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<http://northlandia.com>

## Research Interests

Cartography, web mapping and data visualization, teaching and curriculum development, volunteered geographic information, participatory mapping, natural resource extraction, social and environmental justice movements, Indigenous treaty rights

## Education

- Ph.D. Geography  
University of Wisconsin-Madison, expected August 2017  
Advisor: Dr. Robert E. Roth  
Dissertation: "Curriculum Development and Pedagogy for Teaching Web Cartography"  
Minor: Culture, History, and Environment (CHE), Nelson Inst. for Environmental Studies
- M.S. Cartography and GIS  
University of Wisconsin-Madison, May 2013  
Advisor: Dr. Robert E. Roth  
Thesis: "Mapmaking for Change: Online Participatory Mapping Tools for Revealing Landscape Values in the Bad River Watershed"
- B.S. Outdoor Education/Natural History, Biology Teaching  
Northland College, May 2005  
Graduating GPA: 3.95

## Honors and Awards

1. UW-Madison Campus-Wide Teaching Assistant Innovation in Teaching Award, 2015
2. First Place, Association of American Geographers Cartography Specialty Group Honors Student Paper Competition, 2013
3. Best Thematic Map Poster, Wisconsin Land Information Association Poster Contest, 2013
4. Summa Cum Laude, Northland College, 2005
5. Alpha Chi National College Honor Society, 2001-2003
6. Outdoor Education Department Merit Award, Northland College, 2005
7. Dean's List, Northland College, 2002-2005

## Scholarships and Grants

1. UW-Madison Geography Department Trewartha Conference Travel Award. 2016.
2. North American Cartographic Information Society Travel Grant. 2016.
3. UW-Madison Geography Department Odebolt Conference Travel Award. 2015.

4. International Cartographic Conference Travel Grant, U.S. National Committee of the International Cartographic Association. 2013.
5. Wisconsin Land Information Association Damon Anderson Memorial Scholarship. 2012.
6. North American Cartographic Information Society Travel Grant. 2012.
7. UW-Madison Geography Department Trewartha Graduate Research Award. 2012.
8. Association of American Geographers Cartography Specialty Group Master's Thesis Grant. 2012.
9. Nelson Institute for Environmental Studies Center for Culture, History, and Environment Master's Thesis Research Travel Grant. 2012.
10. Grant from Bad River Band of Lake Superior Chippewa for thesis work. 2012.
11. SciFund Challenge (research crowdfunding) Participant. 2012.
12. Academic Scholarship, Northland College. 2001-2005.
13. Morris K. Udall Scholarship. 2004.

## Peer-Reviewed Publications

1. Sack, CM and RE Roth. 2017. "Design and evaluation of an Open Web Platform cartography lab curriculum." *Journal of Geography in Higher Education* 41(1): 1-23. DOI: 10.1080/03098265.2016.1241987
2. Sack, CM. Under Review. "A User-Centered Design and Evaluation Process for Wikimap Developments." *Cartographic Perspectives*.
3. Roth, RE, S Young, C Nestel, CM Sack, B Davidson, J Janicki, V Knoppe-Wetzel, F Ma, R Mead, C Rose, and G Zhang. Under Review. "Global landscapes: Teaching globalization through responsive mobile map design. *The Professional Geographer*.
4. Roth, RE, RG Donohue, and CM Sack. 2014. "A Process for Keeping Pace with Evolving Web Mapping Technologies." *Cartographic Perspectives* 78: 25-52. DOI: 10.14714/CP78.1273

## Peer-Reviewed Conference Proceedings

1. Sack, CM, RE Roth, and KL Vincent. Accepted. "Introducing MapStudy: An Open-Source Cartographic Research Tool." *28<sup>th</sup> International Cartographic Conference*. Washington, D.C.: July 2-7, 2017.
2. Severtson, DJ, RE Roth, and CM Sack. 2016. "The influence of interactivity and uncertainty on reasoning with maps that depict an environmental hazard." In: *Proceedings of Society for Risk Analysis*. San Diego, CA: December 11-15.
3. Severtson, DJ, RE Roth, and CM Sack. 2015. "Does interactivity enhance reasoning with maps that visualize uncertain information? Preliminary results from an empirical study. In: *Proceedings of IEEE Information Visualization Conference*. Chicago, IL: October 25.
4. Roth RE, SJ Young, C Nestel, CM Sack, B Davidson, J Janicki, V Knoppke-Wetzel, F Ma, R Mead, C Rose, and G Zhang. 2015. "Global Madison: Usability evaluation of an adaptive mobile map supporting situated learning of globalization." In: *Proceedings of the 27th International Cartographic Conference*. Rio de Janeiro, Brazil: August 27.

