Dr. Michael T. Tercek

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About Me

I am an applied scientist interested in practical results. I care about protecting the environment, so I focus primarily on projects that will affect land management decisions. I enjoy finding creative solutions to difficult technical problems.

Experience

2007 - present — *Chief Scientist, Founder,* Walking Shadow Ecology, Gardiner, Montana (www.YellowstoneEcology.com). Through my consulting company, I work on a wide variety of ecological and climate-related projects in the western United States, including studies of landscape-level trophic interactions, community ecology of plants exposed to naturally occurring carbon dioxide springs, data analysis contracts, study design, and management of field crews for other researchers. Funding for these projects comes as either direct contacts or through cooperative agreements hosted by other organizations or universities.

2005 - 2008 — *Postdoctoral Researcher,* Colorado State University, Fort Collins, Colorado. Research on trophic interactions involving willow in Yellowstone National Park.

2004 - 2005 — *Postdoctoral Researcher,* Montana State University, Bozeman, Montana. Research on the ecology of plants that grow in geothermally active areas of Yellowstone National Park.

Education

1996 - 2003 — Ph.D., Ecology and Evolutionary Biology, Tulane University, New Orleans, Louisiana.

1990 - 1994 — B.A., Philosophy, Kent State University, Kent, Ohio.

Skills and Interests

- Data analysis with Python, R, and JavaScript.
- Climate change, climate data analysis, and the predicted effects of climate change.
- Creating web- and desktop – based applications that visualize data. Visit www.ClimateAnalyzer.org and www.VegViz.org for examples.
- Plant Ecology
- Study design, sampling strategies and monitoring techniques.
- GIS and spatial data analysis.
- Survey and mapping with traditional transits and levels.
- Design and deployment of scientific equipment under challenging environmental conditions.
- Repair and maintenance of electronic devices, including re-design and adaptation of hardware.
- Mechanical fabrication and design. I put myself through college by working as an auto mechanic. The practical skills from that job continue to serve me well. I design and build much of my own research equipment.
- Back-country skills. After 30 years living in the Greater Yellowstone Ecosystem, I have hiked to many places that are unknown to the general public. I routinely camp by myself in remote areas for extended periods of time.

Peer-reviewed Scientific Publications

Tercek MT, JE. Gross, and DP. Thoma. 2023. "Robust Projections and Consequences of an Expanding Bimodal Growing Season in the Western United States." Ecosphere e4530.https://doi.org/10.1002/ecs2.4530

Tercek MT, Thoma D, Gross JE, Sherrill K, Kagone S, Senay G. 2021. Historical changes in plant water use and need in the continental United States. PLoS ONE 16(9): e0256586. https://doi.org/10.1371/journal.pone.0256586

Tercek, M.T., A. Rodman, S. Woolfolk,Z. Wilson, D. Thoma, and J. Gross. 2021. Correctly applying lapse rates in ecological studies: comparing temperature observations and gridded data in Yellowstone. Ecosphere 12(3) e03451.

Thoma, D.P., **M.T. Tercek**, E.W. Schweiger, S.M. Munson, J.E. Gross, and S.T. Olliff. 2020. Water balance as an indicator of natural resource condition: Case studies from Great Sand Dunes National Park and Preserve. Global Ecology and Conservation 24(2) e01300.

Painter LE, and **M. Tercek**. 2020. Tall Willow thickets return to northern Yellowstone. Ecosphere 11(5): e03115. 10.1002/ecs2.3115

Al-Chokahachy, R., A. Ray, D. Thoma, **M. Tercek**. 2017. Evaluating species-specific changes in hydrologic regimes: an iterative approach for salmonids in the Greater Yellowstone Area (USA). Reviews in Fish Biology and Fisheries. doi:10.1007/s11160-017-9472-3

Tercek M., and A. Rodman. 2016. Forecasts of 21st Century Snowpack and Implications for Snowmobile and Snowcoach Use in Yellowstone National Park. PLoS ONE 11(7): e0159218. doi:10.1371/journal.pone.0159218 view

Gross J., **M. Tercek**, K. Guay, M. Talbert, T. Chang, A. Rodman, D. Thoma, P. Jantz, and J. Morissette. 2016. Analyses of historical and projected climates to support climate adaptation in the northern Rocky Mountains. Chapter 4 in Hansen et al. (eds.) Climate Change in Wildlands: Pioneering approaches to science and management. Island Press. Washington.

