

# CAROLYN S. FISH

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pronouns: she, her, hers

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Department of Geography

1251 University of Oregon

Eugene, OR 97403-1251

## EDUCATION

### **Doctor of Philosophy in Geography, 2014-2018**

*The Pennsylvania State University (Penn State)*

Dissertation Title: The cartography of climate change in United States media

Advisor: Dr. Cynthia A. Brewer

### **Master of Science in Geography, 2008-2010**

*Michigan State University*

Thesis Title: Change detection in animated choropleth maps

### **Bachelor of Science in Geography (GIScience concentration), 2005-2008**

*The Pennsylvania State University*

Graduated with Distinction

## PROFESSIONAL EXPERIENCE

### **Academic Positions**

2018-present *Assistant Professor*

University of Oregon, Department of Geography, Eugene, OR

2019-2023 *Early-Career Innovator Program Fellow*

National Center for Atmospheric Research (NCAR), Boulder, CO

### **Professional Positions (Non-Academic)**

2011-2014 *Cartographic Product Engineer*

Esri, Redlands, CA

2010 *GIS Data Collection Manager*

Remote Sensing and GIS, Michigan State University, East Lansing, MI

## GRANTS

2023-25 **Fish, C.S. (PI) & A. Segrè Cohen (PI).** *Science Communication and Mapping for Climate Justice.* University of Oregon Office of the Provost's 2023 Environmental Initiative Curriculum Award. (\$25,000).

2019-23 **Fish, C.S. (PI).** *Map storytelling to build empathy for coastal communities.* National Center for Atmospheric Research (NCAR) Early-Career Innovators Program sponsored by the National Science Foundation (NSF) (\$235,000).

- 2017-18 Brewer, C.A. (PI) and C.S. Fish (Co-PI) *Doctoral dissertation research: Cartographic design for public communication of environmental information*. National Science Foundation (NSF) Doctoral Dissertation Research Improvement Award (DDRI) (\$15,986).
- 2017-18 Fish, C.S (PI). *Cartographic design for mass communication*. Evelyn L. Pruitt National Fellowship for Dissertation Research, Society of Woman Geographers (\$11,000).

## PUBLICATIONS

\* = undergraduate student, \*\* = graduate student, \*\*\* = postdoctoral scholar mentee

*In my field it is typical that lead author is first author. My policy is to list students as first author if the publication is from their thesis or dissertation, even if the project is heavily coordinated by me. In papers where there were multiple students who worked on a paper derived from a student's thesis, I listed the students first and myself last. Student research assistants on my research are typically not listed as first-authors unless they made a typical first-author contribution to the paper.*

### Peer-Reviewed Publications

- 2025 Garrison, M.\*\*, S. Reis\*\*, Zhang, S.\*\*, and C.S Fish. (accepted 3/22/25) Narrative Transportation & Emotional Responses to Storytelling Maps. *Cartography and Geographic Information Science*.
- 2025 Fish, C.S.. R.E. Roth, P. Raposo, E.M. Guidero, and Z. Sui\*\*. (accepted 3/2/25) Why Conduct Cartographic Research: A Comparison of Cartographic Research Contributions from 2015–2024 in Four International Cartographic Association (ICA) Affiliated Journals. *International Journal of Cartography*.
- 2025 Fish, C.S. S. Steidle-Nix\*\*, S. Brown\*\*. (accepted 12/6/24) Cartographic Storytelling and the potential to be lost in a map story: Narrative Transportation Theory for the improvement of Map Stories. *Cartographica: The International Journal for Geographic Information and Geovisualization*. 60(2).
- 2024 Slavik, C.\*\*\*, C. Fish, and E. Peters. (2024) Using geovisualizations to educate the public about environmental health hazards: What works and why. *Current Environmental Health Reports*. DOI: 10.1007/s40572-024-00461-8. <https://doi.org/10.1007/s40572-024-00461-8>
- 2024 Thatcher, J., D. Retchless, and C.S. Fish. (2024) Dueling Cartographies: science, positivism, art, and critical praxis. *International Journal of Cartography*. DOI: 10.1080/23729333.2024.2338496. <https://doi.org/10.1080/23729333.2024.2338496>
- 2023 Fish, C.S. and K.Q. Kreitzberg\*. (2023). Mapping in an Echo Chamber: How Cartographic Silence Frames Right-Wing Media's Climate Change Denial. *Annals of the American Association of Geographers*. DOI: 10.1080/24694452.2023.2227672. <https://doi.org/10.1080/24694452.2023.2227672>
- 2022 Douglass, N.A.K.\*\* and C.S. Fish. (2022). That's a relief: Assessing beauty, realism, and landform clarity in multilayer terrain maps. *Cartographic Perspectives*. 100, 45-66. DOI: 10.14714/CP100.1727. <https://cartographicperspectives.org/index.php/journal/article/view/1727/2091>