5. Severtson D, RE Roth, CM Sack, and R Mead. 2014. "The influence of interactive maps and data sufficiency on risk beliefs, ambiguity, and behavioral intentions for maps depicting water test results for private residential wells." In: *Proceedings of Society for Risk Analysis*. Denver, CO: December 10.
6. Sack, CM. 2013. "Mapping Sense of Place: Online Participatory Mapping for Indicating Landscape Values." In: *Proceedings of the 26<sup>th</sup> International Cartographic Conference*. August 25-30.
7. Donohue, RG, CM Sack, TR Wallace, RE Roth, and TMA Buckingham. 2013. "A Competitive Analysis of Open Web Mapping Technologies." In: *Proceedings of the 26<sup>th</sup> International Cartographic Conference*. Dresden, Germany: August 27.
8. Roth RE, RG Donohue, CM Sack, TR Wallace, and TMA Buckingham. 2013. "A Process for Assessing Emergent Web Mapping Technologies." In: *Proceedings of the 26<sup>th</sup> International Cartographic Conference*. Dresden, Germany: August 26.
9. Sack, CM. 2013. "Tools and Best Practices for Coastal Web Maps." In: Devillers, R, C Lee, R Canessa, and A Sherin (eds.), *CoastGIS Conference 2013: Monitoring and Adapting to Change on the Coast: The 11<sup>th</sup> International Symposium for GIS and Computer Cartography for Coastal Zone Management*. Victoria, BC, Canada: June 18-21. pp. 160-164.
10. Sack, CM. 2013. "Designing Map Democracy: The Creation of the Bad River Watershed Wikimap." First Place AAG Cartography Specialty Group Honors Student Paper. In: *Proceedings of the Association of American Geographers*. Los Angeles, CA: April 10.

## Open Educational Resources

1. Sack, CM, RG Donohue, and RE Roth. 2014. "Interactive and Multivariate Choropleth Maps with D3." *Cartographic Perspectives* 78: 57-76.
2. Donohue, RG, CM Sack, and RE Roth. 2014. "Time Series Proportional Symbol Maps with Leaflet and jQuery." *Cartographic Perspectives* 76: 43-66.
3. Sack, CM. 2013. "User-Centered Design for Coastal Web Atlas Maps and Tools: A Process Manual." Wisconsin Coastal Atlas White Paper.

## Invited Talks

1. Sack, CM. 2015. "Volunteered Geographic Information and Participatory Mapping." Guest lecture to *Geography 572: Graphic Design in Cartography* course. University of Wisconsin-Madison: November 19.
2. Sack, CM. 2013. "Wikimapping the Bad River Watershed." *University of Wisconsin-La Crosse GIS Exposition*. La Crosse, WI: December 6.
3. Sack C.M. 2013. "Volunteered Geographic Information and Participatory Mapping." Guest lecture to *Geography 572: Graphic Design in Cartography* course. University of Wisconsin-Madison: November 29.

## Conference Presentations Without Proceedings

1. Sack, CM. Abstract accepted. "The Brave New World of Teaching Web Mapping." *Association of American Geographers Annual Meeting*. Boston, MA: April 5-9, 2017.

