Matthew R.V. Ross

Duke University

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Education

2011-present Ph.D. Program in Ecology at Duke University

2006-2010 B.A. Ecology and Evolutionary Biology, minor in French. *Summa Cum Laude*. CU-Boulder, CO.

Awards and Fellowships

2016 AGU Data Visualization and Storytelling Award ($6,000)

Finalist for Mozilla Fellowship for Open Science

2015 Third Place Duke Data Visualization Contest

Duke Data+ Mentor ($2,500)

Gordon Research Conference Rising Star

2013 NSF Graduate Research Fellowship ($132,000)

2012 NSF IGERT for Wireless Intelligent Sensor Networks ($84,000)

Honorable Mention NSF Graduate Research Fellowship

2011 University Scholars Program at Duke University ($70,000)

James B. Duke Fellowship ($20,000)

Publications - *published*

Ross, M.R.V., McGlynn, B.L., Bernhardt, E.S. Deep impact: Effects of mountaintop mining on surface topography, bedrock structure, and downstream waters. *Environmental Science & technology* **50.4**, 2064-2074 (2016)
**Covered in popular press outlets such as: NY Times, The Atlantic, ThinkProgress, and Charleston Gazette*

Ross. M.R.V., Bernhardt, E.S., Doyle, M.W., Heffernan, J.B. Designer Ecosystems: Incorporating design approaches into applied ecology. *Annual Reviews of Environment and Resources* **40**, 419-443 (2015)

Arnold, M. C., Friedrich, L. A., Lindberg, T. T., **Ross, M.R.V**., Halden, N. M., Bernhardt, E., & Di Giulio, R. T. Microchemical analysis of selenium in otoliths of two West Virginia fishes captured near mountaintop removal coal mining operations. *Environmental Toxicology and Chemistry* (2015).

Ross, M. R., Castle, S. C. & Barger, N. N. Effects of fuels reductions on plant communities and soils in a Piñon-juniper woodland. *Journal of Arid Environments* **79**, 84–92 (2012).

Publications – *Submitted/in revision*

Jaeger, K. **Ross. M.R.V.** Process domains in synthetic landscapes: slope-area relationships in the mountaintop mining region of Central Appalachia. *In revision at Journal of Geophysical Research*.

Nippgen, F, **Ross, M.R.V.,** Bernhardt, E.S., McGlynn, B.L., Creating a more perennial problem? Mountaintop removal mining enhances and sustains baseflow of Appalachian watersheds. *In revision.*

Ross, M.R.V., Nippgen, F., Hassett, B. McGlynn, B.L. Bernhardt, E.S., Melting mountains of Appalachia: Exceptionally high-weathering rates in mountaintop-mined watersheds. *In revision.*

Publications – *In preparation*

Pericak, A., Kroodsma, D., Thomas, C., Wasson M., Deal J., Amos, J., Franklin, Y., Burker, B., Clinton, N., **Ross M.R.V.,** Bernhardt, E.S. Mapping yearly extent of surface coal mining in Appalachia since 1972 using Google Earth Engine.

Ross, M.R.V., Nippgen, F., Hassett, B. Moore, E. McGlynn, B.L. Bernhardt, E.S., Long-term changes in water and element flux across a range of mountaintop mines from 0-30 years old.

Ross, M.R.V., Voss, K.A., Nippgen, F., Hassett, B. Moore, E. McGlynn, B.L. Bernhardt, E.S., Contaminants in time and space: Mountaintop mining impacts on stream hydrology, biogeochemistry and macroinvertebrates.

Ross, M.R.V., Doyle, M.W., McGlynn, B.L., Bernhardt, E.S., Geomorphic signals of the Anthropocene: Mountaintop Mining impacts on the morphology of Central Appalachia.

Ross, M.R.V., Marani, M., D'Alpaos, A., Bernhardt, E.S., Controls on soil oxygen by salt marsh plants in the Venice Lagoon.

Brooks, A., **Ross, M.R.V.,** Nippgen, F., Hassett, B. Moore, E. McGlynn, B.L. Bernhardt, E.S Long-term increase in nitrogen flux out of mountaintop mined watersheds.

Presentations

Ross, M.R.V., Nippgen, F., McGlynn, B.L., Bernhardt, E.S. *Contaminants in time and space: Mountaintop mining impacts on stream hydrology, biogeochemistry and macroinvertebrates.* Society for Freshwater Sciences, Sacramento, May 2016

Ross, M.R.V., Nippgen, F., McGlynn, B.L., Bernhardt, E.S. *Geomorphic signals of the Anthropocene: Mountaintop Mining impacts on the morphology of Central Appalachia.* American Association of Geographers (AAG) Annual Meeting, San Francisco, 2016.

