

Ross Vander Vorste

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CURRENT POSITION

Assistant Professor – Department of Biology, University of Wisconsin – La Crosse

EDUCATION

- 2015** **PhD Ecology** University of Claude Bernard Lyon 1, Lyon, France. Advisor: T. Datry.
2010 **M.S. Biological Sciences** South Dakota State University, Advisor: N. Troelstrup
2006 **B.S. Environmental Management** South Dakota State University

PROFESSIONAL APPOINTMENTS

- 2017-2019** Post-doctoral Research Associate – University of California, Berkeley, CA
Advisors/mentors: S. Carlson, T. Grantham, A. Ruhi
2016-2017 Post-doctoral Research Associate – Virginia Tech, Blacksburg, VA.
Advisors/mentors: S. Ciparis, S. Schoenholtz, B. Brown.
Lead Instructor – Virginia Tech, Aquatic Entomology ENT 4354
2012-2015 Graduate research assistant – National Research Institute of Science and
Technology for Environment and Agriculture, Villeurbanne, France
2010-2012 Environmental Specialist – North Carolina Division of Water Quality
Raleigh, NC.
2006-2010 Graduate research assistant – South Dakota State University
Brookings, SD.
2005-2006 Water Resources Technician – South Dakota Water Resources Institute,
Brookings, SD.
2004-2005 Seasonal Watershed Technician – South Dakota Department of Environment and
Natural Resources, Pierre, SD.

GRANTS AND FELLOWSHIPS (Total = \$447,720)

- Virginia Tech Global Change Center - \$13,863. 2017. **Vander Vorste**, R. (PI), S. Schoenholtz, B. Badgley, C. Zipper, B. Brown, and T. Timpano. Microbial diversity response to a coal-mining induced salinity gradient
US Geological Survey Mendenhall Fellowship - \$168,000. 2017. Broad-scale assessment of aquatic community resilience to river drying
** Due to proposed federal budget cuts, funding for this position was terminated shortly before the project was started.*
US Environmental Protection Agency - \$258,651. **Vander Vorste**, R. (PI), and V. Baker. 2012. Evaluation of success criteria and restoration techniques to promote aquatic biota

US Geological Survey - \$7,206. German, D. and R. **Vander Vorste** (undergraduate). 2006. Development of a lake bioassessment index based on evaluation of prairie lakes

