild rice). *Environmental Science & Policy*, 115, p.108-115.

- Wittkop, C., E. Swanner; A. Grengs, N. Lambrecht, M. Fakhraee, A. Myrbo, A. Bray, S. Poulton, and S. Katsev. 2020. Revisiting the carbonate pathway for manganese enrichments in reducing environments. *Earth and Planetary Science Letters*.
- Shinneman, A.L.C., S. Loeffler, and A. Myrbo. 2020. Self-guided field trips allow flexibility in student introductory field experiences. *Journal of Geoscience Education*.
- Brown, E., M. Caballero, P. Fawcett, S. Lozano-García, B. Ortega, L. Pérez, A. Schwalb, V. Smith, B. Steinman, M. Stockhecke, B. Valero-Garcés, S. Watt, N. Wattrus, J. Werne, T. Wonik, A. Myrbo, A. Noren, R. O'Grady, and D. Schnurrenburger. 2020. Scientific Drilling of Lake Chalco, Basin of Mexico (MexiDrill). *Scientific Drilling*.
- Birlenbach, D., A.L.C. Shinneman, S. Loeffler, and A. Myrbo. 2019. Flyover Country: Creating flexible field experiences using a mobile geoscience app. *In the Trenches*.
- Myrbo, A., S. Loeffler, A.L.C. Shinneman, and R. McEwan. 2018. Outreach and educational opportunities created by open-data resources. *PAGES Magazine* 26(2): 74-75. doi.org/10.22498/pages.26.2.74
- Goring, S., R. Graham, S. Loeffler, A. Myrbo, C. Ormand, J. Oliver, and J. Williams. 2018. *Invited*. The Neotoma Paleocology Database: A research-outreach nexus. *Paleontological Society Special Volume: Pedagogy and Technology in the Modern Paleontology Classroom*. Cambridge University Press.
- Harrison, B.K., A. Myrbo, J.V. Bailey, and B.E. Flood. 2018. Abrupt burial imparts persistent changes to the bacterial diversity of turbidite-associated sediment profiles. *Geobiology* 16:2, 1-13. doi.org/10.1111/gbi.12271
- Myrbo, A., E.B. Swain, D.R. Engstrom, J. Coleman Wasik, J. Brenner, M. Dykhuizen Shore, E.B. Peters, and G. Blaha. 2017a. Sulfide generated by sulfate reduction is a primary controller of the occurrence of wild rice (*Zizania palustris*) in shallow aquatic ecosystems. *Journal of Geophysical Research: Biogeosciences*. doi.org/10.1002/2017JG003787
- Myrbo, A., E.B. Swain, N.W. Johnson, D.R. Engstrom, J. Pastor, B. Dewey, P. Monson, J. Brenner, M. Dykhuizen Shore, and E.B. Peters. 2017b. Increase in nutrients, mercury, and methylmercury as a consequence of elevated sulfate reduction to sulfide in experimental wetland mesocosms. *Journal of Geophysical Research: Biogeosciences*. doi.org/10.1002/2017JG003788
- Pollman, C.D., E.B. Swain, D. Bael, A. Myrbo, P. Monson, and M.D. Shore 2017. The evolution of sulfide in shallow aquatic ecosystem sediments – an analysis of the roles of sulfate, organic carbon, iron and feedback constraints using structural equation modeling. *Journal of Geophysical Research: Biogeosciences* 122. doi.org/10.1002/2017JG003785
- Ng, G.-H.C., A.R. Yourd, N.W. Johnson, and A. Myrbo. 2017. Modeling hydrologic controls on sulfur processes in sulfate-impacted wetland and stream sediments. *Journal of Geophysical Research: Biogeosciences* 122. 10.1002/2017JG003822
- Pastor, J., B. Dewey, N. Johnson, E.B. Swain, P. Monson, E. Peters, and A. Myrbo. 2017. Effects of sulfate and sulfide on the life cycle of wild rice (*Zizania palustris*) in hydroponic and mesocosm experiments. *Ecological Applications* 27, 321-336
- Lozano-García, S., and 29 coauthors. 2017. Perforación profunda en el lago de Chalco: reporte técnico [Deep drilling in Lake Chalco: technical report]]. *Boletín de la Sociedad Geológica Mexicana* 69(2): 299-311.
- Harrison, B.K., A. Myrbo, B.E. Flood, and J.V. Bailey, 2015. Identification of subannual patterns in microbial community signatures from individual sedimentary laminae using a freeze-coring approach. *Limnology and Oceanography* 61(2): 735-747.
- Williams, J., K.K. McLauchlan, J.R. Mueller, E.M. Mellicant, A. Myrbo, and I. Lascu. 2015. Ecosystem development following deglaciation: a new sedimentary record from Devils Lake, Wisconsin, USA. *Quaternary Science Reviews* 125:131-143.
- Schachtman, N., K.R. MacGregor, A. Myrbo, N.R. Hencir, C.A. Riihimaki, J. Thole, and L.I. Bradtmiller 2015. Lake core record of Grinnell Glacier dynamics during the Late Pleistocene and Younger Dryas, Glacier National Park, Montana, U.S.A. *Quaternary Research* 84(1): 1-11.

