

# Robert W. Van Kirk

Senior Scientist, Henry's Fork Foundation  
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## EDUCATION

- **Ph.D. Mathematics**, 1995. University of Utah, Salt Lake City, UT
  - Emphasis: mathematical biology
  - Dissertation Title: *Integrodifference Models of Biological Growth and Dispersal*
  - Advisor: Mark A. Lewis
- **M.S. Environmental Systems**, 1990. Humboldt State University, Arcata, CA
  - Emphasis: mathematical modeling
  - Thesis Title: *Black-footed Ferret Population Dynamics: Use of Simulation Modeling to Investigate the Effects of Stochasticity, Habitat Geometry and Dispersal*
  - Advisor: Roland H. Lamberson
- Graduate study, mathematics and atmospheric science, 1985–1986, Colorado State University, Ft. Collins, CO
- **B.A. Mathematics**, 1984, *magna cum laude*. Humboldt State University, Arcata, CA
  - Emphasis: applied mathematics

## PROFESSIONAL POSITIONS

- Senior Scientist, Henry's Fork Foundation, 2013–present
- Professor of Mathematics, Humboldt State University, 2012–2013
- Associate Professor of Mathematics, Humboldt State University, 2008–2012
- Associate Professor of Mathematics, Idaho State University, 2005–2008
- Visiting Scholar (sabbatical), Idaho Water Resources Research Institute, 2005–2006
- Assistant Professor of Mathematics, Idaho State University, 2000–2005
- Adjunct Assistant Professor of Mathematics, Idaho State University, 1999–2000
- Visiting Instructor in Mathematics, Humboldt State University, 1998
- Research Director, Henry's Fork Foundation, Ashton, ID, 1994–1998
- Graduate Research Fellow, University of Utah, 1994
- Graduate Teaching Assistant, University of Utah, 1991–1993
- Lecturer in Mathematics, Humboldt State University, 1990–1991
- Instructor of Mathematics, College of the Redwoods, Eureka, CA, 1990–1991
- Graduate Teaching Assistant, Humboldt State University, 1989–1990
- Graduate Teaching and Research Assistant, Colorado State University, 1985–1986

## AWARDS AND HONORS

- Award for “contributions to watershed science,” Friends of the Teton River, 2016.
- Professional Award “for a career dedicated to protecting and restoring the upper Snake River,” Trout Unlimited Western Water Project, 2014
- R.L. Wallace Native Fish Conservation Award, Idaho Chapter American Fisheries Soc., 2008
- Conservation Award, Henry’s Fork Foundation, 2005
- Best Professional Paper, Idaho Chapter American Fisheries Society Annual Meeting, 2004
- Award of Merit for service to Idaho Chapter American Fisheries Society, 2004
- Outstanding Teaching Award, Mathematics Department, University of Utah, 1992
- First Prize for Student Papers presented at Symposium on Population Biology, Pacific Division American Association for the Advancement of Science, June 1989

## PUBLICATIONS

\*indicates graduate student co-author

†indicates undergraduate student co-author

### Refereed

- [32] Hansen, J.M. and **R.W. Van Kirk**. 2018. A mark-recapture-based approach for estimating angler harvest. *North American Journal of Fisheries Management* 38:400-410.
- [31] Tennant, C.J., A.A Harpold, K.A. Lohse, S.E. Godsey, B.T. Crosby, L.G. Larsen, P.D. Brooks, **R.W. Van Kirk**, and N.F. Glenn, N. F. 2017. Regional sensitivities of seasonal snowpack to elevation, aspect, and vegetation cover in western North America. *Water Resources Research*, 53:6908–6926.
- [30] Kuzniar, Z.J.\*, **R.W. Van Kirk**, and E.B. Snyder. 2017. Seasonal effects of macrophyte growth on rainbow trout habitat availability and selection in a low-gradient, groundwater-dominated river. *Ecology of Freshwater Fish* 26:653–665.
- [29] Bond\*, R.M., A.P. Stubblefield, and **R.W. Van Kirk**. 2015. Sensitivity of summer stream temperatures to climate variability and riparian reforestation strategies. *Journal of Hydrology: Regional Studies* 4B:267–279.
- [28] Tenant\*, C.J., B.T. Crosby, S.E. Godsey, **R.W. Van Kirk**, and D.R. Derryberry. 2015. A simple framework for assessing the sensitivity of mountain watersheds to warming-driven snowpack loss. *Geophysical Research Letters* 42, doi:10.1002/2015GL063413.
- [27] Sahara\*, A., E. Jules, D.A. Sarr, and **R.W. Van Kirk**. 2015. Quantifying habitat loss: assessing tree encroachment into a serpentine savanna using dendroecology and remote sensing. *Forest Ecology and Management* 340:9–21.
- [26] Boggs\*, K.G., **R.W. Van Kirk**, G.S. Johnson, and J.P. Fairley. 2014. Forecasting aquifer discharge using a data-driven, statistical approach. *Groundwater* 52:853-863.
- [25] **Van Kirk, R.**, S. Martin, K. Ross\*, and M. Douglas\*. 2014. Computer simulation to determine trailhead quotas for overnight wilderness visitor use. *Journal of Parks and Recreation*

*Administration* 32(3):29-48.