Ross, M.R.V., Nippgen, F., McGlynn, B.L., Bernhardt, E.S. *When everything changes: Catchment scale biogeochemical impacts of mountaintop mining*. Gordon Research Seminar, Hanover, NH, June, 2015

Ross, M.R.V., Nippgen, F., McGlynn, B.L., Bernhardt, E.S. *Watershed scale biogeochemical impacts of mountaintop mining*. Ecological Society of America Meeting, Baltimore, MG August 2015

Ross, M.R.V., Bernhardt, E.S. *Not just scratching the surface: Estimating the deep impacts of mountaintop mining.* Joint Aquatic Sciences Meeting, Portland, OR, May, 2014.

Ross, M.R.V., Bernhardt, E.S., Marani, M. *Controls on soil oxygen by salt marsh plants in the Venice Lagoon.* Duke Wireless Sensor Network IGERT seminar. Durham, NC. October, 2013.

Ross, M.R.V., Bernhardt, E.S. *The costs of unintentional ecosystem design: A mountaintop mining case study*. Duke Biology Retreat. Beaufort, NC. September, 2013

Ross, M.R., Barger, N.N., Castle, S. *Recent fuels-reduction treatment effects on herbaceous communities and soils in Piñon -Juniper ecosystem*. Front Range Student Ecology Symposium. Fort Collins, CO. March 2010.

Posters

Ross M.R.V., Nippgen, F., McGlynn, B.L., Bernhardt, E.S. When everything changes: Catchment scale biogeochemical impacts of mountaintop mining. Gordon Research Conference, Hanover, NH, June, 2015

Jaeger KL, **Ross M.R.V.,** Process domains in synthetic landscapes: slope-area relationships in the mountaintop mining region of central Appalachia. American Geophysical Union Fall Meeting. San Francisco, CA. (12/2014)

Ross M.R., Lindberg, T.T., Voss, K., Bernhardt, E.S., Impacts from valley fill design and age on water quality in mountaintop mined watersheds. American Geophysical Union (AGU). San Francisco Dec 3-7 2012.

Invited Seminars

Ross, M.R.V., Nippgen, F., McGlynn, B.L., Bernhardt, E.S. *When everything changes: Catchment scale biogeochemical impacts of mountaintop mining*. Gordon Research Conference, Hanover, NH, June, 2015

Ross, M.R.V, Visualizing complex spatiotemporal data using R and ShinyR. Duke Data+ Seminar Series. *July 2016*.

Ross, M.R.V, Berdanier, A., Interactive mapping with R and Shiny. Duke Data Visualization Series. *October 2015*.

Teaching Experience

2016-2017 *Reproducible spatiotemporal data analysis and visualization in R*. Developing and teaching a semester long master's and PhD level course to introduce students to R

2014-2016 *R at Night*. Co-taught a monthly 4 hour meeting and night/course introducing students of any skill level to R programming.

2016 *Ecology.* Teaching assistant and guest lecturer prepared and delivered a course on global nitrogen cycle and redox biogeochemistry.

2015 *Introduction to Environmental Science:* Planned, prepared and taught portions of a 4-week learning module based on interactive data modules with real environmental data.

2010-2011 *English*. Taught English at Lycée Polyvalent Emmanuel Chabrier, Yssingeaux, France

Outreach Activities

2015-present Developed open access data applications: http://mtm-explore.web.duke.edu/, http://mtm-hydro.web.duke.edu/, http://mtm-weathering.web.duke.edu/,

2015-2016 Helped build and test Duke University wide support for production of interactive data visualizations

2014-2017 PhD Liaison for Student Association for Geospatial Analysis (SAGA)

Summer 2015 Duke Data+ Mentor, mentored two undergraduates in advanced data visualization for 10 weeks.

2014-2015 Coordinator of Duke Ecology Symposium (3 day symposium of ~100 ecology presentations)

2013-2015 Field Assistant for Water Resources Course at Durham School of Math and Science, NC

2011-2012 Science Olympiad Coach at Smith Middle School, Chapel Hill, NC

Other Publications

Grimbert, Pierre., *The Secret of Ji: The Shadow of the Ancients.* Translated by **Matt Ross.** Amazon Crossing, Seattle, 2014

Grimbert, Pierre., *The Secret of Ji: The Orphans' Promise.* Translated by **Matt Ross** and Eric Lamb. Amazon Crossing, Seattle, 2013

Grimbert, Pierre., *The Secret of Ji: The Six Heirs*. Translated by **Matt Ross** and Eric Lamb. Amazon Crossing, Seattle, 2012.