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Education

B.S. 1989. Cornell University, Ithaca, NY.
Ph.D. 1996. Institute of Ecology, University of Georgia, Athens, GA.

Research Interests

Stream and river ecology, food webs, nutrient cycling, primary and secondary production, invasive species, river impoundments

Appointments

2004-present Associate Professor. Department of Zoology and Physiology, University of Wyoming, Laramie, WY 82071.
1998-2004. Assistant Professor. Department of Zoology and Physiology, University of Wyoming, Laramie, WY 82071.
1996-1998 Postdoctoral Associate. Institute of Ecosystem Studies, Box AB, Millbrook NY. 12545
1989-1991 Technician, Ecosystems Research Center, Cornell University, Ithaca, NY 14853

Publications

Journal articles

- Arango, C. P., L. A. Riley, J. L. Tank, and R. O. Hall. In press. Herbivory by an invasive snail increases nitrogen fixation in a nitrogen limited stream. *Canadian Journal of Fisheries and Aquatic Sciences*.
- Hall, R. O., J. L. Tank, D. J. Sobota, P. J. Mulholland, J. M. O'Brien, W. K. Dodds, J. R. Webster, H. M. Valett, G. C. Poole, B. J. Peterson, J. L. Meyer, W. H. McDowell, S. L. Johnson, S. K. Hamilton, N. B. Grimm, S. V. Gregory, C. N. Dahm, L. W. Cooper, L.R. Ashkenas, S. M. Thomas, R. W. Sheibley, J. D. Potter, B. R. Niederlehner, L. Johnson, A. M. Helton, C. Crenshaw, A. J. Burgin, M. J. Bernot, J. J. Beaulieu, C. Arango. 2009. Nitrate removal in stream ecosystems measured by ¹⁵N addition experiments: Total uptake. *Limnology and Oceanography* 54: 653-665.
- Mulholland, P. J., R. O. Hall, D. J. Sobota, W. K. Dodds, S. E. G. Findlay, N. B. Grimm, S. K. Hamilton, W. H. McDowell, J. M. O'Brien, J. L. Tank, L. R. Ashkenas, L. W. Cooper, C. N. Dahm, S. V. Gregory, S. L. Johnson, J. L. Meyer, B. J. Peterson, G. C. Poole, H. M. Valett, J. R. Webster, C. P. Arango, J. J. Beaulieu, M. J. Bernot, A. J. Burgin, C. L. Crenshaw, A. M. Helton, L. T. Johnson, B. R. Niederlehner, J. D. Potter, R. W.

- Scheibley, and S. M. Thomas. 2009. Nitrate removal in stream ecosystems measured by ¹⁵N addition experiments: Denitrification. *Limnology and Oceanography* 54: 666-680.
- Solomon, C., E. R. Hotchkiss, J. Moslemi, A. J. Ulseth, E. Stanley, R. O. Hall, and A. S. Flecker. 2009. Sediment size and nutrients regulate denitrification in a tropical stream. *Journal of the North American Benthological Society* 28: 480-490.
- Tank, J. L., E. J. Rosi-Marshall, M. A. Baker, and R. O. Hall. 2008. Are rivers just big streams? A pulse method to quantify nitrogen demand in a large river. *Ecology* 86:2935-2945.
- Riley, L. A, M. F. Dybdahl. And R. O. Hall. 2008. Invasive species impact: asymmetric interactions between invasive and endemic freshwater snails. *Journal of the North American Benthological Society* 27:509-520.
- Mulholland, P. J., A. M. Helton, G. C. Poole, R. O. Hall, S. K. Hamilton, B. J. Peterson, J. L. Tank, L. R. Ashkenas, L. W. Cooper, C. N. Dahm, W. K. Dodds, S. Findlay, S. V. Gregory, N. B. Grimm, S. L. Johnson, W. H. McDowell, J. L. Meyer, H. M. Valett, J. R. Webster, C. Arango, J. J. Beaulieu, M. J. Bernot, A. J. Burgin, C. Crenshaw, L. Johnson, B. R. Niederlehner, J. M. O'Brien, J. D. Potter, R. W. Sheibly, D. J. Sobota, and S. M. Thomas. 2008. Stream denitrification across biomes and its response to anthropogenic nitrate loading. *Nature* 452: 202-205.
- Warren, D. R., E. S. Bernhardt, R. O. Hall, and G. E. Likens. 2007. Forest age, woody debris, and nutrient dynamics in headwater streams of the White Mountains, NH. *Earth Surface Processes and Landforms* 32:1154-1163.
- Taylor, B. W., C. F. Keep, R. O. Hall, B. J. Koch, L. M. Tronstad, A. S. Flecker, and A. J. Ulseth. 2007. Improving the fluorometric ammonium method: matrix effects, background fluorescence, and standard additions *Journal of the North American Benthological Society* 26:167-177.
- Gooseff, M. N., R. O. Hall, and J. L. Tank. 2007. Relating transient storage to channel complexity in streams of varying land use in Jackson Hole, WY. *Water Resources Research* 43: W01417, doi:10.1029/2005WR004626.
- Taylor, B. W., A. S. Flecker, and R. O. Hall. 2006. Loss of a harvested fish species disrupts carbon flow in a diverse tropical river. *Science* 313:833-836.
- Hall, R. O., M. F. Dybdahl, and M. C. VanderLoop. 2006. Extremely high secondary production of introduced snails in rivers. *Ecological Applications* 16:1121-1131.
- Hall, R. O. and J. L. Tank. 2005. Correcting whole-stream estimates of metabolism for groundwater input. *Limnology and Oceanography: Methods* 3:222-229.
- Bernhardt, E.S., G.E. Likens, R.O. Hall, D.C. Buso, S.G. Fisher, T.M. Burton, J.L. Meyer, W.H. McDowell, M.S. Mayer, B. Bowden, S. Findlay, K.H. Macneale, R. Stelzer, W. Lowe.