- [24] Baker, J.M., Y. Everett, L. Liegel\*, and **R. Van Kirk**. 2014. Patterns of irrigated agricultural land conversion in a western USA watershed: implications for landscape-level water management and land-use planning. *Society and Natural Resources: An International Journal* 27:1145–1160.
- [23] Boggs\*, K.G., G.S. Johnson, **R.W. Van Kirk**, and J.P. Fairley. 2014. Forecasting aquifer discharge using a numerical model and convolution. *Groundwater* 52:503–513.
- [22] Banwell\*, E.M., J.M. Varner, E.E. Knapp, and **R.W. Van Kirk**. 2013. Spatial, seasonal, and diel forest floor moisture dynamics in Jeffrey pine-white fir forests of the Lake Tahoe Basin, USA. *Forest Ecology and Management* 305:11–20.
- [21] Gledhill\*, M. and **R.W. Van Kirk**. 2011. Modeling effects of toxin exposure in fish on long-term population size, with an application to selenium toxicity in bluegill (*Lepomis macrochirus*). *Ecological Modelling* 222:3587–3597.
- [20] Marcarelli, A.M., **R.W. Van Kirk**, and C.V. Baxter. 2010. Predicting effects of hydrologic alteration and climate change on ecosystem metabolism in a western U.S. river. *Ecological Applications* 20:2081–2088.
- [19] Boggs\*, K.G., **R.W. Van Kirk**, G.S. Johnson, J.P. Fairley, and P.S. Porter. 2010. Analytical solutions to the linearized Boussinesq equation for assessing the effects of recharge on aquifer discharge. *J. American Water Resources Association* 46:1116–1132.
- [18] **Van Kirk, R.W.**, L. Battle, and W.C. Schrader. 2010. Modelling competition and hybridization between native cutthroat trout and nonnative rainbow and hybrid trout. *J. Biological Dynamics* 4:158–175.
- [17] Lifton\*, Z.M., G.D. Thackray, **R.W. Van Kirk**, and N.F. Glenn. 2009. Influence of rock strength on the valley morphometry of Big Creek, central Idaho, USA. *Geomorphology* 111:173–181.
- [16] Ames, D.P., E.B. Rafn\*, **R. Van Kirk**, and B. Crosby. 2009. Estimation of stream channel geometry in Idaho using GIS-derived watershed characteristics. *Environmental Modelling and Software* 24:444–448.
- [15] Garren, D., J. Fredericks, D. Keen, and **R. Van Kirk**. 2009. Evaluating the success of fingerling trout stockings in Henrys Lake, Idaho. Pp. 427–438 in M.S. Allen, S. Sammons, and M.J. Maceina, editors. *Balancing Fisheries Management and Water Uses for Impounded River Systems*. American Fisheries Society Symposium 62, Bethesda, MD.
- [14] **Van Kirk, R.W.** and S.L. Naman\*. 2008. Relative effects of water use and climate on base-flow trends in the lower Klamath Basin. *J. American Water Resources Association* 44:1035–1052.
- [13] Johnson\*, B.G., G.L. Thackray and **R.W. Van Kirk**. 2007. The effect of topography, latitude, and lithology on rock glacier distribution in the Lemhi Range, central Idaho, USA. *Geomorphology* 91:38–50.
- [12] **Van Kirk, R.W.** and S.L. Hill. 2007. Demographic model predicts trout population response to selenium based on individual-level toxicity. *Ecological Modelling* 206:407–420.
- [11] **Van Kirk, R.W.** and L. Benjamin. 2001. Status and conservation of salmonids in relation to hydrologic integrity in the Greater Yellowstone Ecosystem. *Western North American Naturalist* 61:359–374.

- [10] Jaeger\*, M.E., **R.W. Van Kirk** and T. Kellogg. 2000. Distribution and status of Yellowstone cutthroat trout in the Henrys Fork watershed. *Intermountain J. Sciences* 6:197–216.
- [9] **Van Kirk, R.W.** 2000. Henrys Fork aquatic resources bibliography. *Intermountain J. Sciences* 6:312–332.
- [8] **Van Kirk, R.W.** and L. Benjamin. 2000. Physical and human geography of the Henry’s Fork watershed. *Intermountain J. Sciences* 6:106–118.
- [7] **Van Kirk, R.W.** and M. Gamblin. 2000. History of fisheries management in the upper Henry’s Fork watershed. *Intermountain J. Sciences* 6:263–284.
- [6] **Van Kirk, R.W.** and R. Martin. 2000. Interactions among aquatic vegetation, waterfowl, flows and the fishery below Island Park Dam. *Intermountain J. Sciences* 6:249–262.
- [5] Gregory, J.S., S.S. Beesley<sup>†</sup> and **R.W. Van Kirk**. 2000. Effect of springtime water temperature on the time of emergence and size of *Pteronarcys californica* in the Henrys Fork catchment, Idaho, USA. *Freshwater Biology* 45:77–83.
- [4] Benjamin, L.\* and **R.W. Van Kirk**. 1999. Assessing instream flow and reservoir operations on an eastern Idaho river. *J. American Water Resources Association* 35:899–909.
- [3] **Van Kirk, R.W.** and M.A. Lewis. 1999. Edge permeability and population persistence in isolated habitat patches. *Natural Resource Modeling* 12:37–64.
- [2] **Van Kirk, R.W.** and C.B. Griffin. 1997. Building a collaborative process for restoration: Henrys Fork of Idaho and Wyoming. Pp. 253–276 in J.E. Williams, M.P. Dombeck, W. Elmore and C.A. Wood, editors. *Watershed Restoration: Principles and Practices*. American Fisheries Society, Bethesda, MD.
- [1] **Van Kirk, R.W.** and M.A. Lewis. 1997. Integrodifference models for population persistence. *Bulletin of Mathematical Biology* 59:107–137.

## Technical reports

**Van Kirk, R.** and C. Morrisett. 2017. Analysis of Caribou-Targhee National Forest Fisheries and Fish Habitat Database. Prepared for USDA Forest Service, Caribou-Targhee National Forest. 33 pp. plus appendices.

CH2M and Henry’s Fork Foundation. 2016. Eastern Snake Plain Aquifer (ESPA): Review of Comprehensive Managed Aquifer Recharge Program. Prepared for Idaho Water Resource Board, <http://www.idwr.idaho.gov/files/iwrb/2016/201603-CH2M-Recharge-Report.pdf>. 44 pp. plus appendices.

Idaho Department of Fish and Game and **R. Van Kirk**. 2014. Rationale for Protest of [Water-Right] Permit Applications 37-22682 and 37-22852: Expert Report. Submitted to Idaho Department of Water Resources. 34 pp.

Idaho Department of Fish and Game and **R. Van Kirk**. 2014. Rationale for Protest of [Water-Right] Permit Applications 01-10625 and 01-10626: Expert Report. Submitted to Idaho Department of Water Resources, [http://www.idwr.idaho.gov/apps/ExtSearch/DocsImages/lb7\\_01\\_.PDF](http://www.idwr.idaho.gov/apps/ExtSearch/DocsImages/lb7_01_.PDF). 41 pp.