- 2022 Retchless, D., C.S. Fish, J.Thatcher (2022). Climate Change Communication beyond the Digital Divide: Exploring cartography's role and privilege in climate action. *Journal of Environmental Media*. 3 (1), 101-123. DOI: [https://doi.org/10.1386/jem\\_00074\\_1](https://doi.org/10.1386/jem_00074_1)
- 2021 Fish, C.S. (2021). Elements of Vivid Cartography. *The Cartographic Journal*. 58(2), 150-166. DOI: <https://doi.org/10.1080/00087041.2020.1800160>
- 2020 Fish, C.S. (2020) Cartographic content analysis of compelling climate change communication. *Cartography and Geographic Information Science*. 47(6), 492-507. DOI: 10.1080/15230406.2020.1774421
- 2020 Fish, C. (2020) Storytelling for making cartographic design decisions for climate change communication. *Cartographica: The International Journal for Geographic Information and Geovisualization*. 55(2), 69–84. DOI: 10.3138/cart-2019-0019
- \*most read paper in *Cartographica*
- 2019 de Sherbinin, A., A. Bukvic, G. Rohat, M. Gall, B. McCusker, B. Preston, A. Apotsos, C. Fish, S. Kienberger, P. Muhonda, O. Wilhelmi, D. Macharia, W. Shubert, R. Sliuzas, B. Tomaszewski, S. Zhang. (2019). Climate Vulnerability Mapping: A Systematic Review and Future Prospects. *WIREs Climate Change*. 10(5), 1-23. DOI: 10.1002/wcc.600
- 2018 Fish, C.S. (2018). Spatiotemporal Representation. *The Geographic Information Science & Technology Body of Knowledge* (4th Quarter 2018 Edition), John P. Wilson (Ed.). DOI: 10.22224/gistbok/2018.4.6.
- 2017 Griffin, A.L., T. White, C.S. Fish, B. Tomio, H. Huang, C. Robbi-Sluter, J.V. Meza Bravo, S.I. Fabrikant, S. Bleisch, M. Yamada, and P. Picanço (2017). Designing across map use contexts: A research agenda. *International Journal of Cartography*. 3(sup1), 90-114. DOI:10.1080/23729333.2017.1315988.
- 2016 Fish, C.S. and K. Calvert (2016). Analysis of interactive solar energy web maps for urban energy sustainability. *Cartographic Perspectives*. 85, 5-22. DOI: 10.14714/CP85.1372\*
- \*won *Cartographic Perspectives* Student Paper Competition
- 2016 Fish, C. S. and N.B. Piekielek (2016). Targeting disciplines for GIS outreach using bibliometric analysis. *Journal of Maps and Geography Libraries*. 12(3), 258–280. DOI: 10.1080/15420353.2016.1221870.
- 2013 Schaetzl, R. J., H. Enander, M.D. Luehmann, D.P. Lusch, C. Fish, M. Bigsby, M. Steigmeyer, J. Guasco, C. Forgacs, and A. Pollyea (2013). Mapping the physiography of Michigan with GIS. *Physical Geography*. 34(1): 2-39. DOI: 10.1080/02723646.2013.778531.
- 2011 Fish, C., K.P. Goldsberry, and S. Battersby (2011). Change blindness in animated choropleth maps: An empirical study. *Cartography and Geographic Information Science*. 38(4): 350-362. DOI: 10.1559/15230406384350.

## Under Review

Fish, C., J. Thatcher, and D. Retchless. Cartography: a translational science for the Anthropocene? Abstract accepted for a special issue on New Media in Geography at the *Annals of the American Association of Geographers* to be published in 2026.

### In Revision

Roberts, L.\* and C. Fish. Dashboard Requirements for International Emergency Response: Evaluation of COVID-19 Dashboard Features. *Cartography and Geographic Information Science*.

### Work in Progress

Sui, Z.\*\* and C. Fish. Deconstructing Borders, Territories, and Toponyms: Cartographic Designs in the Political Disputed Territory of Sakhalin. *Cartographic Perspectives*.

### Book Chapters

2020 Hauthal, E., D. Burghardt, D., C. Fish, A.L. Griffin. (2020) "Sentiment Analysis" In (Kobayashi) *Encyclopedia of Human Geography*, Second Edition: Elsevier. Pp. 169-177. <https://doi.org/10.1016/B978-0-08-102295-5.10593-1>

2015 Fish, C. and C.A. Brewer. (2015) "GIS as a Tool for Map Production" In: (Monmonier) *The History of Cartography Project*, Volume 6: University of Chicago Press; Chicago, Illinois. Pp. 504-509. [https://www.press.uchicago.edu/books/HOC/HOC\\_V6/HOC\\_VOLUME6\\_G.pdf](https://www.press.uchicago.edu/books/HOC/HOC_V6/HOC_VOLUME6_G.pdf)

### Peer-Reviewed Extended Abstracts

2024 Roberts, L.\*\* and C. Fish. Hazardous Waste Litigation and Mapping: A template for designing maps of climate change attribution. EuroCarto 2024. Vienna, Austria. September 9-11, 2024.

Kelly, M. & C. Fish. Storytelling with Satellites: A Preliminary User Study of Satellite Data in the News. EuroCarto 2024. Vienna, Austria. September 9-11, 2024.

2023 Fish, C.S., E. Guidero, P. Raposo, & R.E. Roth. *Research Approaches in Cartography: A Preliminary Review*. Proceedings of the 31<sup>st</sup> International Cartographic Conference. Cape Town, South Africa. August 2023.

Sui, Z.\* & C.S. Fish. *Endonyms or Exonyms: How map purpose, data source, and map language impact place naming on maps*. Proceedings of the 31<sup>st</sup> International Cartographic Conference. Cape Town, South Africa. August 2023.

2019 Fish, C.S. and A.L. Griffin. *Emotional responses to climate change map framing using facial emotion recognition technology*. Proceedings of the 29<sup>th</sup> International Cartographic Conference. Tokyo, Japan. July 2019.

2018 Fish, C.S. *Evaluating emotional responses to framing of climate change maps with facial emotion recognition technology*. 10<sup>th</sup> International Conference on Geographic Information Science. Melbourne, VIC, Australia. August 29, 2018.