PEER REVIEWED PUBLICATIONS

18. Vander Vorste, R., R. Sarrajame, T. Datry. *In Press*. Intermittent rivers & ephemeral streams: a unique biome with important contributions to biodiversity and ecosystem services, Reference module in Earth Systems and Environmental Sciences. Elsevier.
17. von Schiller D., T. Datry, R. Corti, A. Foulquier, K. Tockner, ..., Vander Vorste, R.,... *Accepted*. Sediment Respiration Pulses in Intermittent Rivers and Ephemeral Streams. Global Biogeochemical Cycles.
16. Vander Vorste, R., A.J. Timpano, C. Cappellin, B. Badgley, C. Zipper, and S. Schoenholtz. 2019. Microbial and macroinvertebrate communities, but not leaf decomposition, change along a mining-induced salinity gradient. *Freshwater Biology* 00:1–14.
15. Shumilova, O., D. Zak, T. Datry, A. Foulquier, R. Corti, D. von Schiller, K. Tockner, ..., R. Vander Vorste, ... 2019. A global analysis of leached nutrients and organic matter in IRES. *Global Change Biology*. doi: 10.1111/gcb.14537.
14. Marshall, J.C., V. Acuña, D.C. Allen, N. Bonada, A.J. Boulton, S.M. Carlson, C.N. Dahm, T. Datry, C. Leigh, P. Negus, J.S. Richardson, S. Sabater, A. L. Steward, R. Stubbington, K. Tockner, and R. Vander Vorste. 2018. Protecting US river health by maintaining the legal status of temporary waterways. *Science* 361(6405): 856-857. doi: 10.1126/science.aav0839.
13. Datry, T., A. Foulquier, R. Corti, D. von Schiller, K. Tockner, ..., R. Vander Vorste, ... 2018. A global perspective of terrestrial plant material dynamics in non-perennial waterways. *Nature Geoscience*
12. Vander Vorste, R., P. McElmurray, S. Bell, K.M. Eliason, and B.L. Brown. 2017. Does stream size really explain patterns of biodiversity in lotic systems? A call for mechanistic explanations. *Diversity* 9 (3), 26. doi:10.3390/d9030026 (Invited paper).
11. Vander Vorste, R., F. Mermillod-Blondin, F. Hervant, R. Mons, and T. Datry. 2017. *Gammarus pulex* (Crustacea: Amphipoda) avoids increasing water temperature and intraspecific competition through vertical migration into the hyporheic zone: a mesocosm experiment. *Aquatic Sciences*. doi: 10.1007/s00027-016-0478-z.
10. Datry, T. R. Vander Vorste, E. Goita, N. Moya, M. Campero, F. Rodriguez, J. Zubieta, and T. Oberdorff. 2017. Context dependent resistance of freshwater invertebrate communities to drying. *Ecology and Evolution*. doi:10.1002/ece3.2870.
9. Stubbington, M. Bogan, N. Bonada, A. Boulton, T. Datry, C. Leigh, and R. Vander Vorste. 2017. The biota of intermittent rivers and ephemeral streams: aquatic invertebrates in T. Datry, N. Bonada and A. Boulton (editors). *Intermittent rivers and ephemeral stream: ecology and management*. Elsevier. (Book chapter)
8. Vander Vorste, R., F. Mermillod-Blondin, F. Hervant, R. Mons, M. Forcellini, and T. Datry. 2016. Increased depth to the water table during river drying decreases the resilience of *Gammarus pulex* and alters ecosystem function. *Ecohydrology*. doi: 10.1002/eco.1716.
7. Vander Vorste, R., F. Malard, and T. Datry. 2016. Is drift the primary process promoting the resilience of river invertebrate communities? A manipulative field experiment in an alluvial, intermittent river. *Freshwater Biology* 61:1276–1292. doi:10.1111/fwb.12658.
6. Vander Vorste, R., R. Corti, A. Sagouis, and T. Datry. 2016. Invertebrate communities in

- gravel-bed, braided rivers are highly resilient to flow intermittence. *Freshwater Science* 35:164–177. doi:10.1086/683274.
5. Leigh, C., N. Bonada, A. Boulton, B. Hugueny, S.T. Larned, R. Vander Vorste, and T. Datry. 2016. Invertebrate assemblage responses and the dual roles of resistance and resilience to drying in intermittent rivers. *Aquatic Sciences* 78:291–301. doi: 10.1007/s00027-015-0427-2.
 4. Vander Vorste, R., N. Troelstrup, Jr., and E. Rasmussen. 2011. Hydroperiod of intermittent headwater streams in the Northern Glaciated Plains. *Proceedings of the South Dakota Academy of Science* 90: 105–112.
 3. Vander Vorste, R. W., E. J. Rasmussen, and N. H. Troelstrup Jr. 2008. Family-level community structure of insects inhabiting intermittent streams within the Northern Glaciated Plains. *Proceedings of the South Dakota Academy of Science* 87: 37–44.
 2. Rasmussen, E. J., R. W. Vander Vorste, and N. H. Troelstrup Jr. 2008. Habitat characteristics of intermittent streams within South Dakota’s Northern Glaciated Plains Ecoregion. *Proceedings of the South Dakota Academy of Science* 87: 55–62.
 1. Vander Vorste, R. W., and D. German. 2007. Development of an optimal macroinvertebrate bioassessment index for prairie lakes in northeastern South Dakota. *Proceedings of the South Dakota Academy of Science* 86: 259.

Manuscripts in review:

- Vander Vorste, R., M. Obedzinski, S. Nossaman-Pierce, S. Carlson, and T. Grantham. From refugia to ecological traps: extreme drought threatens persistence of an endangered fish in intermittent streams.
- Vander Vorste, R., E. Sokol, T. Datry, and B.L. Brown. Temporal storage influences colonization dynamics, biotic interactions and species coexistence in dynamic ecosystems.