- Van Kirk, R.** and 12 co-authors. 2012. In the Henry's Fork Watershed, Every Drop Leaves a Ripple: A guide to hydrology and water management. Humboldt State University, [http://www.humboldt.edu/henrysfork/Documents\\_Presentations/HFW%20Booklet%20final.pdf](http://www.humboldt.edu/henrysfork/Documents_Presentations/HFW%20Booklet%20final.pdf). 20 pp.
- Van Kirk, R.**, S. Martin, K. Ross\*, and M. Douglas\*. 2011. Simulation modeling and analysis of overnight visitor use in the Yosemite Wilderness. Report to National Park Service, Yosemite National Park, El Portal, CA. 77 pp. plus executive summary.
- Van Kirk, R.W.** and S.W. Naman\*. 2007. Separating effects of water use and climatic changes on base flow in the lower Klamath Basin. Report to U.S. Fish and Wildlife Service, Arcata, CA. 31 pp.
- Van Kirk, R.W.** and S.L. Hill. 2006. Modeling predicts trout population response to selenium based on individual-level toxicity. Report to Greater Yellowstone Coalition, Idaho Falls, ID. 24 pp.
- Van Kirk, R.** and A. Jenkins\*. 2005. Hydrologic alteration in the upper Teton watershed and its implications for cutthroat trout restoration. Report to Friends of the Teton River, Driggs, ID. 72 pp.
- Van Kirk, R.** and B. Burnett<sup>†</sup>. 2004. Hydrologic alteration and its ecological effects in the Henry's Fork watershed upstream of St. Anthony. Report to Henry's Fork Watershed Council, Ashton, ID, and other organizations. 66 pp.
- Moller\*, S. and **R. Van Kirk**. 2003. Hydrologic alteration and its effect on trout recruitment in the South Fork Snake River. Report to Idaho Department of Fish and Game, Idaho Falls, ID. 92 pp.
- Van Kirk, R.**, L. Benjamin and D. Patla. 2000. Riparian area assessment and amphibian status in the watersheds of the Greater Yellowstone Ecosystem. Report to Greater Yellowstone Coalition, Bozeman, MT. 102 pp.
- Van Kirk, R.** 1999. Status of fisheries and aquatic habitats in the Greater Yellowstone Ecosystem. Report to Greater Yellowstone Coalition, Bozeman, MT. 36 pp.
- Van Kirk, R.** 1999. Angler effort, catch and attitudes on Henry's Lake Outlet. Report to The Nature Conservancy, Eastern Idaho Field Office, Idaho Falls, ID. 32 pp.
- Van Kirk, R.** and S. Beesley\*. 1999. Downstream migration of rainbow trout in the Buffalo River during 1997 and 1998. Report to Idaho Fish and Wildlife Foundation, Boise, ID. 31 pp.
- Van Kirk, R.**, S. Beesley\*, J. Didier<sup>†</sup>, D. Hanson<sup>†</sup> and D. Hayes<sup>†</sup>. 1999. Angler effort and catch and floater use in Box Canyon. Report to Idaho Fish and Wildlife Foundation, Boise, ID. 24 pp.
- Van Kirk, R.** and K. Giese<sup>†</sup>. 1999. Angler effort and catch on the Buffalo River during 1998 and effects of the Buffalo River fish ladder on the Box Canyon rainbow trout population. Report to Idaho Fish and Wildlife Foundation. 19 pp.
- Van Kirk, R.**, D. Hanson<sup>†</sup>, G. Peracca<sup>†</sup>, K. Giese<sup>†</sup> and A. Kitching<sup>†</sup>. 1999. Angler attitudes on the Mack's Inn reach of the Henry's Fork of the Snake River. Report to Idaho Fish and Wildlife Foundation. 17 pp.
- Gregory, J. and **R. Van Kirk**. 1998. Henrys Fork Habitat Assessment Island Park Dam to Warm River, Summer 1997. Henry's Fork Foundation, Ashton, ID. 77 pp.

Gregory, J. and **R. Van Kirk**. 1998. Box Canyon insect abundance and emergence and rainbow trout spawning assessment: Supplement. Henry's Fork Foundation, Ashton, ID. 13 pp.

**Van Kirk, R.**, L. Albano, J. Didier<sup>†</sup> and D. Hayes<sup>†</sup>. 1997. Angler effort and catch on the Buffalo River, 1996 and 1997. Henry's Fork Foundation, Ashton, ID. 16 pp.

**Van Kirk, R.**, E. Bergman<sup>†</sup>, D. Hayes<sup>†</sup>, M. Jaeger<sup>†</sup>, B. Krestian<sup>†</sup>, D. Morical<sup>†</sup>, W. Thorson<sup>†</sup>, J. Gregory, and T. Kellogg. 1997. Status of Yellowstone cutthroat trout in the upper Henry's Fork watershed. Henry's Fork Foundation, Ashton, ID. 15 pp

**Van Kirk, R.**, A. Frazier<sup>†</sup>, B. Smith<sup>†</sup> and A. Mali. 1997. Floater use and attitudes on the Big Springs Water Trail and use of Wood Road 16 on the Targhee National Forest. Henry's Fork Foundation, Ashton, ID. 17 pp.

Gregory, J. and **R. Van Kirk**. 1997. Box Canyon insect abundance and emergence and rainbow trout spawning assessment. Henry's Fork Foundation, Ashton, ID. 64 pp.

**Van Kirk, R.** 1996. The Henry's Fork Fishery Above Mesa Falls: An Overview of Management History and Implications for Rehabilitation and Restoration. Henry's Fork Foundation, Ashton, ID. 36 pp.

### Conference proceedings and abstracts (non-refereed)

**R. Van Kirk**, B. Hoffner, A. Verbeten, and S. Yates. 2017. Imperative actions for wild-trout conservation organizations to combat climate change and increased water demand: Unify anglers, support agencies, and drive water markets. Pp. 23–29 in R.F. Carline, and C. LoSapio, editors. Science, Politics, and Wild Trout Management: Who's Driving and Where are We Going? Proceedings of Wild Trout XII Symposium, West Yellowstone, MT. <https://www.wildtroutsymposium.com/proceedings-12.pdf>.

Muradian, M. and **R. Van Kirk**. 2017. Costs, benefits and challenges of establishing and maintaining real-time instrumentation that can be used to inform management and educate stakeholders. Pp. 39–45 in R.F. Carline, and C. LoSapio, editors. Science, Politics, and Wild Trout Management: Who's Driving and Where are We Going? Proceedings of Wild Trout XII Symposium, West Yellowstone, MT. <https://www.wildtroutsymposium.com/proceedings-12.pdf>.