- Fish, C.S.** *Animation in the age of the animated gif: The changing dynamics of dynamics in geovisual analytics*. Workshop at the 10<sup>th</sup> International Conference on Geographic Information Science. Melbourne, VIC, Australia. August 28<sup>th</sup>, 2018.
- 2017 **Fish, C.S.** *A content analysis of climate change maps in the United States news media*. Proceedings of the 28<sup>th</sup> International Cartographic Conference. Washington, DC. July 2-7, 2017
- Griffin, A.L., T. White, **C.S. Fish**, B. Tomio, H. Huang, C. Robbi-Sluter, J.V. Meza Bravo, S.I. Fabrikant, S. Bleisch, M. Yamada, and P. Picanço. *Designing across map use contexts*. Proceedings of the 28<sup>th</sup> International Cartographic Conference. Washington, DC. July 2-7, 2017.
- 2015 **Fish, C.S.** and K. Calvert. *Understanding map design for energy policy, planning, and technology implementation*. The 27<sup>th</sup> Annual Meeting of the International Cartographic Association. Rio de Janeiro, Brazil. August 25, 2015.
- 2010 Goldsberry, K. and **C. Fish**. *Legibility of transitions in dynamic geovisual displays: Determining the influence of change blindness in geovisual analytics*. The 6<sup>th</sup> Meeting of GIScience. Zurich, Switzerland. September 15, 2010.
- 2009 **Fish, C.** and K. Goldsberry. *Evaluating the influence of tweening on human change perception in animated choropleth maps*. The 24<sup>th</sup> Annual Meeting of the International Cartographic Association. Santiago, Chile. November 18, 2009.

#### **Proceedings and Other Publications (Not Peer-Reviewed)**

- 2017 **Fish, C.S.** and A.L. Griffin. (2017). *Emotional responses to climate change maps*. Proceedings of the 28<sup>th</sup> International Cartographic Conference, Pre-conference Workshop on Maps and Emotion. Washington, DC. July 1-2, 2017.
- 2015 **Fish, C.S.** 2015. *Cartographic challenges in animated mapping*. Proceedings of the 27<sup>th</sup> International Cartographic Conference, Pre-conference Workshop on Envisioning the Future of Cartographic Research. Curitiba, Brazil. August 21, 2015.
- 2015 Abbott, L., A. Barrett, S. Eissler, **C.S. Fish**, L. Goldberg, S. Mainzer, and M. Olsen. (2015). *Community perceptions of local foods: A mixed methods approach in State College, PA*. University Park, PA: Hamer Center for Community Design.

## **PRESENTATIONS AND INVITED LECTURES**

### **Invited Talks**

- 2025 **Fish, C.S. (presenter)**. *Contextualizing cartography in a changing climate*. 2025 CaGIS Early Career Scholar Keynote Lecturer at the 120<sup>th</sup> Meeting of the American Association of Geographers. March 27, 2025.
- 2024 **Fish, C.S. (presenter)**. *A Conversation on Research Process: How Cartographic Silence Frames Conservative Media's Climate Change Denial*. Penn State Department of Geography Coffee Hour Lecture Series. University Park, PA. November 8, 2024.

- Fish, C.S. (presenter).** *Map Design for Communicating Data Science*. University of Oregon School of Data and Computer Sciences Seminar Series. Eugene, OR, USA. January 11, 2024.
- 2023 **Fish, C.S. (presenter).** *Building Empathy for Coastal Communities Through Storytelling Maps*. University of Applied Sciences and Arts Northwestern Switzerland, Brugg-Windisch, Switzerland. September 5, 2023.
- Fish, C.S. (presenter).** *Research Talk: Finding Context Without a Map: Carolyn Fish on Contextual Cartographic Research*. University of Pennsylvania Penn Institute for Urban Research Urban Spatial Analytics Program & Weitzman School of Design McHarg Environmental Modeling Center. Philadelphia, PA. April 13, 2023.  
<https://penniur.upenn.edu/events/finding-context-without-a-map-carolyn-fish-on-contextual-cartographic-research>
- Fish, C.S. (presenter).** *#MUSA Master Class: Small Cartographic Adjustments for Designing Better Maps*. University of Pennsylvania Penn Institute for Urban Research Urban Spatial Analytics Program & Weitzman School of Design McHarg Environmental Modeling Center. Philadelphia, PA. April 13, 2023.
- 2022 **Fish, C.S. (presenter).** *The Albatross: How Cartographic Silence Frames Conservative Media's Climate Change Denial*. University of Oregon Department of Geography Colloquium. Eugene, OR. October 13, 2022.
- Fish, C.S. (presenter).** *Cartographic Communication of Climate Change*. University of Wisconsin-Madison Department of Geography Yi-Fu Tuan Lecture. Madison, WI. March 11, 2022.
- 2021 **Fish, C.S. (presenter).** *Cartography for Communication: Politics and Climate Change*. University of Puget Sound and University of Washington Tacoma REU Site: Spatial Models and Electoral Redistricting (NSF Award #1851696). Tacoma, WA, July 9, 2021.  
[https://www.nsf.gov/awardsearch/showAward?AWD\\_ID=1851696&HistoricalAwards=false](https://www.nsf.gov/awardsearch/showAward?AWD_ID=1851696&HistoricalAwards=false).
- Fish, C.S. (presenter)** and Michala Garrison. *Map Stories for Climate Change Communication*. Harvard University Center for Geographic Analysis Virtual Forum 2021: Geographic Data Science and Public Policy. Virtual. June 30, 2021.  
<https://gis.harvard.edu/event/cga-virtual-forum-2021-geographic-data-science-and-public-policy>.
- Fish, C.S. (presenter).** *From the media to storytelling maps: The ways in which maps connect the public to climate change*. University of Münster, Institute for Geoinformatics GI Forum. Virtual. June 22, 2021. <https://www.uni-muenster.de/Geoinformatics/en/GI-Forum/index.php>.
- Fish, C.S. (presenter).** *Cartographies of Climate Change*. Oregon State University College of Earth, Ocean, and Atmospheric Sciences. Corvallis, OR, June 16, 2021.