In preparation:

- Vander Vorste, R., and A. Ruhi. Invertebrate communities are resilient to river drying across an aridity gradient.
- Vander Vorste, R. and S. Ciparis. Legacy mining impacts on mussel and fish communities: field evidence from a freshwater biodiversity hotspot.

PUBLISHED FINAL REPORTS

- Timpano, A.J., R. Vander Vorste, D. Soucek, K. Whitmore, C.E. Zipper, S.H. Schoenholtz. 2017. Stream ecosystem response to mining-induced salinization in central Appalachia. Final report to the Office of Surface Mining Reclamation and Enforcement (OSMRE Cooperative Agreement S15AC20028). Virginia Water Resources Research Institute.
- Baker, V., A. Keyworth, D. Tufford, R. Vander Vorste, R. Bolich, C. Williams, W. Hankinson, R. Milosh, R. Savage, and A. Mueller. 2013. Hydrologic connectivity, water quality function and biocriteria of Coastal Plain geographically isolated wetlands. Final report to US EPA. North Carolina Division of Water Quality, Raleigh, NC.
- Eaton, L., and R. Vander Vorste. 2012. Documenting a significant nexus to navigable water in the Southeast. Final report to US EPA (CD 95415609-0). North Carolina Division of Water Quality, Raleigh, NC.

SCIENTIFIC ARTICLES FOR PUBLIC OUTREACH

- Vander Vorste, R. 2006. Invertebrate summer season ends. SD Water Resources Institute, Water News 2(3): 8-9. https://www.sdstate.edu/abe/wri/upload/SDWRI_Newsletter_Volume2_Edition3.pdf
- Vander Vorste, R. 2006. Big Sioux water festival. SD Water Resources Institute, Water News 2(2): 6. https://www.sdstate.edu/abe/wri/upload/SDWRI_Newsletter_Volume2_Edition2.pdf.
- Vander Vorste, R. 2006. Creatures from the deep. SD Water Resources Institute, Water News 2(1): 6. <https://www.sdstate.edu/abe/wri/upload/SDWRINewsletterVolume2No1.pdf>.
- Vander Vorste, R. 2006. Legislative water festival. SD Water Resources Institute, Water News 2(1): 1. <https://www.sdstate.edu/abe/wri/upload/SDWRINewsletterVolume2No1.pdf>.

PROFESSIONAL SOCIETIES

Society for Freshwater Science, Carolina Area Biologists Association, Southeastern Water Pollution Biologists Association

PROFESSIONAL SERVICE

Lead editor- Society for Freshwater Science newsletter
Communications and Public Information and Publicity Committees, Society for Freshwater Science

PROFESSIONAL LEADERSHIP

- 2019** Co-organizer – Society for Freshwater Science Annual Meeting Special Session
2018 Lead organizer – Society for Freshwater Science Annual Meeting Special Session

JOURNAL PEER REVIEW

Aquatic Sciences, Ecological Applications, Ecology, Ecohydrology, Ecosphere, Freshwater Biology, Freshwater Science, Fundamental and Applied Limnology, Hydrobiologia, International Journal of Limnology, Oikos, Proceedings of the South Dakota Academy of Science, River Research and Applications

STUDENT AWARDS

- 2015** Student travel award. University of Claude Bernard Lyon 1
2014 General Endowment Student Award. Society for Freshwater Science
2009 Outstanding Graduate Teaching Assistant Award. South Dakota State University
2004 Paul Baurle Environmental Conservation Award. South Dakota State University
2003 Hughes County Conservation District Award

TRAINING & CERTIFICATIONS

- 2015** Zero-inflated models for R software: Introduction, Highlands Statistics, Alicante, Spain, October 2015.
- 2013** *Ade4* Statistical Package for R software: Initiation and Basic Methods, Fc-3Bio, Villeurbanne, France, November 2013.
- 2012** R programming statistics workshop at Society for Freshwater Science annual conference- Louisville, Kentucky, May 2012.
- 2011** Taxonomy and Natural History of Southern Appalachian Mayflies, Stoneflies, and Caddisflies- Highlands, North Carolina, August 2011.
Baetidae Workshop at Carolina Area Biologists Workshop- Hotsprings, North Carolina, April 2011.
- 2010** Tanytarsini Workshop at Southeastern Water Pollution Biologists Association Annual Conference, October 2010.
Coleoptera Workshop at Southeastern Water Pollution Biologists Association Annual Conference- October 2010.
North Carolina Surface Water Identification Training and Certification Course- Raleigh, North Carolina, August 2010.
SCUBA, PADI Open Water and Advanced Open Water Diver, August-January 2010.