Laatsch, J. **R. Van Kirk**, C. Morrisett, K. Manishin, and J. DeRito. 2017. Angler perception of fishing experience in a highly technical catch-and-release fishery: How closely does perception align with biological reality? Pp. 47–53 in R.F. Carline, and C. LoSapio, editors. Science, Politics, and Wild Trout Management: Who's Driving and Where are We Going? Proceedings of Wild Trout XII Symposium, West Yellowstone, MT. <https://www.wildtroutsymposium.com/proceedings-12.pdf>.

Oldemeyer, B. J. Flinders, C. Morrisett, and **R. Van Kirk**. 2017. Long-term effectiveness of flow management and fish passage on the Henry's Fork Rainbow Trout population. Pp. 125–131 in R.F. Carline, and C. LoSapio, editors. Science, Politics, and Wild Trout Management: Who's Driving and Where are We Going? Proceedings of Wild Trout XII Symposium, West Yellowstone, MT. <https://www.wildtroutsymposium.com/proceedings-12.pdf>.

**Van Kirk, R.** 2014. Effects of irrigation seepage and groundwater flow on fluvial and palustrine habitats in the upper Snake River basin. Pp. 47-48 in Abstracts of the workshop on Late Cenozoic



to Recent Geologic and Biotic History of the Snake River. March 24-26, Pocatello, ID. <http://geology.isu.edu/Papers/SRPPProceedings.pdf>.

Battle, L., **R. Van Kirk**, and B. Schrader. 2010. Effectiveness of flow management and rainbow trout harvest on long-term viability of native Yellowstone cutthroat trout in the South Fork Snake River. Pp. 267–274 in R.F. Carline, and C. LoSapio, editors. Conserving Wild Trout. Proceedings of Wild Trout X Symposium, Bozeman, MT. <http://www.wildtroutsymposium.com/proceedings-10.pdf>.

Fredericks, J., B. Schrader, and **R. Van Kirk**. 2004. A collaborative, multi-facted approach to Yellowstone Cutthroat Trout conservation in the South Fork of the Snake River, Idaho. Pp. 158–166 in S.E. Moore, R.F. Carline, and J. Dillon, editors. Working Together to Ensure the Future of Wild Trout. Proceedings of Wild Trout VIII Symposium, Yellowstone National Park, WY. <http://www.wildtroutsymposium.com/proceedings-8.pdf>.

**Van Kirk, R.W.** and B.L. Gamett. 2003. Geography and fishes of the Sinks Drainages of southeastern Idaho (abstract). *Intermountain J. Sciences* 9:147.

## EXTRAMURAL FUNDING RECEIVED

### Competitive grants

**Van Kirk, R.** Henrys Lake water quality and limnology investigation. Idaho Fish and Game Commission Community Challenge Grant. \$26,350 to Henry's Fork Foundation, 2018–2019.

Jackson-Smith, D. (PI), J. Horsburgh, B. Neilson, D. Rosenberg, C. Sims (Co-PIs), C. Neale, D. Stevens, D. Tarboten, J. Schmidt, J. Jin, J. Endter-Wada, M. Baker, P. Budy, and **R. Van Kirk** (Senior Investigators). Impacts of Climate Change and Urbanization on Water Availability, Water Quality, and Ecosystem Services in Transitioning Irrigated Agricultural Landscapes of the Intermountain West. National Science Foundation (Water Sustainability and Climate Program), \$150,000 to Utah State University, 2010–2011.

**Van Kirk, R.** (PI), J.M. Baker, Y. Everett, B. Finney, S. Steinberg, (Co-PIs), D. Swensen, S. Trafton, and A. Verbeten (Cooperating Organization Senior Personnel). Conservation of surface and ground water in a Western watershed experiencing rapid loss of irrigated agricultural land to development. U.S. Department of Agriculture (Cooperative State Research, Extension and Education Service). \$620,000 to Humboldt State University, 2009–2011.

Bjorkstedt, E., S. Ralston, **R. Van Kirk**, J. Field, and X. He. Developing recruitment indices for West Coast rockfish using individual-based models and environmentally forced ocean circulation models. National Marine Fisheries Service, \$99,630 to Humboldt State University, 2009–2011.

Marcarelli, A., **R. Van Kirk**, and C. Baxter. Coupling management of water quality and quantity: How do hydrology and biological activity interact to control nutrient concentration and export in an impaired Intermountain watershed? Inland Northwest Research Alliance, \$62,500 to Idaho State University, 2007–2009.

**Van Kirk, R.** Integrating mathematics into interdisciplinary water resources research and education in the upper Snake River basin. National Science Foundation (Interdisciplinary Grants in the Mathematical Sciences), \$62,900 to Idaho State University, 2005–2006.

Stowe, D., T. Lay, and **R. Van Kirk**. Restructuring Math 107 at Idaho State University. Idaho State Board of Education (Technology Incentive Program), \$167,116 to Idaho State University, 2001–2002.

Mebane, C., **R. Van Kirk**, and A. Mali. Sheridan Creek Restoration. U.S. Environmental Protection Agency, \$258,000 to Henry's Fork Watershed Council, 1998–2001.

## Contracts

**Van Kirk, R.** Rock Creek temperature analysis. GeoSense LLC, \$2,700 to Henry's Fork Foundation, 2018.

**Van Kirk, R.** Analysis of Caribou-Targhee National Forest Fisheries and Fish Habitat Database. U.S. Forest Service, \$5,000 to Henry's Fork Foundation, 2015–2017.

**Van Kirk, R.** Mark-recapture method for estimating salmon and steelhead harvest. Idaho Department of Fish and Game, \$2,200 to Henry's Fork Foundation, 2016–2017.

**Van Kirk, R.** Idaho Department of Water Resources Murphy gage streamflow forecasting. CH2M, \$32,500 to Henry's Fork Foundation, 2016–2017.

**Van Kirk, R.** Idaho Department of Water Resources managed recharge review: additional analyses and reporting. CH2M, \$18,000 to Henry's Fork Foundation, 2016.