- 2020 **Fish, C.S. (presenter)**. *Creating User Friendly Maps for Experts & Storytelling Maps for Everyone on Ocean Acidification & Hypoxia*. State of the Coast Conference-Oregon Sea Grant. Virtual. November 6, 2020. <https://seagrant.oregonstate.edu/state-coast/program>.
- Fish, C.S. (presenter)**. *What do maps have to do with emotions and climate change?* IntroDUCKtion: UO Student Orientation. Eugene, OR, August 6, 2020. [https://www.youtube.com/watch?v=Y\\_117iOclEw&ab\\_channel=OregonWelcome](https://www.youtube.com/watch?v=Y_117iOclEw&ab_channel=OregonWelcome).
- 2018 **Fish, C.S. (presenter)**. *Cartographic design for mass communication*. Society of Woman Geographers Meeting, Washington, DC, April 28, 2018.
- 2017 **Fish, C.S. (presenter)**. *Cartographic design for climate change vulnerability mapping*. National Socio-Environmental Synthesis Center (SESYNC) Pursuit on Climate Vulnerability Mapping Workshop May 8-10, 2017, Annapolis, MD, May 9, 2017.
- Fish, C.S. (presenter)**. *Emotion, framing, climate change, and maps*. United States Military Academy at West Point. West Point, NY, April 27, 2017.
- 2014 **Fish, C.S. (presenter)**. *Designing point symbols*. University of Kentucky MapShop Workshop for the New Maps+ Online Digital Mapping Initiative. Lexington, KY, October 13<sup>th</sup> 2014.
- Fish, C.S. (panelist)**, Wilson, M., A. Woodruff, J. Czaplewski, and M. Foster. *Professional cartography*. Geography 109: Digital Mapping, University of Kentucky. Lexington, KY, October 14<sup>th</sup>, 2014.
- 2012 **Fish, C. (presenter)**, L. Rosenshein Bennett, and L. Scott. *Visualizing space-time cluster analysis*. Esri Useful Maps and Apps Presentation Series. Redlands, CA, October 30, 2012
- 2009 **Fish, C. (presenter)** and K. Goldsberry. *Quantifying the influence of tweening in animated maps*. Michigan State Geography Department Colloquia Series. East Lansing, MI, March, 2009.
- Fish, C. (presenter)** and K. Goldsberry. *Change blindness and animated choropleth maps*. Michigan State Geography Department Colloquia Series. East Lansing, MI, October 2, 2009.

### Conference and Symposium Presentations

\*\* students under my supervision

- 2025 **Fish, C.S. (presenter)**. *Contextualizing cartography in a changing climate*. 2025 CaGIS Early Career Scholar Keynote Lecturer at the 120<sup>th</sup> Meeting of the American Association of Geographers. March 27, 2025.
- \*Also listed above as an invited talk
- 2024 **Fish, C.S. (presenter)** & B.Ricker. *Cartography for Sustainable Development*. 119<sup>th</sup> Meeting of the American Association of Geographers, Honolulu, Hawaii. April 18, 2024.
- 2023 **Fish, C.S. (presenter)**, S.R. Brown\*\*, and S. Steidle-Nix\*\*. *Narrative Transportation in Cartography: The Potential to Be Lost in a Map Story*. 2023 North American Cartographic Information Society (NACIS) Conference, Pittsburgh, PA. October 12, 2023.

- Fish, C.S. (presenter)**, E. Guidero, P. Raposo, R.E. Roth. *Research Approaches in Cartography: A Preliminary Review*. Proceedings of the 31<sup>st</sup> International Cartographic Conference. Cape Town, South Africa. August 18, 2023. (also listed under peer-reviewed extended abstracts).
- Sui, Z.\* & **C.S. Fish**. *Endonyms or Exonyms: How map purpose, data source, and map language impact place naming on maps*. Proceedings of the 31<sup>st</sup> International Cartographic Conference. Cape Town, South Africa. August 14, 2023. (also listed under peer-reviewed extended abstracts).
- Fish, C.S. (presenter)**. *Cartography: A Translational Science for the Anthropocene?* 118<sup>th</sup> Meeting of the American Association of Geographers, Denver, CO. March 24, 2023.
- 2021 Douglass, N.A.K.\*\* (presenter) & **C. Fish**. *That's a Relief: Assessing Aesthetic Preference and Landform Clarity in Terrain Maps*. 2021 North American Cartographic Information Society (NACIS) Conference, Oklahoma City, OK. October 14, 2021.
- M. Garrison\*\* (presenter) & **C. Fish**. *Narrative Transportation, Emotions, and Climate Change Attitudes: Understanding Map Reader Response to Storytelling Maps*. 2021 North American Cartographic Information Society (NACIS) Conference, Oklahoma City, OK. October 14, 2021.
- K. Quines Kreitzberg\*\* (presenter) and **C. Fish**. *Mapping an Echo Chamber: How Cartographic Silence Frames Right-Wing Media's Climate Change Denial*. 2021 North American Cartographic Information Society (NACIS) Conference, Oklahoma City, OK. October 15, 2021.
- Fish, C.S. (presenter)** & M. Garrison. *Map Stories for Climate Change Communication*. NCAR Innovators Catalyzing Innovation through Convergent Research PI Symposium, Virtual. July 27, 2021.
- 2020 **Fish, C.S. & N. Douglass (both authors were presenters)**. *Revamping an Introductory GIS Course for Online Delivery*. 2020 North American Cartographic Information Society (NACIS) Conference, Virtual. October 15, 2020.
- Fish, C.S. (presenter)**. *Who is telling the story of climate change with maps? The surprising cartographic silence of the far right*. 115<sup>th</sup> Meeting of the American Association of Geographers, Denver, CO. (cancelled)
- 2019 **Fish, C. S. (presenter)**. *Vivid Maps of Climate Change: Do They Make a Difference?* 114<sup>th</sup> Meeting of American Association of Geographers, Washington, DC, April 3-7, 2019.
- 2018 **Fish, C.S. (presenter)**. *Vivid Persuasion in Maps*. 2018 North American Cartographic Information Society (NACIS) Conference, Norfolk, VA, October 18, 2018.
- Fish, C.S. (presenter)**. *Vivid maps: Climate change cartographic communication*. 113<sup>th</sup> Meeting of the American Association of Geographers, New Orleans, LA, April 10-14, 2018.
- 2017 **Fish, C.S. (presenter)**. *Climate change, maps, and the media*. 2017 North American Cartographic Information Society (NACIS) Conference, Montreal, Canada, October 10-13, 2017.