2005. Can't see the forest for the stream? In-stream processing and terrestrial nitrogen exports. *BioScience* 55:219-230.
- Feck, J., and R. O. Hall. 2004. Response of American Dippers (*Cinclus mexicanus*) to variation in stream water quality. *Freshwater Biology* 49: 1123-1137.
- Marshall, M. C. and R. O. Hall. 2004. Hyporheic invertebrates affect nitrogen cycling and respiration in stream sediment microcosms. *Journal of the North American Benthological Society* 23:416-428.
- Likens, G. E., D. C. Buso, B. K. Dresser, E. S. Bernhardt, R. O. Hall, K. H. Macneale, and S. W. Bailey. 2004. Buffering an acidic stream in New Hampshire with a silicate mineral. *Restoration Ecology* 12:419-428.
- Hall, R. O., J. L. Tank, and M. F. Dybdahl. 2003. Exotic snails dominate nitrogen cycling in a highly productive stream. *Frontiers in Ecology and the Environment*. 1: 407-411.
- Hall, R. O., and J. L. Tank. 2003. Ecosystem metabolism controls nitrogen uptake in streams in Grand Teton National Park, Wyoming. *Limnology and Oceanography* 48: 1120-1128.
- Hall, R. O. 2003. A stream's role in watershed nutrient export. *Proceedings of the National Academy of Sciences* 100: 10137-10138.
- Bernhardt, E. S., R. O. Hall, and G. E. Likens. 2002. Whole-system estimates of nitrification and nitrate uptake in streams at the Hubbard Brook Experimental Forest. *Ecosystems* 5: 419-430.
- Paul, M. J. and R. O. Hall. 2002. Particle transport and transient storage along a stream gradient in the Hubbard Brook Experimental Forest. *Journal of the North American Benthological Society* 21:195-205.
- Hall, R. O., E. S. Bernhardt, and G. E. Likens. 2002. Relating transient storage and nutrient uptake in forested mountain streams *Limnology and Oceanography* 47: 255-265.
- Hall, R. O., G. E. Likens, and H. M. Malcom. 2001. Trophic basis of invertebrate production in two forest streams. *Journal of the North American Benthological Society* 20:432-447.
- Hall, R. O., K. H. Macneale, E. S. Bernhardt, M. Field, and G. E. Likens. 2001. Biogeochemical response of two forest streams to a two-month calcium addition. *Freshwater Biology* 46:291-302.
- Hall, R. O., and G. E. Likens. 2000. Ecological implications of high discharge variability in streams of the Hubbard Brook Experimental Forest. *Proceedings of the International Society of Theoretical and Applied Limnology* 27:2353-2358.