- Zimmerman, S.H. and A. Myrbo. 2015. ^{14}C in lacustrine systems. In Rink, W.J. and J.W. Thompson, eds., *Encyclopedia of Scientific Dating Methods*, Springer, p. 365-371. (Invited)
- Marty, J.E. and A. Myrbo. 2014. Radiocarbon dating suitability of aquatic plant macrofossils. *Journal of Paleolimnology* 52: 435-442. DOI 10.1007/s10933-014-9796-0
- Park Boush, L.E., A. Myrbo, and A. Michelson. 2014. A qualitative and quantitative model for climate-driven lake formation on carbonate platforms based on examples from the Bahamian archipelago. *Carbonates and Evaporites*. DOI 10.1007/s13146-014-0221-6
- Dalbotten, D., E. Ito, A. Myrbo, H. Pellerin, L. Greensky, T. Howes, A. Wold, and the *gidaa/manoomin* mentor team. 2014. NSF-OEDG Manoomin science camp: A model for engaging American Indian students in science, technology, engineering, and mathematics. *Journal of Geoscience Education* 62: 227-243.
- McLauchlan, K. K., I. Lascu, A. Myrbo, and P. R. Leavitt. 2013. Variable ecosystem response to climate change during the Holocene in northern Minnesota, USA. *Geological Society of America Bulletin*. 125(3-4): 445-452
- Myrbo, A. 2012. The carbon cycle in lakes. In Bengtsson, L., R. W. Herschy, and R. W. Fairbridge, eds., *Encyclopedia of Earth Sciences, Part 3, Encyclopedia of Lakes and Reservoirs*, Springer: p.121-125. (Invited)
- Lascu, I., K. MacLauchlan, A. Myrbo, and S. Banerjee, 2012. Mineral-magnetic evidence for last millennium drought conditions at the prairie-forest ecotone of northern United States. *Palaeogeography, Palaeoclimatology, Palaeoecology* 337-338: 99-107.
- Myrbo, A., M. Murphy, and V. Stanley, 2011. The Minneapolis Chain of Lakes by bicycle: Glacial history, human modifications, and paleolimnology of an urban natural environment, in Miller, J.D., Hudak, G.J., Wittkop, C., and McLaughlin, P.I., eds., *Geological Society of America Field Guide* 24: 435-437. (Not peer-reviewed.)
- MacGregor, K.R., C.A. Riihimaki, A. Myrbo, M.D. Shapley, and K. Jankowski, 2011. Geomorphic and climatic change during the Holocene at Swiftcurrent Lake, Glacier National Park, Montana. *Quaternary Research* 75: 80-90
- Mischke, S., I. Rajabov, N. Musasteva, C. Zhang, U. Herzsuh, I. Boomer, E.T. Brown, N. Andersen, A. Myrbo, E. Ito, and M.E. Schudack, 2010. Modern Hydrology and late Holocene history of Lake Karakul, eastern Pamirs (Tajikistan): a reconnaissance study. *Palaeogeography, Palaeoclimatology, Palaeoecology* 289(1-4): 10-24.
- Myrbo, A., 2008. Sedimentary and historical context of eutrophication and remediation in urban Lake McCarrons (Roseville, Minnesota). *Lake and Reservoir Management* 24: 349-360
- Myrbo, A., and M.D. Shapley, 2006. Seasonal water-column dynamics of dissolved inorganic carbon stable isotopic compositions ($\delta^{13}\text{C}_{\text{DIC}}$) in small hardwater lakes in Minnesota and Montana. *Geochimica et Cosmochimica Acta*. 70: 2699-2714.
- Johnson, T.C., M.R. Talbot, and A. Myrbo, 2001. Kerry Kelts (1947-2001). *Eos, Transactions, American Geophysical Union*, 83(9): 88 (Not peer-reviewed.)