- Fish, C.S. (presenter) and A.L. Griffin. *Emotional responses to climate change maps*. 112<sup>th</sup> Annual Meeting of the American Association of Geographers, Boston, MA, April 5 – 9, 2017.
- 2016 Fish, C.S. (presenter) and K. Calvert. *A content analysis study of interactive online solar energy maps*. 111<sup>th</sup> Annual Meeting of the Association of American Geographers, San Francisco, CA, March 30, 2016.
- \*Awarded Best Paper in the American Association of Geographers Cartography Specialty Group Honors Student Paper Competition*
- Fish, C.S. (presenter) and K. Calvert. *Assessment of solar energy web maps*. 2016 No Boundaries Conference, University Park, PA, February 20, 2016.
- 2015 Robinson, A. C. (presenter), C.S. Fish, and S. Quinn. *Visualizing geographic patterns in MOOC data*. 2015 Esri Education GIS Conference. San Diego, CA, July 18-21, 2015.
- Calvert, K., J. Brownson, C.S. Fish (panelist), D. Renne, J. Rannalli, and D. Lingfors. *Panel: Mapping solar energy futures: Emerging trends in geospatial decision-support*. Solar 2015: American Solar Energy Society (ASES) Conference, State College, PA, July 29, 2015.
- Fish, C.S. (presenter) and K. Calvert. *Web-based renewable energy map design evaluation*. 110<sup>th</sup> Annual Meeting of the Association of American Geographers, Chicago, IL, April 21-25, 2015.
- Fish, C.S. (presenter), P. Stephens, and M. Mathason. *Web-based renewable energy map design evaluation*. 2015 No Boundaries Conference, University Park, PA, April 11, 2015.
- 2014 Fish, C. and K. Goldsberry. *Are you blind to change? Evaluating the influence of tweening on human change perception in animated choropleth maps*. 2014 North American Cartographic Information Society (NACIS) Conference, Pittsburgh, PA, October 8-11, 2014. (poster)
- 2013 Fish, C. (presenter). *Basemaps*. 2013 Esri International Users Conference, San Diego, CA, July 8-12, 2013
- Fish, C. (presenter). *Military Aspects of Weather*. 2013 Esri International Users Conference, San Diego, CA, July 8-12, 2013
- Fish, C., N. Campos, and M. Funk. (all authors were presenters). *ArcGIS for the Military: Managing the operational factors*. 2013 Esri International Users Conference, San Diego, CA, July 8-12, 2013
- Fish, C. and M. Funk. (all authors were presenters). *ArcGIS for the Military: Analyzing the operational environment*. 2013 Esri International Users Conference, San Diego, CA, July 8-12, 2013
- Fish, C. and M. Funk. (all authors were presenters). *ArcGIS for the Military: analyzing the operational environment*. 2013 Esri Federal GIS Conference, Washington, DC, February 25-27, 2013.

- Fish, C.S. (presenter).** *Designing and testing point symbols.* 2013 North American Cartographic Information Society (NACIS) Conference, Greenville, SC, October 9-11, 2013.
- 2012 **Fish, C.** and B. Conklin. (all authors were presenters). *Creating basemaps for the defense and intelligence communities.* 2012 Esri Federal GIS Conference, Washington, DC, February 22-24, 2012.
- Fish, C.** and B. Conklin. (all authors were presenters). *Exploring the ArcGIS Defense and Intelligence Resources.* 2012 Esri Federal GIS Conference, Washington, DC, February 22-24, 2012.
- Fish, C.S. (presenter),** L. Rosenshein Bennett, and L. Scott. *Visualizing space-time cluster analysis.* 2012 North American Cartographic Information Society (NACIS) Conference, Portland, OR, October 17-19, 2012.
- 2011 Buckley, A. (presenter), K. Field, and **C.S. Fish.** *Methods for space time visualization: Take 3.* 2011 North American Cartographic Information Society (NACIS) Conference. Madison, WI, October 12-14, 2011.
- Goldsberry, K. (presenter) and **C.S. Fish.** *Space-time legibility: Using design to mitigate geovisual failures.* 107<sup>th</sup> Annual Meeting of the Association of American Geographers, Seattle, WA, April 12-16, 2011.
- 2010 **Fish, C.S. (presenter)** and K. Goldsberry. *Animated choropleth maps and human change detection.* The 106<sup>th</sup> Annual Meeting of the Association of American Geographers, Washington, DC, April 14-18, 2010.
- Goldsberry, K. (presenter) and **C.S. Fish.** *Change We Can Perceive In: Change legibility in dynamic displays of geographic information.* 106<sup>th</sup> Annual Meeting of the Association of American Geographers, Washington, DC, April 14-18, 2010.
- 2009 **Fish, C.S. (presenter)** and K. Goldsberry. *The effects of smooth transitions in animated choropleth maps on human change detection.* 2009 North American Cartographic Information Society (NACIS) Conference. Sacramento, CA, October 7-10, 2009.
- Fish, C.S. (presenter)** and K. Goldsberry. *Quantifying the influence of tweening in animated maps.* 105<sup>th</sup> Annual Meeting of the Association of American Geographers, Las Vegas, NV, March 22-28, 2009.
- 2008 Roth, R.E. (presenter), M. Stryker, **C. Fish,** D. Schoch, and C.A. Brewer. *ScaleMaster.org: Multi-scale mapping made easy.* 2008 North American Cartographic Information Society (NACIS) Conference. Missoula, MT, October 8-11, 2008.
- Allen, M., **C. Fish,** and S. Herb. (all authors were presenters). *The cultural and literary map of Pennsylvania.* 104<sup>th</sup> Annual Meeting of the Association of American Geographers, Boston, MA, April 15-19, 2008.