- Hall, R. O., J. B. Wallace, and S. L. Eggert. 2000. Organic matter flow in stream food webs with reduced detrital resource base. *Ecology* 81:3445-3463.
- Hall, R. O., and J. L. Meyer. 1998. The trophic significance of bacteria in a detritus-based stream food web. *Ecology* 79:1995-2012.
- Hall, R. O., B. J. Peterson, and J. L. Meyer. 1998. Testing a nitrogen cycling model of a forest stream by using a nitrogen-15 tracer addition. *Ecosystems* 1:283-298.
- Hall, R. O., C. L. Peredney, and J. L. Meyer. 1996. The effect of invertebrate consumption on bacterial transport in a mountain stream. *Limnology and Oceanography*, 41:1180-1187.
- Couch, C. A., J. L. Meyer, and R. O. Hall. 1996. Incorporation of bacterial extracellular polysaccharide by black fly larvae (Simuliidae). *Journal of the North American Benthological Society* 15:289-299.
- Hall, R.O. 1995. The use of a stable carbon isotope addition to trace bacterial carbon in a stream food web. *Journal of the North American Benthological Society* 14: 269-277.
- Hambright, K.D., and R.O. Hall. 1992. Differential zooplankton feeding behaviors, selectivities, and community impacts of two planktivorous fishes. *Environmental Biology of Fishes* 35: 401-411.

Book Chapters

- Hall, R. O., B. J. Koch, M. C. Marshall, B. W. Taylor, and L. M. Tronstad. 2007. How body size mediates the role of animals in nutrient cycling in aquatic ecosystems. Pages 286-305 in A. Hildrew, D. Raffaelli, and R. Edmonds-Brown, editors. *Body Size: The Structure and Function of Aquatic Ecosystems*. Cambridge University Press.
- Hall, R. O., S. Thomas and E. E. Gaiser. 2007. Measuring primary production and respiration in freshwater ecosystems. Pages 175-203 in *Principles and Standards for Measuring Net Primary Production*. T.J. Fahey and A. K. Knapp, editors. Oxford University Press, Oxford.
- Harmon, M. E., D. L. Phillips, J. J. Battles, A. Rassweiler, R. O. Hall, and W. K. Lauenroth. 2007. Quantifying uncertainty in net primary production measurements. Pages 238-264 in *Principles and Standards for Measuring Net Primary Production*. T.J. Fahey and A. K. Knapp, editors. Oxford University Press, Oxford.
- Covich, A.P., K.C. Ewel, R. O. Hall, P.G. Giller, W. Goedkoop, D. Merritt,. 2004. Ecosystem services provided by freshwater benthos. Pages 45-72 in D. H Wall, editor. *Integrating concepts of biodiversity in soils and sediments: a transdisciplinary assessment of the most critical taxa, functions and habitats for sustainability, their vulnerability and management options*.

Giller, P. S., A.P. Covich, K.C. Ewel, R.O. Hall, and D. Merritt. 2004. Vulnerability and management of ecological services in freshwater systems. Pages 137-160 in D. H Wall, editor. *Integrating concepts of biodiversity in soils and sediments: a transdisciplinary assessment of the most critical taxa, functions and habitats for sustainability, their vulnerability and management options.*

Ineson P., Levin, L.A., R. Kneib, R.O. Hall, J.M.Weslawski, R.D. Bardgett, D.A. Wardle, D.H. Wall, W.H. van der Putten, H. Zadeh. 2004. Terrestrial soils and freshwater and marine sediments: cascading effects of deforestation on ecosystem services across spatially separated habitats. Pages 225-248 in D. H Wall, editor. *Integrating concepts of biodiversity in soils and sediments: a transdisciplinary assessment of the most critical taxa, functions and habitats for sustainability, their vulnerability and management options.*

Publications in process

Hall, R. O., M. A. Baker, C. D. Arp, and B. J. Koch. In revision. Hydrologic control of nitrogen uptake, storage, and export in a mountain stream. *Limnology and Oceanography*.

Cross, W. F., E. J. Rosi-Marshall, K. Behn, R. O. Hall, A. E. Fuller, and C. V. Baxter. In revision. Invasion and production of New Zealand mud snails in the Colorado River, Glen Canyon. *Biological Invasions*.