Sepulveda, A., **M. Tercek**, R. Al-Chokhachy, A. Ray, D. Thoma, B. Hossack, G. Pederson, A. Rodman, T. Olliff. 2015. The Shifting Climate Portfolio of the Greater Yellowstone Area. PLoS ONE 10(12): e0145060. doi:10.1371/. view

Tercek, M.T., S. Gray, and C. Nicholson. 2012. Climate Zone Delineation: Evaluating Approaches for Natural Resource Management. Environmental Management 49: 1076 – 1091. view

Tercek, M.T., R. Stottlemyer, and R. Renkin. 2010. Bottom-up factors influencing riparian willow recovery in Yellowstone National Park. Western North American Naturalist 70: 387-399. view

Appoloni, S., Y. Lekberg, **M.T. Tercek**, C.A. Zabinski, and D. Redecker. 2008. Molecular community analysis of arbuscular mycorrhizal fungi in roots of geothermal soils of Yellowstone National Park (USA). Microbial Ecology 56: 649-659. view

Tercek, MT and J.L. Whitbeck. 2004. Heat avoidance life history strategy controls the distribution of geothermal *Agrostis* in Yellowstone. *Ecology* 85(7): 1955-1966. view

Tercek, M.T, D. P. Hauber and S.P. Darwin. 2003. Genetic and historical relationships among geothermally adapted *Agrostis* of North America and Kamchatka: evidence for a previously unrecognized, thermally adapted taxon. *American Journal of Botany* 90:1306-1312. view

Selected Technical Reports and Monitoring Protocols

Tercek, M.T. 2019. Nowcasting and Forecasting Fire Severity in Yellowstone. Yellowstone Science 27(1): 27 – 33. view

Tercek, M.T., A. Rodman, and D. Thoma. 2015. Trends in Yellowstone snowpack. Yellowstone Science 23(1): 20 – 27. view

Tercek, M.T. 2015. A seemingly small change in average temperature can have big effects. Yellowstone Science 23(1): 70 – 71. view

Tercek, M.T. 2015. Data substitution among weather stations in Yellowstone National Park: Defining the scope of the problem. Technical report submitted to National Park Service. view

Tercek, M.T. 2012. Analysis of Temperature Patterns in Channel Islands National Park. Technical Report Submitted to The Nature Conservancy and the National Park Service. view

Tercek, M.T. 2011. Distribution map and habitat description for *Eriogonum umbellatum* var. *cladophorum*, a rare, endemic plant species in Yellowstone National Park. Report submitted to the Yellowstone Center of

Resources, Yellowstone National Park. *Due to the sensitive habitat information in this report, it will not be publicly available, following a request from the National Park Service.*

Tercek, M.T. 2010. Yellowstone northern range riparian willow inventory. Report submitted to the National Park Service in Yellowstone National Park.

Frakes, B. , S. Ostermann-Kelm, I. Ashton, J. Burke, R. Daley, **M. Tercek**, D. Pillmore, C. Jean, M. Britten, S. Gray, and T. Kittel. 2010. Rocky Mountain Climate Protocol: Climate monitoring in the Greater Yellowstone and Rocky Mountain Inventory and Monitoring Networks. National Park Service Monitoring Protocol NPS/ IMRO/NRR -2010/222.

Tercek, M.T., T. S. Al-Niemi, and R.G. Stout. 2008 Plants Exposed to High Levels of Carbon Dioxide in Yellowstone National Park. Yellowstone Science 16:12-19. view

Other Stuff (Follow the links)

Appearance in a climate change video produced by the National Park Service

Interview in Sierra Magazine

I contributed a graph to the May 2016 issue of National Geographic (page 145 of print edition)