**Van Kirk, R.** Hydrology and water-management consulting. Friends of the Teton River, Driggs, ID, \$4,000 to Henry's Fork Foundation, 2016.

**Van Kirk, R.** Idaho Department of Water Resources managed recharge review. CH2M, \$14,700 to Henry's Fork Foundation, 2015.

**Van Kirk, R.** Hydrologic effects of proposed aquifer recharge on the Big Wood River. Idaho Department of Fish and Game, \$4,000 to Henry's Fork Foundation, 2014–2015.

**Van Kirk, R.** Upper Salmon Basin Groundwater-Surface Water Interactions Study. CH2M, \$2,700 to Henry's Fork Foundation, 2014.

**Van Kirk, R.** Hydrologic effects of proposed aquifer recharge on the Snake River near Blackfoot, Idaho. Idaho Department of Fish and Game, \$4,000 to Henry's Fork Foundation, 2014.

**Van Kirk, R.** South Fork Snake River Trout Population Modeling and Analysis. Idaho Department of Fish and Game, \$9,000 to Henry's Fork Foundation, 2013–2014.

**Van Kirk, R.** Hydrology and fisheries consulting. Friends of the Teton River, Driggs, ID, \$4,842 to Humboldt State University, 2011–2012.

Martin, S., and **R. Van Kirk**. Modeling backcountry use in Yosemite National Park. National Park Service (Yosemite Conservancy), \$98,917 to Humboldt State University, 2009–2011.

**Van Kirk, R.** Carry-over storage in the upper Snake River system. Idaho Department of Water Resources, \$10,000 to Humboldt State University, 2009.

**Van Kirk, R.** Evaluation of effectiveness of water and fisheries management actions in reversing decline of native cutthroat trout in the South Fork Snake River. Idaho Department of Fish and Game, \$9,502 to Idaho State University, 2007–2008.



**Van Kirk, R.** and L. Battle. Predictive modeling of cutthroat and rainbow trout population interactions in the South Fork Snake River. Idaho Department of Fish and Game, \$12,014 to Idaho State University, 2007–2008.

**Van Kirk, R.** Hydrologic Alteration in the Klamath River Basin. U.S. Fish and Wildlife Service, \$16,500 to Idaho State University, 2006–2007.

**Van Kirk, R.** Potential Population-level Effects of a Proposed Fish-tissue Selenium Concentration Criterion on Yellowstone Cutthroat Trout. Greater Yellowstone Coalition, \$8,867 to Idaho State University, 2006.

**Van Kirk, R.** Effects of geology and water management on hydrologic regimes and fluvial processes in the Henry’s Fork watershed. Henry’s Fork Watershed Council and participating organizations, \$14,702 to Idaho State University, 2005–2006.

**Van Kirk, R.** Teton River hydrologic analysis. Friends of the Teton River, Driggs, ID, \$10,765 to Idaho State University, 2004–2005.

**Van Kirk, R.** Teton River fishery juvenile trout abundance and survival assessment. Idaho Department of Fish and Game, \$5,500 to Idaho State University, 2003–2005.

**Van Kirk, R.** A watershed perspective on hydrologic alteration in the Henry’s Fork. Henry’s Fork Watershed Council and participating organizations, \$17,093 to Idaho State University, 2003–2004.

**Van Kirk, R.** South Fork Snake River hydrologic regime and fish population analysis. Idaho Department of Fish and Game, \$22,642 to Idaho State University, 2002–2004.

**Van Kirk, R.** Intermediate Algebra learning software development. Quant Systems, Inc., Charleston, SC, \$6,775 to Idaho State University, 2002.

**Van Kirk, R.** and A.V. Zale. Aquatic Resources of the Henry’s Fork Watershed Special Issue. Henry’s Fork Watershed Council and participating organizations, \$11,211 to *Intermountain J. Sciences*, 1999–2000.

## PRESENTATIONS

\*indicates graduate student co-author

†indicates undergraduate student co-author

### Invited addresses at conferences and professional meetings

**Van Kirk, R.** Effective use of hydrological science to assess the impact of change in land use from agricultural to urban. Idaho Water Law Seminar, Law Seminars International, October 2017, Boise, ID.

**Van Kirk, R.,** S. Yates, B. Hoffner, and A. Verbeten. Imperative actions for wild-trout conservation organizations to combat climate change and increased water demand. Wild Trout Symposium XII, September 2017, West Yellowstone, MT.

**Van Kirk, R.** Fish and wildlife conservation in Idaho’s canal-irrigated landscapes: Opportunities and challenges. Special session: *Connecting fish and wildlife: Ecological linkages between land and*

*water*, Joint meeting, Idaho chapters of American Fisheries Society and The Wildlife Society, March 2017, Boise, ID.

**Van Kirk, R.** The role of hydrological science in assessing the impact of change in land use from agriculture to urban. Idaho Water Law Seminar, Law Seminars International, September 2016, Boise, ID.

**Van Kirk, R.** Environmental Effects of Managed Recharge. Symposium on Private Managed Aquifer Recharge, Recharge Development Corporation, February 2016, Idaho Falls, ID.

**Van Kirk, R.** Conversion of irrigated agricultural land in eastern Idaho to non-agricultural uses: consequences for water management and hydrology. Technical workshop on shallow groundwater, Montana Department of Natural Resources and Conservation, October 2015, Helena, MT.

**Van Kirk, R.** Hydrology of the Henry's Fork: World-class geology, fly-fishing, and irrigation. Keynote address to State Rendezvous of Idaho Master Naturalists, September 2015, Harriman State Park, ID.

**Van Kirk, R.** Even Academic Research is Subject to Political Influence: A Case Study in Infringement of Academic Freedom at a Public University. Symposium on Ethical Science in the Face of Political Reality. American Fisheries Society, August 2015, Portland, OR.

**Van Kirk, R.** Hydrology of the upper Henry's Fork: climate, geology, and water management. Caldera Symposium, Henry's Fork Foundation, July 2012, Island Park, ID.

**Van Kirk, R.** Mathematical models as testable scientific hypotheses: A modern approach to fitting mathematical models to data. 40th Annual State of Jefferson Mathematics Congress, October 2011, Whiskeytown Lake, CA.

**Van Kirk, R.** The role of snowpack in sustaining ecological, recreational, and agricultural systems in Greater Yellowstone. Invited plenary address, Greater Yellowstone Business Partnership Annual Conference, May 2010, Jackson Lake Lodge, WY.

