

Matthew R.V. Ross  
Duke University  
matt.ross@duke.edu

## **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** 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
- 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 Review at Environmental Science & Technology*
- Ross, M.R.V.**, Nippgen, F., Hassett, B. McGlynn, B.L. Bernhardt, E.S., Pyrite melts mountains. *In Review at Science Advances*

## **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.**, Doyle, M.W., Geomorphic signals of the Anthropocene: Examining Mountaintop Mining impacts on the morphology of Central Appalachia using Hypsometric Curves.
- 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.
- Ross, M.R.V.**, Purdy, J., Legal legacy in Central Appalachia: interactions of the Clean Air Act and Surface Mining Control and Reclamation Act.

## **Presentations**

---

- 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.
- 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, Yssingaux, France

## **Outreach Activities**

---

**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.