

Molly Elizabeth Smith Cross

Wildlife Conservation Society • [REDACTED]

EMPLOYMENT

- Climate Change Adaptation Lead, North & South America, Wildlife Conservation Society** 2007 – Present
Science Director, Wildlife Conservation Society Climate Adaptation Fund 2011 – Present
- Lead climate-informed conservation planning efforts that convene scientists and practitioners to translate broad-brush climate change adaptation strategies into on-the-ground conservation actions. Climate change planning efforts have involved conservation NGOs, government agencies, and Tribes and First Nations at several landscapes across North and South America, focused on a range of targets from individual species to complex ecosystems.
 - Provide scientific direction and co-manage a competitive re-grant program that has awarded more than \$21 million to over 110 adaptation projects in the United States designed to help wildlife and ecosystems adapt to a changing climate: <https://www.wcsclimateadaptationfund.org>.

EDUCATION AND TRAINING

- Ph.D. **University of California, Berkeley**, Environmental Science, Policy, and Management 2006
Dissertation Title: *Ecosystem responses to warming-induced plant species loss and increased nitrogen availability in a subalpine meadow in the Rocky Mountains, CO*
- B.Sc. **Brown University**, Environmental Science with Honors (Magna Cum Laude) 1997

RECENT GRANTS

- 2011-2025 WCS Climate Adaptation Fund. *Doris Duke Charitable Foundation*, **\$27 million** (co-PI).
2018-2023 North Central Climate Adaptation Science Center Consortium Partner Funding: Actionable science and planning *USGS, University of Colorado-Boulder*, **\$124,950** (co-PI, Consortium Partner Subaward on **\$4.5 million** grant).
2021-2022 Climate adaptation and soil health benefits of bison restoration and cattle management for North Central Grasslands. *USGS North Central Climate Adaptation Science Center*, **\$207,375** (co-PI).
2020-2021 Synthesis of Climate Impacts and Adaptation on Grassland Ecosystems in the Northern Great Plains. *USGS North Central Climate Adaptation Science Center*, **\$317,558** (co-PI).
2020-2021 Climate Change-Driven Transformations in Human and Natural Systems: Case Studies to Accelerate Proactive Adaptation Responses. *US Geological Survey National Climate Adaptation Science Center*, **\$61,000** (co-PI).
2018-2020 Co-Production of Science and Planning to Support Decisions About Priority Species and Habitats in the North Central Region (Phase 2). *US Geological Survey North Central Climate Adaptation Science Center*, **\$119,634** (PI).
2017-2019 Ecological Drought: Assessing Vulnerability and Developing Solutions for Nature and People. *Science for Nature and People Partnership (SNAPP)*, **\$50,457** (co-PI).
2017-2018 Enabling Climate-Informed Planning and Decisions about Species of Conservation Concern in the North Central Region (Phase 1). *US Geological Survey North Central Climate Science Center*, **\$65,395** (co-PI).
2015-2018 Ecological Drought: Assessing Vulnerability and Developing Solutions for Nature and People. *US Geological Survey*, **\$564,000** (co-PI).
2014-2018 Using Scenario Planning to Inform Land and Wildlife Management: A pilot project for boreal forests in the Northeastern United States. *US Geological Survey*, **\$363,167** (PI).
2012-2016 Facilitating climate change adaptation planning and implementation through the GNLCC Rocky Mountain Partner Forum. *Great Northern Landscape Conservation Cooperative*, **\$154,966** (PI).

PEER-REVIEWED PUBLICATIONS

- Peterson St-Laurent, G., L. Oakes, **M. Cross**, and S. Hagerman (In Review). A novel framework for evaluating climate change adaptation success for biodiversity and natural resource conservation. Submitted to *Environmental Science and Policy*.