**Workshop (attendance and presentations)**

- 2019 National Science Foundation Landscape Carbon Sequestration for Atmospheric Recovery (LCSAR) Workshop, Portland, Oregon

- 2017 Critical GIS Workshop, McGill University, Montreal, Canada  
National Socio-Environmental Synthesis Center (SESYNC) Workshop on Climate Change Vulnerability Mapping, Annapolis, MD **with presentation** on “Cartographic Design for Climate Change Vulnerability Mapping”
- 2016 International Cartographic Association (ICA) Workshop with Commissions on Visual Analytics, Usability, and Map Design in San Francisco, California
- 2015 ICA Workshop with Commissions on Visual Analytics, Usability, and Map Design in Curitiba, Brazil **with presentation** of white paper on “Cartographic Challenges in Animated Mapping”

## AWARDS

- 2022-23 **Community Service Award.** Department of Geography, University of Oregon
- 2020-21 **TRELIS Fellow.** Selected through a competitive process to participate in a year-long program of professional development for academic women in the geospatial sciences. Program funded by the National Science Foundation (Award #1660400).
- 2018 **University of Oregon New Junior Faculty Research Award** for new research at the University of Oregon.
- 2017 **Best Paper, Cartographic Perspectives Student Paper Competition** for Fish, C.S. and K. Calvert (2016). Analysis of interactive solar energy web maps for urban energy sustainability. *Cartographic Perspectives*. 85, 5-22.
- Outstanding Graduate Teaching Assistant Award** for excellence in teaching in the Department of Geography at Penn State.
- Nancy Brown Community Service Award** for excellence in service to the Department of Geography at Penn State and the community.
- Penn State Geography Academic Enrichment Research Award** for dissertation research.
- 2016 **Best Paper, Association of American Geographers Cartography Specialty Group Paper Competition** for presentation of the paper entitled *A content analysis study of interactive online solar energy maps*.
- Penn State Geography Academic Enrichment Research Award** for dissertation research.
- E. Willard Miller Ph.D. Paper Competition Second Place** for the paper entitled *A content analysis study of interactive online solar energy maps*.
- 2014 **Elaine Bosowski Second Place Map Graduate Level Award** for a graduate student map or poster displayed at the annual meeting of the Pennsylvania Geographic Society.
- 2009 **Graduate Office Fellowship, Michigan State University, Department of Geography** for master’s thesis research.
- 2008 **Association of American Geographers, Cartography Specialty Group Master’s Thesis Research Grant** for the proposal entitled: “*Evaluating the influence of tweening on human change perception in animated choropleth maps*”.

**Penn State Department of Geography, Jeff Gockley Memorial Award** for academic excellence in the GIScience concentration.

2005-08 **Dean's List**, Penn State University, College of Earth and Mineral Sciences.

## SCHOLARSHIPS

- 2017-18 NASA Pennsylvania Space Grant Consortium, Graduate Fellowship \$5,000.
- 2017-18 United States Geospatial Intelligence Foundation Doctoral Scholarship \$5,000.
- 2017 Cartography and Geographic Information Society (CaGIS) Doctoral Scholarship \$1,500.
- 2014-15 Penn State College of Earth and Mineral Sciences FEGR Top-up Award \$5,000.
- 2006-08 Penn State College of Earth and Mineral Sciences Matthew J. Wilson Honors Scholarship \$4,000.

## TRAVEL GRANTS

- 2017 United States National Committee of the International Cartographic Association National Science Foundation (NSF) Young Scholar Conference Grant
- 2016 Gamma Theta Upsilon Travel Award
- 2015 United States National Committee of the International Cartographic Association National Science Foundation Young Scholar Conference Grant
- 2015 North American Cartographic Information Society Student Travel Grant
- 2015 State of the Map United States Conference Scholarship
- 2015 Free and Open-Source Software for Geospatial (FOSS-4G) North American Conference Scholarship
- 2014 North American Cartographic Information Society Student Travel Grant
- 2010 North American Cartographic Information Society Member Travel Grant
- 2009 United States National Committee of the International Cartographic Association National Science Foundation Young Scholar Conference Grant
- 2009 GIS and GIScience Specialty Group of the Association of American Geographers Travel Award
- 2009 Michigan State University, Department of Geography Travel Grant
- 2009 Michigan State, Graduate School Travel Grant
- 2009 Michigan State, College of Social Science Travel Grant
- 2009 Michigan State, Council of Graduate Students Travel Grant
- 2009 Robert Thomas/Gamma Theta Upsilon Michigan State Travel Grant

## TEACHING

### **Course Instructor University of Oregon**

GEOG 493/593: Advanced Cartography

Advanced undergraduate/graduate course in cartography focused on cartographic projects  
Fall 2022 (25), Winter 2024 (27), Winter 2025 (24)

GEOG 393 (formerly 490): Data Driven Cartography

Intermediate course in cartography focused on analyzing and visualizing data

Spring 2022 (25), Winter 2023 (20), Fall 2023 (10)