**Van Kirk, R.W., L. Battle, and W.C. Schrader.** Effects of flow regime and species interactions on displacement of native cutthroat trout by nonnative rainbow trout in the upper Snake River. Pacific Northwest Conference on Comprehensive Mathematical Modelling in the Natural and Engineering Sciences, Organized in the Spirit of L.A. Segel. Washington State University, June 2009, Pullman, WA.

**Van Kirk, R.** Effects of climate change on Idaho's large rivers. Invited plenary address, Idaho Chapter American Fisheries Society, February 2008, Post Falls, ID.

**Van Kirk, R.** Effects of flow alterations associated with dams and diversions. Invited plenary address, Idaho Chapter American Fisheries Society, February 2007, Boise, ID.

**Van Kirk, R.** Greater Yellowstone: Headwaters of a continent. Invited plenary address, Greater Yellowstone Business Partnership Annual Conference, May 2006, Jackson Lake Lodge, WY.

### **Contributed papers at conferences and professional meetings, presenting author**

**Van Kirk, R., M. Muradian, Z. Kuzniar, and B. Ortman.** Effects of macrophyte growth and senescence on sediment dynamics in a regulated, low-gradient river. Pacific Northwest Chapter Society for Freshwater Science, November 2018, Ketchum, ID.

**Van Kirk, R.**, J. Laatsch, J. McLaren\*, C. Morrisett, and B. Oldemeyer. Climate change adaptation in the Henrys Fork Snake River to sustain agriculture, fish and wildlife and recreation. Northwest Climate Conference, October 2018, Boise, ID.

Hansen, J. and **R. Van Kirk**. A mark-recapture based approach for estimating angler harvest. Idaho Chapter American Fisheries Society, Feb.-Mar. 2018, Idaho Falls, ID.

Kuzniar, Z.\*, **R.W. Van Kirk**, and E.B. Snyder. Seasonal effects of macrophyte growth on Rainbow Trout habitat availability and selection in a low-gradient, groundwater dominated-river. Joint meeting, Idaho chapters of American Fisheries Society and The Wildlife Society, March 2017, Boise, ID.

**Van Kirk, R.** Effects of groundwater management on hydrologic regimes in the Snake River Basin, and implications for water and fisheries management. Idaho Chapter American Fisheries Society, March 2015, Boise, ID.

**Van Kirk, R.**, and K. Lindke. Effects of Island Park Reservoir on sediment and phosphorus transport in the upper Henrys Fork watershed. Idaho Department of Environmental Quality Water Quality Monitoring Workshop. February 2015, Boise, ID.

**Van Kirk, R.** Effects of irrigation seepage and groundwater flow on fluvial and palustrine habitats in the upper Snake River basin. Workshop on Late Cenozoic to Recent Geologic and Biotic History of the Snake River. March 2014, Pocatello, ID.

**Van Kirk, R.**, E. DeVita\*, B. High, and D. Garren. Effects of fisheries and flow management on long-term viability of native cutthroat trout in the South Fork Snake River. Idaho Chapter American Fisheries Society, February 2014, Idaho Falls, ID.

**Van Kirk, R.**, B. Apple\*, J.M. Baker, Y. Everett, B. Finney, L. Liegel\*, V. Orosz†, K. Peterson\*, K. Ragotzkie, D. Swensen, and A. Verbeten. Conversion of irrigated agricultural land in the Intermountain West to non-agricultural uses: consequences for water management and hydrology. USDA/NOAA Land and Sea Grant National Water Conference, May 2012, Portland, OR.

**Van Kirk, R.**, L. Battle, and W.C. Schrader. Effectiveness of flow management and rainbow trout harvest on long-term viability of native Yellowstone cutthroat trout in the South Fork Snake River. Idaho Chapter American Fisheries Society, March 2009, Boise, ID.

**Van Kirk, R.** and S. Hill. Demographic model predicts trout population response to individual-level toxicity. Lemley Intermountain Conference on the Environment, September 2007, Pocatello, ID.

**Van Kirk, R.** and S. Naman\*. Statistical detection of stream flow changes due to climatic and water use factors in the lower Klamath Basin. American Fisheries Society, September 2007, San Francisco, CA.

**Van Kirk, R.** Changes in hydrologic regimes in the Portneuf River due to water use and climate change. Portneuf Watershed Symposium, June 2007, Pocatello, ID.

**Van Kirk, R.** and S. Hill. Modeled response of Yellowstone cutthroat trout populations to chronic selenium exposure. Idaho Chapter American Fisheries Society, February 2007, Boise, ID.

**Van Kirk, R.** and B. Burnett†. Effects of anthropogenic hydrologic alteration on fluvial and riparian geomorphology in the Henry's Fork Snake River watershed, Idaho. Geological Society of America, October 2005, Salt Lake City, UT.