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- Peterson St-Laurent, G., L. Oakes, **M.S. Cross**, and S. Hagerman (2021). R–R–T (resistance–resilience–transformation) typology reveals differential conservation approaches across ecosystems and time. *Communications Biology* 4(1): 1-9. <https://www.nature.com/articles/s42003-020-01556-2.pdf>
- Raheem, N., A.E. Cravens, **M.S. Cross**, S. Crausbay, A. Ramirez, J. McEvoy, D. Zoanni, D. Bathke, M. Hayes, S. Carter, M. Rubenstein, A. Schwend, K. Hall and P. Suberu (2019). Planning for ecological drought: Integrating ecosystem services and vulnerability assessment. *WIREs Water* e1352.
- Glennon M.J., S.F. Langdon, M.A. Rubenstein, and **M.S. Cross** (2019). Relative contribution of climate and non-climate drivers in determining dynamic rates of boreal birds at the edge of their range. *PLoS ONE* 14(10): e0224308. <https://doi.org/10.1371/journal.pone.0224308>.
- Glennon M.J., S.F. Langdon, M.A. Rubenstein, and **M.S. Cross** (2019). Temporal changes in avian community composition in lowland conifer habitats at the southern edge of the boreal zone in the Adirondack Park, NY. *PLoS ONE* 14(8): e0220927. <https://doi.org/10.1371/journal.pone.0220927>.
- Crausbay, S.D., A.R. Ramirez, S.L. Carter, **M.S. Cross**, et al. (2017). Framing Ecological Drought for the 21st century. *Bulletin of the American Meteorological Society* 98(12):2543–2550.
- Lonsdale, W.R., H.E. Kretser, C.-L.B. Chetkiewicz, and **M.S. Cross** (2017). Similarities and Differences in Barriers and Opportunities Affecting Climate Change Adaptation Action in Four North American Landscapes. *Environmental Management* 60:1076–1089.
- Safford, H.D., S.C. Sawyer, S. Kocher, K. Hiers, and **M.S. Cross**. (2017). Linking knowledge to action: the role of boundary spanners in translating ecology. *Frontiers in Ecology and the Environment* 15(10):560-568.
- Fisichelli, N., G. Schuurman, A. Symstad, A. Ray, B. Miller, **M. Cross**, and E. Rowland (2016). Resource management and operations in southwest South Dakota: Climate change scenario planning workshop summary. January 20-21, 2016, Rapid City, SD. *Natural Resource Report NPS/NRSS/NRR— 2016/1289*. National Park Service, Fort Collins, Colorado.
- Comer, P.J., R.L. Pressey, M.L. Hunter, C.A. Schloss, S.C. Buttrick, N.E. Heller, J.M. Tirpak, D.P. Faith, **M.S. Cross**, and M.L. Shaffer (2015). Incorporating geodiversity into conservation decisions. *Conservation Biology* 29(3): 692–701.
- Rowland, E.L., **M.S. Cross**, and H. Hartmann (2014). Considering Multiple Futures: Scenario planning to address uncertainty in natural resource conservation. Washington, DC: US Fish and Wildlife Service [*USGS-led peer-review*]
- Glick, P. and **M.S. Cross** (2014). “Charting your course: Defining planning purpose and scope”. In: *Climate-Smart Conservation: Putting Adaptation Principles into Practice*. (eds. Stein, B.A., P. Glick, N. Edelson, A. Staudt). National Wildlife Federation, Washington, DC. [*USGS-led peer-review*]
- Stein, B.A., A. Staudt, **M.S. Cross**, N.S. Dubois, C. Enquist, R. Griffis, L.J. Hansen, J.J. Hellmann, J.J. Lawler, E.J. Nelson, and A. Paris (2013). Preparing for and managing change: Climate adaptation for biodiversity and ecosystems. *Frontiers in Ecology and the Environment* 11(9): 502-510.
- Staudinger, M.D., S. Carter, **M.S. Cross**, N.S. Dubois, J.E. Duffy, C. Enquist, R. Griffis, J. Hellmann, J. Lawler, J. O’Leary, S.A. Morrison, L. Sneddon, B. Stein, L. Thompson, W. Turner, E. Varela-Acevedo, and W. Reid (2013). Biodiversity in a changing climate: a synthesis of current and projected trends in the United States. *Frontiers in Ecology and the Environment* 9(11): 465-473.
- Cross, M.S.**, P. McCarthy, G. Garfin, D. Gori, and C. Enquist (2013). Accelerating adaptation of natural resource management to address climate change. *Conservation Biology* 27(1): 4-13.
- Cross, M.S.**, E.S. Zavaleta, D. Bachelet, M.L. Brooks, C.A.F. Enquist, E. Fleishman, L. Graumlich, C.R. Groves, L. Hannah, L. Hansen, G. Hayward, M. Koopman, J.J. Lawler, J. Malcolm, J. Nordgren, B. Petersen, D. Scott, S.L. Shafer, M.R. Shaw, and G.M. Tabor (2012). Adaptation for Conservation Targets (ACT) Framework: A tool for incorporating climate change into natural resource conservation and management. *Environmental Management* 50:341-351.
- Groves, C.R., E.T. Game, M.G. Anderson, **M.S. Cross**, C. Enquist, Z. Ferdana, E. Girvetz, A. Gondor, K. Hall, J. Higgins, R. Marshall, K. Popper, S. Schill, and S. Shafer (2012). Incorporating climate change into systematic conservation planning. *Biodiversity and Conservation* 21(7): 1651-1671.