**GEOG 481/581: GIScience 1**

Introductory, undergraduate and graduate GIS course

Winter 2019 (38), Spring 2019 (59), Fall 2019 (71), Winter 2020 (61), Fall 2020 (68),

Winter 2021 (37), Fall 2022 (70), Fall 2023 (75)

**GEOG 498: Geospatial Project Design**

Upper-division undergraduate capstone/service-learning GIS/cartography course

Fall 2019 (13), Fall 2020 (15)

**GEOG 181: Our Digital Earth**

Introductory, general education undergraduate GIS course

Spring 2019 (66)

**GEOG 607: Cartography Seminar**

Graduate student seminar

Winter 2021 (7)

**Course Instructor: Penn State & Michigan State**

**GEOG 160: Mapping Our Changing World (Web), Penn State**

Introductory, general education online undergraduate GIS course

Fall 2017 (136), Summer 2017 (23)

**GEOG 430: Human Use of the Environment (Web), Penn State**

Upper-division online undergraduate human-environment geography course

Summer 2016 (31)

**GEOG 206: Physical Geography (Web), Michigan State**

Introductory, general education online undergraduate physical geography course

Summer 2009 (102)

**Teaching Assistant**

**GEOG 363: Geographic Information Systems, Penn State**

Intermediate, undergraduate GIS course. Taught lab component.

Spring 2017

**GEOG 361: Cartography: Maps and Map Construction, Penn State**

Intermediate, undergraduate cartography course. Taught lab component.

Fall 2016

**GEO 423: Map Design, Michigan State**

Intermediate, undergraduate cartography course. Taught lab component.

Fall 2008, Fall 2009

GEO 426: Thematic Cartography, Michigan State  
 Advanced, undergraduate cartography course. Taught lab component.  
 Spring 2009, Spring 2010

## MENTORSHIP

### Post-Doctoral Supervision

Cathy Slavic School of Journalism & Communications (co-supervised with Ellen Peters) 2022-24

### Graduate Student Advisees

Joy Ihuka	PhD in Geography	In Progress	Oregon
Mason Leavitt	MA in Geography Co-advisor	In Progress	Oregon
Lucy Roberts	Master of Science in Geography	In Progress	Oregon
Jasper Zhou	Master of Science in Geography	In Progress	Oregon
Zhaoxu Sui	Master of Science in Geography	2024	Oregon
Janice Chen	Master of Science in Geography	2022	Oregon
Nathanial Douglass	Master of Science in Geography	2021	Oregon
Michala Garrison	Master of Science in Geography NCAR Innovator Student Fellow	2021	Oregon

### Graduate Student Committee Member

Cy Abbott	PhD Geography	In Progress	Oregon
Dalton Richardson	PhD Sociology	In Progress	Oregon
Justin Meinke	PhD Geography	In Progress	Oregon
Zachary Provant	PhD Environ. Sci., Studies, & Policy (ESSP)	2024	Oregon
Bill Limpisathian	PhD in Geography	2022	Oregon
Schyler Reis	PhD in ESSP/Geography	2022	Oregon
Stuart Steidle-Nix	Master of Science in Geography	2022	Oregon

### Undergraduate Honors Thesis Advisor

Lucinda Roberts	Bachelor of Science in Spatial Data Science	2023	Oregon
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### Undergraduate Mentorship

Aidan Clark	Bachelor of Science in Spatial Data Science	Oregon
Katie Quines	Bachelor of Science in Geography/Spatial Data Science	Oregon
Peter Ryan	Bachelor of Science in Geography	Penn State
Han Yu	Bachelor of Science in Geography	Penn State
Julia Higson	Bachelor of Science in Geography/Anthropology	Penn State
Nicole Rivera	Bachelor of Science in Geography	Penn State
Sophie Najjar	Bachelor of Arts in Geography/Visual Arts	Penn State
Patrick Stevens	Bachelor of Science in Geography	Penn State

## SERVICE

### Scholarly Affiliations (past and present)

American Geophysical Union (AGU)

American Association of Geographers (AAG)  
 Cartography and Geographic Information Society (CaGIS)  
 Gamma Tau Upsilon, Geography Honors Society (GTU)  
 Phi Beta Kappa, Lambda Chapter of Pennsylvania  
 North American Cartographic Information Society (NACIS)  
 Society of Woman Geographers (SWG)  
 Supporting Women in Geography (SWIG)

**Journal Reviews**

<i>Cartography and Geographic Information Science</i> (12)	Editorial Board Member
<i>Cartographic Perspectives</i> (3)	Editorial Board Member
<i>Cartographic Journal</i> (3)	
<i>IEEE Transactions on Visualization and Computer Graphics</i> (2)	
<i>Cities</i> (1)	
<i>Environmental Research Letters</i> (1)	
<i>Geographical Analysis</i> (1)	
<i>Geography Teacher</i> (1)	
<i>University Consortium for Geographic Information Science &amp; Technology Body of Knowledge</i> (1)	
International Cartography Conference 2019(3), 2025(6)	
<i>International Journal of Cartography</i> (1)	
<i>International Journal of Geographic Information Science</i> (1)	
<i>ISPRS International Journal of Geo-Information</i> (1)	
<i>Renewable &amp; Sustainable Energy Reviews</i> (1)	

**Interdisciplinary Service**

2024-2025	<b>Reviewer:</b> National Science Foundation, Graduate Research Fellowship Program
2020	<b>Organizer/Chair:</b> Convergence Research in Climate Science: How to Move Beyond Disciplinary Silos, American Geophysical Union (AGU) Poster Session
2020	<b>Organizer/Chair:</b> Convergence Research in Climate Science: How to Move Beyond Disciplinary Silos, American Geophysical Union (AGU) Paper Session

