Matthew R.V. Ross

Duke University

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**Professional Experience \_\_\_\_\_\_**

**Starting 2018** Assistant professor of Water Quality at Colorado State University

**2017-2018** Post-doctoral researcher in remote sensing of water quality at UNC-Chapel Hill.

**Education**

**2011-2017** 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** Grand Prize AGU/NASA Data Visualization and Storytelling Competition ($6,000)

Fellow for Intergovernmental Panel on Biodiversity and Ecosystem Assessment

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

**Publications -** *published*

**Ross, M.R.V.,** Nippgen, F., Hassett, B. McGlynn, B.L. Bernhardt, E.S., Surface mining for coal creates landscapes with exceptionally high weathering rates.  *Global Biogeochemical Cycles Early Access*

**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).

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. *Environmental Science & Technology* ***51.15****, 8324-8334*

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. *PloS one* **13.7** e0197758

**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*.

**Publications –** *In preparation­­­­­­* **­­­­**

**Ross, M.R.V.,** Nippgen, F., Hassett, E. 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.,** 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**

Nippgen, F., **Ross, M.R.V.,** Bernhardt, E.S., McGlynn, B.L., Deconstructing the deconstruction of Appalachia: Mountaintop mining effects on hydrology across temporal and spatial scales, Fall Meeting of the American Geophysical Union, New Orleans, December 2017.

**Ross M.R.V.,** Nippgen, F., McGlynn, B.L., Bernhardt, E.S., Yesterday’s forest, tomorrow’s savannah? Legacies in the man-made mountains of Appalachia, Fall Meeting of the American Geophysical Union, New Orleans, December 2017.

Nippgen, F., **Ross, M.R.V.,** Bernhardt, E.S., McGlynn, B.L., *Short and long-term effects of a large-scale critical zone disturbance on hydrologic response*, UCOWR, Fort Collins, June 2017

**Ross M.R.V.,** Nippgen, F., McGlynn, B.L., Bernhardt, E.S., *Disturb 1% of the land, generate 50% of the regional ion flux*. Society for Freshwater Science, Raleigh, June, 2017.

**Ross M.R.V.,** Nippgen, F., McGlynn, B.L., Bernhardt, E.S., *Tracing disturbance impacts on water quantity and quality through a stream network*. European Geophysical Union, Vienna, April, 2017

**Ross, M.R.V.,** Nippgen, F., Hassett B., McGlynn, B.L., Bernhardt, E.S. *Melting mountains of Appalachia: exceptionally high weathering rates in mined watersheds*, American Geophysical Union Fall Meeting, 2016

Nippgen F., **Ross, M.R.V.,** Bernhardt, E.S., McGlynn, B.L. *Mountaintop removal mining: from ephemeral to perennial streams*, American Geophysical Union Fall Meeting 2016

Brooks, A.C., **Ross, M.R.V.**, Nippgen, F., Bernhardt, E.S., McGlynn, B.L. *Old mountains, new nutrients: Mountaintop mining’s impact on watershed scale nitrogen export*, American Geophysical Union Fall Meeting 2016

**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.

Nippgen, F., **Ross, M.R.V.,** McGlynn, B.L., Bernhardt, E.S., *Mountaintop mining effects on watershed hydrology*, American Geophysical Union Fall Meeting 2015 (Invited)

**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.

**Posters**

**Ross, M.R.V.,** *Sensing rivers and streams*. Gordon Research Conference, Lewiston, ME, June 2017

**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**

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

**2014-2017** PhD Liaisonfor 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.