2. Sack, CM. 2017. "Invisible Nation: Mapping Sioux Treaty Boundaries." *Nelson Institute Center for Culture, History, and Environment Graduate Symposium*. Madison, WI: February 11.
3. Sack, CM, K Vincent, and RE Roth. 2016. "Introducing MapStudy: A survey design framework for 21<sup>st</sup> Century cartography." *North American Cartographic Information Society Annual Meeting*. Colorado Springs, CO: October 21.
4. Sack, CM and RE Roth. 2016. "Teaching Open Web Mapping." *ICA Commission on Open Source Geospatial Technologies Workshop at AutoCarto*. Albuquerque, NM: September 14. Supported by National Science Foundation Grant #1555267.
5. Sack, CM. 2015. "Open Web Mapping: How do we teach this stuff?" *North American Cartographic Information Society Annual Meeting*. Minneapolis, MN: October 15.
6. Roth, RE, DJ Severtson, CM Sack, and R Mead. 2015. "The influence of interactivity and uncertainty on health beliefs and decisions." *Association of American Geographers Annual Meeting*. Chicago, IL: April 21.
7. Sack, CM and Kimambo, N. 2015. "VGI-Enabled Web Mapping of Transhumance Corridors in the Sahel." *University of Wisconsin-Madison Geospatial Summit*. Madison, WI: April 20.
8. Sack, CM. 2014. "Whither the Wikimap." *North American Cartographic Information Society Annual Meeting*. Pittsburgh, PA: October 10.
9. Nestel, C, CM Sack, J Janicki, V Knoppke-Wetzel, F Ma, R Mead, C Rose, RE Roth, and G Zhang. 2014. "Adaptive cartography for situated learning." *North American Cartographic Information Society Annual Meeting*. Pittsburgh, PA: October 10.
10. Sack, CM and J. Janicki. 2014. "A Mobile Map-Based Situated Learning Module Using Open-Source Geoweb Technology." *FOSS4G*. Portland, OR: September 11.
11. Roth, RE, L Severtson, R Mead, and CM Sack. 2014. "Interactivity, privacy, and uncertainty: Mapping drinking water quality in Wisconsin." *Association of American Geographers Annual Meeting*. Tampa, FL: April 11.
12. Sack, CM. 2013. "Zero to Mashup in 1200 Seconds." *Practical Cartography Day at the North American Cartographic Information Society Annual Meeting*. Greenville, SC: October 9.
13. Sack, CM. 2013. "A Practical Introduction to D3 Web Maps." *North American Cartographic Information Society Annual Meeting*. Greenville, SC: October 10.
14. Sack CM, RG Donohue, RE Roth, TR Wallace, and TMA Buckingham. 2013. "Adapting Web Mapping Curriculum to Open Source Technologies." *FOSS4G North America*. Minneapolis, MN: May 22-24.
15. Sack, CM, RG Donohue, RE Roth, TR Wallace, and TMA Buckingham. 2013. "Web Mapping Technology Study Update, or Everything You Just Learned is Now Obsolete." *University of Wisconsin-Madison Geospatial Summit*. Madison, WI: April 25.
16. Sack, C.M. 2013. "Wikimapping Landscape Values in the Bad River Watershed." *Wisconsin Land Information Association Conference*. Lake Geneva, WI: February 14.
17. RE Roth, RG Donohue, TR Wallace, CM Sack, and TMA Buckingham. 2013. "Getting a Handle on Open Source Web Mapping Technologies." *Wisconsin Land Information Association Conference*. Lake Geneva, WI: February 14.
18. Sack, CM. 2012. "Mapmaking for Change: Wikimapping the Bad River Watershed." *North American Cartographic Information Society Annual Meeting*. Portland, OR: October 19.

19. Donohue, RG, TR Wallace, CM Sack, RE Roth, and TMA Buckingham. 2012. "Keeping Pace with Emerging Web Mapping Technologies." *North American Cartographic Information Society Annual Meeting*. Portland, OR: October 19.
20. Sack, CM. 2012. "Mapmaking for Change: Online Participatory Mapping Tools for Revealing Landscape Values in the Bad River Watershed." *University of Wisconsin-Madison Geospatial Summit*. Madison, WI: April 26.

## Posters

1. Sack, CM. 2015. "Open Source Learning: Designing a New Web Mapping Curriculum." 27<sup>th</sup> *International Cartographic Conference*. Rio de Janeiro, Brazil: August 25.
2. Sack, CM. 2013. "Passenger Rail in the United States: A Romantic Past, a High-Speed Future?" *North American Cartographic Information Society Annual Meeting*. Greenville, SC: October 9.
3. Sack, CM, R Donohue, T Wallace, RE Roth, TMA Buckingham. 2013. "A Competitive Analysis of Open Web Mapping Technologies." 26<sup>th</sup> *International Cartographic Conference*. Dresden, Germany: August 28.
4. Sack, CM. 2013. "A Sand County... Disappearing." *Wisconsin Land Information Association Conference*. Lake Geneva, WI: February 14.

## Maps, Blogs, and Video

Many of my static and web maps are presented in my design portfolio at <http://northlandia.com>. I also write web mapping tutorials and commentary on my blog, <http://northlandia.wordpress.com>.