TEACHING EXPERIENCE

- 2019** Invited speaker, Environmental Systems Graduate Group, UC Merced.
Scheduled 20 February.
- 2018** Guest lecturer, Freshwater Ecology, UC Berkeley
Seminar, Essig Brunch, UC Berkeley
- 2017** Lead instructor, Aquatic Entomology Lecture and Laboratory, Virginia Tech.
- 2016** Seminar, Ecology, Evolution and Behavior. Virginia Tech.
Guest lecturer, Wetland hydrology and biodiversity. Virginia Tech.
Guest lecturer, Freshwater Ecology. Virginia Tech.
- 2015** Guest lecturer, The hyporheic zone as a primary source of invertebrate community resilience in intermittent alluvial rivers: evidence from field and mesocosm experiments. University of Barcelona, Barcelona, Spain.
Guest lecturer, Resistance and resilience of invertebrate communities to stream drying. University of Nottingham, UK.
- 2014** Instructor. Workshop on identification of larval chironomids. University of San Simón, Cochabamba, Bolivia.
- 2010** Instructor. North Carolina Surface Water Identification Training and Certification Course, various locations, North Carolina. Several courses over 2 years.
- 2008** Graduate teaching assistant*. Introduction to biology. South Dakota State University, Brookings, South Dakota. Two laboratory sections for one semester. * see awards

MENTORSHIP EXPERIENCE

- 2018** Undergraduate student: Keane Flynn PhD students: Nina Pak, Gabriel Rossi, University of California, Berkeley.
- 2017** Undergraduate students: Daniel Donahoe, Megan Underwood. Virginia Tech

- 2016** Undergraduate/Masters students: Jenny Hwang, Taylor Richmond, Kylie Campbell, Kerwiden Whitmore, Catie Cappellin Virginia Tech
- 2015** Undergraduate student: Alex Niese. University of British Columbia, Vancouver, BC.
- 2012** Undergraduate student: Laury Daligault. University of Claude Bernard Lyon 1, Lyon France
- 2010** High school students: Sean and Wayne Beatty. EnvironMentors Program. Raleigh, NC.
- 2007** Undergraduate students: Kendal Vandekamp, Christine Neuhart. South Dakota State University, Brookings, South Dakota

OUTREACH AND VOLUNTEERING

Society for Freshwater Science Public Information and Publicity committee
Big Sioux Water Festival, water education for regional 4-5th graders, Brookings, SD
Bug Fest, largest arthropod-focused event in the USA, Raleigh, NC
EnviroMentor, mentor high school students in science, Raleigh, NC
Habitat for Humanity ReStore, large reseller of donated goods, Raleigh, NC
Oak Lake Field Station BioBlitz, 24-hr bioassessment, Brookings, SD