SOFTWARE PRODUCTS

- Myrbo, A. and McEwan R. *Tool for Microscopic Identification* (TMI; tmi.laccor.umn.edu), NSF-funded GUI database for identification of components in unconsolidated sediments for research and education.
- Loeffler, S.M., Myrbo, A., and McEwan, R. *Flyover Country* (flyovercountry.io), NSF-funded mobile app for geoscience outreach, research, education, and citizen science. \$1.6M in NSF funding; over 235,000 downloads.

GRANTS AS PRINCIPAL INVESTIGATOR (PI) WHILE AT UNIVERSITY OF MINNESOTA (IF COLLABORATIVE, ONLY THE UMN BUDGET IS GIVEN.)

EarthCube Data Capabilities: Collaborative Proposal: Reducing Time-To-Science in the Earth Sciences: Annotations to foster convergence, inclusion, and credit; NSF EarthCube \$352,391 (UMN PI)
Collaborative Proposal: GREECO: Anatomy of a Greenhouse world: The Early Eocene in the Green River Basin, Wyoming; NSF Integrated Earth Systems \$390,053; 7/1/18-6/30/23 (UMN co-PI)
Kawe Gidaa-Naanaagadawendaamin Manoomin (first we should consider wild rice); UMN Grand Challenges Research \$720,000, 2017-2019 (co-PI)
Collaborative Proposal: EarthCube Integration: THROUGHPUT: Standards and Services for Community Curated Repositories; NSF EarthCube \$109,143, 12/1/17-11/30/18 (UMN lead PI)
EAGER-GLOBE: Collaborative Research: Leveraging GLOBE student and citizen science data on the Flyover Country mobile platform for place-based, data-driven education; NSF ICER \$200,759; 2/1/17-1/31/19 (lead PI)
Collaborative Research: Leveraging domain repositories in Flyover Country, a mobile app for geoscience outreach, data discovery, and visualization; NSF Geoinformatics, \$656,698; 1/15/17-1/14/20 (lead PI)
Collaborative Research: Facility Support: National Lacustrine Core Facility (LacCore); NSF Instrumentation and Facilities; \$1,235,406; 6/1/15-2/28/19 (co-PI)
Management and operation of a Continental Scientific Drilling Coordination Office; NSF Instrumentation and Facilities; \$3,746,542; 3/1/2014-2/28/2019 (Cooperative Agreement) (co-PI)
Collaborative research: Deep Drilling of Lake Junín, Perú: Continuous Tropical Records of Glaciation, Climate Change and Magnetic Field Variations Spanning the Late Quaternary. NSF P2C2; \$39,590 broader impacts supplement (co-PI)
Flyover Country, a mobile app for geoscience outreach; NSF EAGER; \$146,910; 10/1/14-9/30/15 (lead PI with then-UMD-undergraduate and co-PI Shane Loeffler)
Two collaborative grants with National Park Service, \$5400 and \$24,400, summer 2013 (lead PI)
Enhancing Research, Training, and Synthesis in Sedimentary Record Analyses: TMI phase two (Tool for Microscopic Identification); NSF Geoinformatics; \$259,980; 10/01/12-09/30/15 (lead PI)
Wild Rice Standards Study; Minnesota Pollution Control Agency; \$339,962; 03/23/12-12/31/13 (lead PI)
Wild Rice Standards 2011 Preliminary Field Study; Minnesota Pollution Control Agency; \$176,200; 07/01/11-06/30/12 (lead PI)
University of Minnesota Interdisciplinary Informatics Seed Grant – TMI (Tool for Microscopic Identification); UMN Grant-in-Aid; \$59,404; 07/01/11-06/30/12 (lead PI)
Facility Support: National Lacustrine Core Repository and Initial Core Analysis Laboratory (LacCore); NSF Instrumentation and Facilities; \$1,445,856; 06/01/10-05/31/15 (co-PI)
Acquisition of SEM-EDX and upgrade of petrographic microscopy to enhance rapid sediment characterization at LacCore, the National Lacustrine Core Facility; NSF Instrumentation and Facilities; \$142,897; 09/15/09-08/31/11 (co-PI)
Collaborative Project: Track 2: Manoomin, investigating the past, present, and future conditions of wild rice lakes on the Fond du Lac Band of Lake Superior Chippewa Reservation; NSF OEDG (Opportunities for Enhancing Diversity in the Geosciences); \$799,642; 09/01/09-08/31/15 (co-PI)
Analyze Lake Sediment Cores from Crater Lake to Assess Deepwater Moss Growth and Climate Change; US Department of the Interior; \$10,434; 09/15/08-09/30/10 (lead PI)