Tibbets, T. M., A. C. Krist, R. O. Hall, and L. A. Riley. In revision. Phosphorus-mediated changes in life-history traits of the invasive New Zealand mudsnail (*Potamopyrgus antipodarum*). *Oecologia*.

Recent grant support

2009-2012. Collaborative research: Using empirical and modeling approaches to extend nutrient spiraling from rivulets to rivers. National Science Foundation, \$161,000.

2006-2010. Linking whole-system carbon cycling to quantitative food webs in the Colorado River. USGS, \$1,140,000.

2005-2007. Land use impacts on nitrogen fixation in streams. Wyoming Water Development Commission and USGS. \$56,000.

2003-2006 Collaborative Research: Migratory fish as material and functional linkages across tropical Andean landscapes. National Science Foundation \$ 230,552.

2003 Isotope ratio mass spectrometers for biological and environmental research and training at the University of Wyoming. National Science Foundation \$398,885.

2002-2004 Influence of stream-lake interactions on nutrient transport and function in aquatic ecosystems: Modeling ¹⁵N experiments and watershed analyses. National Science Foundation. \$222,336 subcontract of a 1,000,000 grant to Utah State University.

2002-2004 Influence of bio-pollution on ecosystem processes: the impact of introduced lake trout on streams, predators and forests in Yellowstone National Park. EPA / EPSCoR \$200,000.

2001-2005 Nitrate uptake and retention in streams: mechanisms and effects of human from stream reaches to landscapes. National Science Foundation. \$98,000 subcontract from a \$3,000,000 grant to University of Tennessee.

2001-2004 Impacts of piscicide treatments on aquatic invertebrates. US Geological Survey. \$64,920

2000-2005 Hyporheic storage of marine-derived nitrogen in SE Alaska streams. US Forest Service \$98,940.

Teaching

Limnology, Limnology Laboratory, General Biology, General Ecology, Stream Ecology

Honors and awards

2002 Extraordinary Merit in Research. College of Arts and Sciences, University of Wyoming

2000 Hynes award from the North American Benthological Society for best paper (Hall and Meyer 1998) published by a young investigator.

1996 Best student paper award (Hall et al. 1996) for basic research. Institute of Ecology, University of Georgia.

1995 Best student paper award (Hall 1995) for basic research. Institute of Ecology, University of Georgia.

1994 Wildco Award for best oral presentation describing basic research at the 1994 North American Benthological Society Meeting.

1994 Outstanding Teaching Assistant Award. University of Georgia.

1993 Frigid Units Award for best oral presentation describing a new method at the 1993 North American Benthological Society Meeting.

Graduate students supervised

Amber Ulseth Ph.D. current

Erin Hotchkiss, MS 2006, Ph.D. current

Ben Koch M.S. 2005, Ph.D. current

Lisa Kunza Ph.D. current

Lusha Tronstad Ph.D. 2008

Michael Marshall, M.S., 2002 Ph.D. 2006.

Brad Taylor, Ph.D., 2005

Laura Curry, M.S. 2004

Jules Feck, MS 2002

Professional Service

2009-present. Editorial Board, *Oecologia*.

2008-present. Editorial Board, *Journal of the North American Benthological Society*.

2007-2008 Member and Chair, Hynes Award Committee, North American Benthological Society

2002-2004. Panel member, National Science Foundation Graduate Research Fellowship Program.

2000, Member, NAS/NRC Committee, Science and technology for environmental cleanup at Hanford.

1999 Agricultural Experiment Station Competitive Grant Program, University of Wyoming

1995-present Ad hoc reviewer for 18 journals and 4 granting agencies.

1994-1995 Executive Committee student member, North American Benthological Society.

Memberships in professional societies

American Society for Limnology and Oceanography

Ecological Society of America

North American Benthological Society

Workshops

2009 Aquatic invasive species monitoring plan for Greater Yellowstone Area, UW/NPS Research Station, Moran, WY

2007 Control and management of aquatic animal invaders. Nature Conservancy, Las Vegas, NV

2002. Integrating concepts of biodiversity in soils and sediments: a transdisciplinary assessment of the most critical taxa, functions and habitats for sustainability, their vulnerability and management options. SCOPE workshop.

2002 Measurement of Net Primary Production. Organized by Long-Term Ecological Research sites.