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Cross M.S., and J. Harte (2007). Compensatory responses to loss of warming-sensitive plant species. *Ecology* 88(3): 740-748.

NON-REFEREED REPORTS, BOOKS, AND BOOK CHAPTERS

Cross, M., J. Nordgren, D. Long (2019). Managing Risks to Conservation Investments Through Climate Adaptation: A practical guide for funders. Wildlife Conservation Society. New York, NY.

Cross, M., E. Rowland, E. Tully, L. Oakes, D. Long (2018). Embracing Change: Adapting Conservation Approaches to Address a Changing Climate. Wildlife Conservation Society. New York, NY.

Cross, M., E. Rowland, D. Long, E. Tully and K. Dunning (2017). 14 Solutions to Problems Climate Change Poses for Conservation: Examples from the WCS Climate Adaptation Fund. Wildlife Conservation Society, New York, NY.

Nelson, R., **M. S. Cross**, L. Hansen, and G. Tabor (2016). A three-step decision support framework for setting conservation goals and selecting adaptation strategies for native salmonids as climate changes in the northern U.S. Rockies. Wildlife Conservation Society, Crown Conservation Initiative, EcoAdapt, Center for Large Landscape Conservation. Bozeman, MT, USA.

Hilty, J.A., C.C. Chester, **M.S. Cross** (Eds.) (2012). Climate and Conservation: Landscape and Seascape Science, Planning and Action. Island Press, Washington, DC.

Cross M.S., J.A. Hilty, G.M. Tabor, J.J. Lawler, L.J. Graumlich and J. Berger (2012). From connect-the-dots to dynamic networks: Maintaining and enhancing connectivity as a strategy to address climate change impacts on wildlife. In: Wildlife conservation in a changing climate (Eds. Brodie J, Doak D & Post E). University of Chicago Press.

Watson, J.E.M., **M. Cross**, E. Rowland, L.N. Joseph, M. Rao and A. Seimon (2011). Planning for Species Conservation in a Time of Climate Change, in "Climate Change - Research and Technology for Adaptation and Mitigation", Juan Blanco and Houshang Kheradmand (eds). IntechOpen, DOI: 10.5772/24920.

Debinski D.M. and **M.S. Cross** (2009). "Conservation and Global Climate Change." In: The Princeton Guide to Ecology. Section V. Conservation Biology. S.A. Levin (Editor-in-chief), D.S. Wilcove (Associate Editor). Princeton University Press, Princeton, NJ.

SYNERGISTIC ACTIVITIES

2011-present *Science Director, WCS Climate Adaptation Fund* - Co-manage a re-grant program that has awarded \$21 million to 110+ projects designed to help wildlife and ecosystems adapt to a changing climate: <https://www.wcsclimateadaptationfund.org/>

2018-present *Consortium Partner, North Central Climate Adaptation Science Center* - A partnership between the USGS, University of Colorado Boulder and 5 consortium partners, created to foster applied climate research, synthesis, and planning in support of natural resource management.

2008-present *Co-facilitated over eleven (11) climate adaptation planning workshops* with stakeholders ranging from state and federal agencies, indigenous communities, private landowners, conservation organizations.

2014-2016 *Co-led the development and delivery of five (5) Climate Adaptation "Coaching Sessions"* to 150+ participants from more than 70 organizations and agencies.

2013-2015 *Co-designed and instructed climate adaptation training courses* on Climate-Smart Conservation and Scenario Planning for the USFWS National Conservation Training Center.