**Disciplinary Service**

2025	<b>Member:</b> International Scientific Committee, International Cartographic Conference
2023-2027	<b>Vice-Chair:</b> Sustainable Development Commission, International Cartographic Association
2023-2025	<b>Secretary/Treasurer:</b> Cartography Specialty Group of the AAG
2022-	<b>Editorial Board:</b> Cartographic Perspectives Journal
2020-	<b>Editorial Board:</b> Cartography and Geographic Information Science Journal
2020-2021	<b>Past-Chair:</b> Cartography Specialty Group of the AAG
2020-2021	<b>Chair:</b> Diversity and Inclusion of the Cartography Specialty Group of the AAG
2019-2020	<b>Chair:</b> Cartography Specialty Group of the AAG
2019-2020	<b>Program Chair:</b> Cartography Specialty Group of the AAG
2018-2019	<b>Vice Chair:</b> Cartography Specialty Group of the AAG
2014-2016	<b>Conference Organizer:</b> NACIS Practical Cartography Days (2015-2016)

- 2012- 2013 **Board Member:** Cartography and Geographic Information Society (CAGIS)  
standing in for Charlie Frye
- 2009- 2010 **Student Director:** Cartography Specialty Group, AAG

**Conference Session Organization/Chair**

- 2023 **Organizer:** AAG 2023, Mapping Speculative Cartographies (2 sessions: paper & panel)
- 2021 **Organizer:** AAG 2021, Mapping Climate Change
- 2020 **Organizer:** AAG 2020 Convergence research in climate science (cancelled)
- 2020 **Organizer:** AAG 2020, Election Mapping (cancelled)
- 2020 **Organizer:** AAG 2020, Storytelling and Map Design (cancelled)
- 2018 **Organizer:** AAG 2018, Mapping Climate Change (2 sessions)
- 2017 **Chair:** Critical Conference, Penn State
- 2017 **Chair:** ICC 2017, Cartographic Representation in Geovisual Analytics
- 2016 **Chair:** NACIS 2016, Mapping in the City
- 2016 **Organizer:** AAG Grant Writing Panel for SWIG
- 2012 **Chair:** AutoCarto 2012, Geospatial Modeling Session
- 2010 **Chair:** NACIS 2010, Practical Solutions & Applications for Mapmakers

**University of Oregon- University Service**

- 2023 **Chair:** Promotion Committee, InfoGraphics Lab
- 2022 **Advisory Role:** School of Data Science Strategic Planning
- 2019 **Member:** Information Technology Research Domain Subcommittee

**University of Oregon Geography Departmental Service**

- 2024 **Member:** Institutional Hiring Plan Proposal (Mixed-Methods Env-Society Proposal)
- 2024-2025 **Member:** Spatial Data Science Search Committee
- 2024-2025 **Chair:** IT Committee
- 2022-2024 **Chair:** Colloquium Committee
- 2022 **Chair:** Institutional Hiring Plan Proposal (Critical GIS Proposal)
- 2022 **Organizer:** Ad Hoc Grad Curriculum Committee
- 2021-2022 **Member:** Director of Infographics Lab Search Committee
- 2020-2021 **Member:** Graduate Admissions Committee
- 2020 **Member:** Institutional Hiring Plan Proposal (GeoAI Proposal)
- 2020 **Peer Reviewer of Teaching:** Kendra Chritz
- 2019-2020 **Member:** Remote Sensing Search Committee
- 2018-2020 **Member:** Information Technology Committee
- 2018-2020 **Member:** Scholarships, Fellowships, and Awards Committee
- 2019 **Member:** Internal Hiring Plan Proposal (Smart Cities Proposal)

**Penn State Geography Departmental Service**

- 2018 **Organizer:** Supporting Young Women in Geography, mapping activity
- 2015-2016 **President:** Graduate Students in the Department of Geography
- 2015-2016 **President:** Supporting Women in Geography
- 2016 **Presenter:** Supporting Young Women in Geography Day, GIS activity



- 2015 **Organizer/Moderator:** no)Boundaries *Communicating Your Discipline* Panel
- 2015 **Presenter:** Supporting Young Women in Geography Day, GIS activity
- 2007- 2008 **Undergraduate Representative:** Supporting Women in Geography

### **Michigan State Geography Departmental Service**

- 2009- 2010 **Co-President:** Geography Graduate Group
- 2009- 2010 **Department Steward:** Graduate Employees Union
- 2009 **Graduate Assistant:** Geography Graduate Student Orientation
- 2009 **Social Coordinator:** Geography Graduate Group
- 2008 **Secretary:** Geography Graduate Group

### **Community Service**

- 2018 **Volunteer:** ENVISION workshop, geography activity, University Park, PA.
- 2017 **Organizer:** Mapathon, Puerto Rico following Hurricane Maria, Penn State
- 2017 **Volunteer:** ExplorationU, cartography activity, Milesburg, PA
- 2017 **Volunteer:** HauntedU, geosciences activity, University Park, PA
- 2015-2016 **Organizer:** Maptime State College, State College, PA
- 2011- 2013 **Organizer:** Esri Useful Maps and Apps Presentation Series, Esri
- 2011- 2013 **Volunteer:** Court Appointed Special Advocate for Foster Children (CASA), Redlands, CA
- 2005- 2008 **Volunteer:** Penn State Philanthropic Dance Marathon, University Park, PA
- 2005- 2007 **Volunteer/Tutor:** Stormbreak Group Home for Foster Children, State College, PA
- 2005 **Volunteer:** Habitat for Humanity, Penn State Chapter, Augusta, GA

## **ADDITIONAL TRAINING**

- 2016 *Visiting Student*  
School of Physical Environmental and Mathematical Sciences, University of New South Wales, Canberra Campus, Australia
- 2013 *Scrummaster Certification*  
Scrum Alliance, Westminister, CO