- Van Kirk, R.** Using the TI-83 graphing calculator to explore single-species population models. Intermountain Section Mathematical Association of America, March 2005, Pocatello, ID.
- Van Kirk, R.** and A. Jenkins\*. Hydrologic regime as a factor in displacement of Yellowstone cutthroat trout by rainbow trout in the Teton River and other upper Snake River basin streams. Idaho Chapter American Fisheries Society, February 2005, Boise, ID.
- Van Kirk, R.** and L. Benjamin. Watershed-scale patterns in native trout abundance and hydrologic integrity in the Greater Yellowstone Ecosystem. Western Division American Fisheries Society, March 2004, Salt Lake City, UT.
- Van Kirk, R.,** S. Moller\* and W. Schrader. Hydrologic alteration and its effect on trout recruitment in the South Fork Snake River. Idaho Chapter American Fisheries Society, February 2004, Moscow, ID.
- Van Kirk, R.** Using a historical perspective to analyze human aspects of fisheries management: Examples from the Henry's Fork. Idaho Chapter American Fisheries Society, March 2002, Pocatello, ID.
- Van Kirk, R.** The Henry's Fork Watershed Council: Facilitating collaborative, science-based natural resource management. Centennial Science and Society Symposium, February 2002, Idaho State University, Pocatello, ID.
- Van Kirk, R.** Salmonid fishes of the Greater Yellowstone Ecosystem. Southeast Idaho Watershed Conference, October 1999, Pocatello, ID.
- Van Kirk, R.** Ecological integrity and conservation of salmonid communities and aquatic habitat in the Greater Yellowstone Ecosystem. Fifth Biennial Scientific Conference on the Greater Yellowstone Ecosystem, October 1999, Yellowstone National Park, WY.
- Van Kirk, R.** and R. Martin. Interactions among waterfowl herbivory, aquatic vegetation, fisheries and flows below Island Park Dam, Idaho. 17th Trumpeter Swan Society Conference, September 1999, Idaho Falls, ID.
- Van Kirk, R.** Collaboration, science and restoration in the Henry's Fork Watershed. American Fisheries Society, August 1998, Hartford, CT.
- Van Kirk, R.** Restoration of the Henry's Fork Watershed, Idaho: A cooperative effort led by citizens. American Fisheries Society, August 1996, Dearborn, MI.
- Van Kirk, R.** Restoration of the Henry's Fork Watershed, Idaho: A cooperative effort led by citizens. Western Regional Instream Flow Conference III, November 1995, Park City, UT.
- Van Kirk, R.** Ecosystem management: new roles for research institutions, agencies and citizen groups. Idaho Chapter American Fisheries Society, March 1995, Boise, ID.
- Van Kirk, R.** Black-footed ferret population dynamics. Symposium on Population Biology, Pacific Div. American Association for the Advancement of Science, June 1989, Chico, CA.
- Van Kirk, R.** and M. Butler. Black-footed ferret population dynamics. Humboldt Conference on Environmental Systems and Natural Resources, February 1989, Arcata, CA.

## Contributed papers at conferences and professional meetings, co-author

Eckersell, A. L. Nelson, **R. Van Kirk**, C. Quintas Soriano, K. Running, E. Fulton, C. Baxter, and A. J. Castro. A study of relational values in a social-ecological river system: connections between fishing and human well-being. Society for Freshwater Science, May 2018, Detroit, MI.

McLaren, J. T.V. Royer, **R. Van Kirk**, and M. Muradian. Management and limnology interact to drive water temperature patterns in an impounded middle Rockies river system. Society for Freshwater Science, May 2018, Detroit, MI.

Ortman, B. and **R. Van Kirk**. Temporal and spatial trends of macroinvertebrate assemblages on the Henry's Fork of the Snake River. Idaho Chapter American Fisheries Society, Feb.-Mar. 2018, Idaho Falls, ID.

Laatsch, J., **R. Van Kirk**, C. Morrisett, K. Manishin, and J. DeRito. Angler perception of fishing experience in a highly technical catch-and-release fishery. Wild Trout Symposium XII, September 2017, West Yellowstone, MT.

Muradian, M., and **R. Van Kirk**. Costs, benefits, and challenges of establishing and maintaining real-time instrumentation that can be used to inform management and educate stakeholders. Wild Trout Symposium XII, September 2017, West Yellowstone, MT.

Oldemeyer, B., J. Flinders, C. Morrisett, and **R. Van Kirk**. Long-term effectiveness of flow management and fish passage on the Henrys Fork Rainbow Trout population. Wild Trout Symposium XII, September 2017, West Yellowstone, MT.

Sparkman, M., and **R. Van Kirk**. Comparison of night vs. day release of marked Chinook salmon juveniles for determining smolt trapping efficiencies and population estimates. Cal-Neva Chapter American Fisheries Society, April 2017, Eureka, CA.

Laatsch, J., **R. Van Kirk**, C. Morrisett, K. Manishin, and J. DeRito. Angler perception of fishing experience in a highly technical catch-and-release fishery: How closely does perception align with biological reality? Joint meeting, Idaho chapters of American Fisheries Society and The Wildlife Society, March 2017, Boise, ID.

Muradian, M., and **R. Van Kirk**. Effect of climate change on water quality below Island Park Reservoir. Joint meeting, Idaho chapters of American Fisheries Society and The Wildlife Society, March 2017, Boise, ID.

Muradian, M., and **R. Van Kirk**. Effect of climate change on water quality below Island Park Reservoir. Idaho Department of Environmental Quality Water Quality Monitoring Workshop, Jan-Feb 2017, Boise, ID.

Lien, M., C. Morrisett, and **R. Van Kirk**. Using trout population assessment data to identify threats to native trout and to prioritize native trout conservation projects. International Trout Congress, October 2016, Bozeman, MT.

Bond\*, R.M., A.P. Stubblefield, and **R.W. Van Kirk**. Quantifying legacy impacts on summer stream temperatures and potential riparian reforestation strategies. 36th Annual Salmond Restoration Conference, Salmonid Restoration Foundation, April 2016, Fortuna, CA.

Muradian, M.L., and **R. Van Kirk**. Impacts of high discharge From Island Park Reservoir on downstream temperature, turbidity, and dissolved oxygen. Idaho Chapter American Fisheries Society, March 2016, Coeur d'Alene, ID.

Muradian, M.L., and **R. Van Kirk**. Impacts of high discharge From Island Park Reservoir on downstream temperature, turbidity, and dissolved oxygen. Idaho Department of Environmental Quality Water Quality Monitoring Workshop, February 2016, Boise, ID.

Tenant\*, C., A.A. Harpold, K.A. Lohse, B.T. Crosby, S. Godsey, L. Larsen, and **R. Van Kirk**. LiDAR illuminates the influence of elevation, aspect, and vegetation on seasonal snowpack: case studies from four western Critical Zone Observatories. American Geophysical Union, December 2015, San Francisco, CA.

Kuzniar\*, Z., **R. Van Kirk**, E. Snyder, and M. Luttenton. Adult rainbow trout habitat selection in the Henry's Fork of the Snake River, Idaho. Society for Freshwater Science, May 2015, Milwaukee, WI.

Tenant\*, C., B.T. Crosby, S. Godsey, **R. Van Kirk**, and D. Derryberry. A simple framework for quantifying warming-based snowpack declines at the landscape scale. American Geophysical Union, December 2014, San Francisco, CA.

Boggs\*, K.G., G.S. Johnson, **R. Van Kirk**, and J.P. Fairley. Forecasting aquifer discharge using a numerical model and convolution. Geological Society of America Rocky Mountain Section, May 2013, Gunnison, CO.