### Posts on other blogs:

1. Sack, C. 2016. "The Land Doesn't Hate: A Conversation with Lauret Savoy." *Edge Effects*. November 10. <http://edgeeffects.net/lauret-savoy>
2. Sack, C. 2016. "A #NoDAPL Map." *The Huffington Post*. November 2. [http://www.huffingtonpost.com/entry/a-nodapl-map\\_us\\_581a0623e4b014443087af35](http://www.huffingtonpost.com/entry/a-nodapl-map_us_581a0623e4b014443087af35)
3. Sack, C. 2015. "The Arrowhead on the Internet: A Conversation with National Park Service Cartographer Mamata Akella." *Edge Effects*. April 14. <http://edgeeffects.net/mamata-akella>

### Video:

1. Sack, C, C Schuchhardt, and WR Daniels. *Downstream*. <https://vimeo.com/95729335>

## Teaching Experience

### UW-Madison:

1. Instructor, Geography 378: Introduction to Geocomputing. 2016 Fall Semester. Topics: Python and command shell programming for GIS.
2. Instructor, Geography 170: Our Digital Globe. 2016 Summer Term. Topics: geospatial data, technologies, and practices including GPS, Remote Sensing, GIS, and Cartography.
3. Teaching Assistant, Geography 575: Interactive Cartography and Geovisualization. 2014 Fall Semester. Topics: technical skills for web mapping using HTML, CSS, JavaScript, and JavaScript code libraries. Awarded Innovation in Teaching Award for curriculum development work.

4. Teaching Assistant, Geography 378: Introduction to Geocomputing. 2014 Spring Semester. Topics as above.
5. Head Teaching Assistant, Geography 120: Global Physical Environments. 2012 Fall, 2013 Spring, and 2013 Fall Semesters. Topics: Earth systems including atmosphere, hydrosphere, lithosphere, and biosphere dynamics. Oversaw discussion curriculum and syllabus as head TA.
6. Teaching Assistant, Geography 120: Global Physical Environments. 2011 Fall, 2012 Spring Semesters. Topics as above.

## Prior:

1. Science Teacher and Paraprofessional, Lake Superior High School (Duluth, MN). 2010-2011.
2. Summer School Chemistry and Physics, Duluth, MN Public Schools. 2010.
3. Substitute Teacher in Duluth, MN and Superior, Maple, and Ashland, WI. 2006-2010.
4. Environmental Educator, Hartley Nature Center, Duluth, MN. 2009-2010.

## Project Assistantships

1. Development of *MapStudy*, a web application framework for creating map-based surveys. UW-Madison Cartography Lab & Dr. Robert Roth. 2015-2017. Supported by National Science Foundation Grant #1555267.
2. Development of *Couloirs Transhumance*, a wikimap of herding corridors in eastern Senegal. UW-Madison Cartography Lab & Dr. Matthew Turner. 2015-2016.
3. Development of modularized online laboratory curriculum for Geography 575: Interactive Cartography and Geovisualization. UW-Madison Cartography Lab & Dr. Robert Roth. 2015.

## Academic and Professional Affiliations

1. Graduate Associate, Center for Culture, History, and Environment (CHE), Nelson Institute for Environmental Studies, UW-Madison.
2. Officer, UW-Madison Teaching Assistants' Association.
3. Member, Cartographic and Geographic Information Society.
4. Member, North American Cartographic Information Society.
5. Member, Association of American Geographers.

## Service

1. *Edge Effects* Digital Magazine Editorial Board, Center for Culture, History, and Environment, Nelson Institute for Environmental Studies, UW-Madison. 2016-2017.
2. Cartographer, *Capitalism, Nature, Socialism* (peer-reviewed journal). 2014-2016.
3. Graduate Representative to the Faculty, Geography Department, UW-Madison. 2016-2017.
4. Graduate Student Symposium co-coordinator, Geography Department, UW-Madison. 2016.

5. Writing Retreat co-coordinator, Center for Culture, History, and Environment, Nelson Institute for Environmental Studies, UW-Madison. 2015-2016.
6. CHE Symposium planning committee, Center for Culture, History, and Environment, Nelson Institute for Environmental Studies, UW-Madison. 2015.
7. Association of American Geographers Cartography Specialty Group Student Board Member. 2014-2015.
8. Department Picnics co-coordinator, Geography Department, UW-Madison. 2014-2015.
9. Place-Based Workshop planning committee and tour guide, Center for Culture, History, and Environment, Nelson Institute for Environmental Studies, UW-Madison. 2014.
10. Student Senator, Northland College Student Association Senate, Northland College. 2003-2005.
11. *Drifts* student newspaper editor, Northland College. 2004-2005.

## Community Work

1. Volunteer Coordinator, Rainbow Bookstore Cooperative. 2011-2015.
2. Board Member, Wisconsin Network for Peace and Justice. 2007-2015.
3. Writer, Zenith City Weekly newspaper (Duluth, MN). 2008-2014.
4. Americorps (Duluth, MN). 2008-2009.