CONFERENCE PRESENTATIONS

- Vander Vorste, R., T. Grantham, S. Carlson, S. Nossaman-Pierce, M. Obedzinski. 2019. Extreme drought limits survival of endangered coho salmon in intermittent streams. Society for Freshwater Science Annual Conference. Salt Lake City, UT.
- Vander Vorste, R., T. Grantham, S. Carlson, S. Nossaman-Pierce, M. Obedzinski. 2019. Effects of extreme drought on juvenile coho salmon survival in the Russian River. Salmon Restoration Federation Annual Conference. Santa Rosa, CA.
- Vander Vorste, R., T. Grantham, S. Carlson, S. Nossaman-Pierce, M. Obedzinski. 2018. Isolated Abiotic drivers of juvenile coho salmon survival in intermittent streams. California Biologists Workgroup. Davis, CA.
- Vander Vorste, R., T. Grantham, S. Carlson, S. Nossaman-Pierce, M. Obedzinski. 2018. Isolated Pools: a bottleneck for survival of endangered coho salmon in Northern California. Society for Freshwater Science Annual Conference. Detroit, MI.
- Vander Vorste, R, T. Timpano, C. Cappellin, B. Badgley, C. Zipper, S. Schoenholtz. 2017. Influence of salinization on microbial and macroinvertebrate diversity and organic matter decomposition in Appalachian headwater streams. Society for Freshwater Science Annual Conference. Raleigh, NC.
- Vander Vorste, R. and T. Datry. 2016. Storage effects in intermittent river ecology: implications for coexistence, biotic interactions and colonization dynamics. Society for Freshwater Science Annual Conference. Sacramento, CA.
- Vander Vorste, R. 2016. The relationship between biodiversity and ecosystem function: initial results from a field experiment in Appalachian headwater streams influenced by coal mining. Carolina Area Biologists Workshop. Hot Springs, NC.

- Vander Vorste, R., F. Mermillod-Blondin, F. Malard, and T. Datry. 2015. The hyporheic zone as a primary source of resilience for invertebrate communities in intermittent alluvial rivers: evidence from field and laboratory studies. Society for European Freshwater Science Biannual Conference. Geneva, CH.
- Vander Vorste, R., F. Mermillod-Blondin, F. Malard, and T. Datry. 2015. The hyporheic zone as a primary source of resilience for invertebrate communities in intermittent alluvial rivers: evidence from field and laboratory studies. Society for Freshwater Science Annual Conference. Milwaukee, WI.
- Vander Vorste, R., T. Datry. 2015. Invertebrate community resistance and resilience to river drying. Young Natural History Scientists Meeting. Paris, France.
- Vander Vorste, R., F. Malard, and T. Datry. 2014. Contribution of the hyporheic zone to community resilience in intermittent rivers: a field experiment. Joint Aquatic Science Meeting. Portland, OR.
- Vander Vorste, R. W., and L. Eaton. 2012. Characterizing stream origins across the southeastern USA using benthic macroinvertebrate assemblages. Society for Freshwater Science Annual Conference. Louisville, KY.
- Vander Vorste, R. W. et al. 2012. The biocriteria of isolated wetlands in the North and South Carolina Coastal Plain (poster). INTECOL International Wetlands Conference. Orlando, FL.
- Vander Vorste, R. W., and L. Eaton. 2011. Macroinvertebrates in headwater streams across EPA Region IV in the Southeast. Southeastern Water Pollution Biologists Association Annual Conference, Burns, TN.
- Vander Vorste, R. W. and L. Eaton. 2010. Testing the NC stream origin method in the Southeast. Southeastern Water Pollution Biologists Association Annual Conference, Tallahassee, FL.
- Vander Vorste, R. W., E. J. Rasmussen, and N. H. Troelstrup Jr., 2009. Macroinvertebrate communities associated with hydrologic phases of intermittent, headwater streams in the Northern Glaciated Plains. North American Benthological Society Annual Conference, Grand Rapids, MI.
- Vander Vorste, R. W., E. J. Rasmussen, and N. H. Troelstrup Jr., 2009. Isolated pools: desolate waters or diverse refuges? Eastern South Dakota Water Conference, Brookings, SD.
- Vander Vorste, R. W., E. J. Rasmussen, and N. H. Troelstrup, Jr., 2008. Hydrologic connectivity of intermittent headwaters with downstream reaches. Eastern South Dakota Water Conference, Brookings, SD.
- Vander Vorste, R. W., E. J. Rasmussen, N. H. Troelstrup, Jr., 2007. Seasonal change of macroinvertebrate communities in intermittent prairie streams. Oak Lake Field Station Research Retreat, Brookings, SD.
- Vander Vorste, R. W., and D. German, 2006. Development of an Optimal Macroinvertebrate Bioassessment Index for Prairie Lakes in Northeastern South Dakota (poster). Eastern South Dakota Water Conference, Brookings, SD.