HONORS, SYNERGISTIC ACTIVITIES, AND SERVICE

Fellow, Institute on the Environment, University of Minnesota, 2018-present
American Geophysical Union (AGU) Diversity and Inclusion Advisory Committee 2019-present

Developer, organizer, and lead instructor, LacCore/CSDCO Drilling and Coring Summer Institute, 9- to 12-day hands-on course for graduate students and early-career researchers, 2015-2018 (nearly 100 participants trained over seven sessions)

International Quaternary Association (INQUA) Paleoclimate Commission Advisory Board, 2019-2023

EarthLife Consortium Foundation Board 2018-present

AGU Diversity and Inclusion Task Force, 2017-2018

University of Minnesota Vice President for Research Wild Rice Advisory Committee 2017-2018

UMN Earth Sciences Diversity and Equity Committee, 2016-2019

Steering Committee, EarthRates Research Coordination Network, 2016-present

Associate Editor, *Journal of Paleolimnology*, November 2013-October 2017

Chair, Geological Society of America Limnogeology Division 2012-Oct 2014, Vice-Chair 2010-2012

Special Events Chair, Geological Society of America Annual Meeting 2011

Advised or co-advised 109 undergraduates (in REU and Keck Program internships, senior theses, UMN-funded research projects, etc.) 2010-2019, including at least 15 Native students, seven African-American students, five Hispanic/Latinx students, numerous first-generation college students. Projects last one summer to about two years.

LacCore Tribal liaison, collaboratively developing and executing research and education/outreach projects with Tribal resource managers, educators, and students

Work with International Association for Geoscience Diversity to support UMN Department of Earth Sciences Hydrogeology Field Camp to become mobility disability accessible

Organizer and advisor to student organizing committee, NSF-funded Continental Paleorecords and Processes (CPP) Seminar Series (formerly UMN-funded Quaternary Paleoecology Seminar Series) for University of Minnesota, regional paleo community, and drilling and coring community, 2015-2016; secured NSF funding for this series to include live text captioning of talks and free childcare.

Organizing committee member and geochronology workshop co-leader, Sixth International Limnogeology Congress (ILIC6), Reno-Tahoe June 2015

National Science Foundation panel member, 2013 (three panels), 2014 (one panel), 2018 (one panel)

GSA Joint Technical Program Committee Representative, 2011, 2013, 2014

Lecturer and organizer for University of Minnesota Earth Sciences, Carleton College, and Macalester College courses using collection and analysis of lake sediment cores for class labs

Research lead on NSF-OEDG-funded *Manoomin* project working with grade 5-12 and tribal college students and Reservation resource managers studying history of wild rice lakes in northern Minnesota; coadvise 2- and 10-week intern projects (2009-2014)

Laboratory manager search committee member, Department of Anthropology, University of Minnesota (2013)