Jackson-Smith, D., and **R. Van Kirk**. Reframing the Western water problem: the importance of intermediate-scale settled landscapes in the Intermountain West. Universities Council on Water Resources and The National Institute for Water Resources annual meetings, July 2012, Santa Fe, NM.

Verbeten, A., V. Orosz<sup>†</sup>, **R. Van Kirk**, J.M. Baker, Y. Everett, L. Liegel\*, K. Peterson\*, and B. Apple\*. Developing a strategy for addressing the hydrological and sociological implications of development on irrigated agricultural lands in the Henry's Fork Watershed. American Water Resources Association Speciality Conference on Integrated Water Resources Management, June 2011, Snowbird, UT.

Apple\*, B., B. Finney, K. Peterson\*, and **R. Van Kirk**. Predicting groundwater effects due to changing land practices in the Intermountain region. World Environmental and Water Resources Congress, May 2011, Palm Springs, CA.

Boggs\*, K., **R. Van Kirk**, G. Johnson, J. Fairley, and S. Porter. Characterizing aquifer discharge associated with regional changes using analytical and statistical tools. World Environmental and Water Resources Congress, May 2011, Palm Springs, CA.

Liegel\*, L., M. Baker, Y. Everett, and **R. Van Kirk**. Patterns of irrigated agricultural land conversion in Henry's Fork Watershed: Implications for water consumption and future land use. World Environmental and Water Resources Congress, May 2011, Palm Springs, CA.

Peterson\*, K., **R. Van Kirk**, B. Apple\*, and B. Finney. An analytical model of surface water-groundwater interactions in a Western watershed experiencing changes to water and land use. World Environmental and Water Resources Congress, May 2011, Palm Springs, CA.

Battle, L., **R. Van Kirk**, and B. Schrader. Effectiveness of flow management and rainbow trout harvest on long-term viability of native Yellowstone cutthroat trout in the South Fork Snake River. Wild Trout X, September 2010, West Yellowstone, MT.

Battle, L., **R. Van Kirk**, and B. Schrader. Effectiveness of flow management and rainbow trout harvest on long term viability of native Yellowstone cutthroat trout in the South Fork Snake River.



Montana Academy of Sciences, April 2010, Butte, MT.

Battle, L., **R. Van Kirk**, and B. Schrader. Effectiveness of flow management and rainbow trout harvest on long term viability of native Yellowstone cutthroat trout in the South Fork Snake River. Montana Chapter American Fisheries Society, February 2010, Bozeman, MT.

Boggs\*, K., **R. Van Kirk**, G. Johnson, J. Fairley, S. Porter. Characterizing aquifer discharge variability using analytical and statistical tools. Geological Society of America, October 2009, Portland, OR.

Marcarelli, A.M., **R.W. Van Kirk**, and C.V. Baxter. How do hydrology and biological activity interact in an impaired western watershed? North American Benthological Society, May 2009, Grand Rapids, MI.

DeRito, J., D. Garren, and **R. Van Kirk**. Angler values, satisfaction, and management opinions for the Henry's Fork in Harriman State Park. Idaho Chapter American Fisheries Society, March 2009, Boise, ID.

Battle, L., **R. Van Kirk**, and W.C. Schrader. Competition as a factor in displacement of native cutthroat trout by nonnative rainbow and hybrid trout. Idaho Chapter American Fisheries Society, March 2009, Boise, ID.

Johnson\*, B.G., Thackray, G.D. and **R.W. Van Kirk**. The effects of topography, latitude, and lithology on the distribution of rock glaciers in the Lemhi Range, Central Idaho. Geological Society of America, October 2006, Philadelphia, PA.

Bayrd\*, G.B. and **R.W. Van Kirk**. Effects of geology and modern water management on channel characteristics. Geological Society of America, October 2006, Philadelphia, PA.

Bayrd\*, G.B. and **R.W. Van Kirk**. Effects of geology and modern water management on hydrology and fluvial geomorphology in the Henry's Fork Watershed, eastern Idaho and western Wyoming. Rocky Mountain Section Geological Society of America, May 2006, Gunnison, CO.

Johnson\*, B.G., Thackray, G.D. and **R.W. Van Kirk**. The effects of topography, latitude, and lithology on the distribution of rock glaciers in the Lemhi Range, Central Idaho. Rocky Mountain Section Geological Society of America, May 2006, Gunnison, CO.

Colyer, R., **R. Van Kirk**, K. Peterson<sup>†</sup>, M. Koenig\* and K. Keetch<sup>†</sup>. Modeled hydrology predicts trout species composition of upper Teton River tributaries. Idaho Chapter American Fisheries Society, February 2006, Idaho Falls, ID.

Lifton\*, Z., G. Thackray, N. Glenn, P. Link and **R. Van Kirk**. Bedrock strength controls on the valley morphometry of Big Creek, Idaho and Valley Counties, Central Idaho. Geological Society of America, October 2005, Salt Lake City, UT.

Fredericks, J., B. Schrader and **R. Van Kirk**. A collaborative, multi-faceted approach to Yellowstone cutthroat trout conservation in the South Fork of the Snake River, Idaho. Wild Trout VIII, September 2004, Yellowstone National Park, WY.

Burnett<sup>†</sup>, B. and **R. Van Kirk**. Quantitative methodology for assessing hydrologic alteration at the watershed scale. Western Division American Fisheries Society, March 2004, Salt Lake City, UT.

Moller\*, S., **R. Van Kirk** and W. Schrader. Hydrologic alteration and its effect on trout recruitment in the South Fork Snake River. Western Division American Fisheries Society, March 2004, Salt Lake City, UT.

## Posters

Nelson, L. A. Eckersell, C. Quintas Soriano, **R. Van Kirk**, C. Baxter, and A. J. Castro. The importance of relational values in a riverine social ecological system. Society for Freshwater Science, May 2018, Detroit, MI.

Redfield, L. T. Wickersham, J. Powell, D. Garren, M. Campbell, and **R. Van Kirk**. Using SNP DBA markers for assessing movement and reproductive success of rainbow trout *Oncorhynchus mykiss* in the Buffalo River and their contributions to the Henry's Fork fishery. Wild Trout Symposium XII, September 2017, West Yellowstone, MT.

Redfield, L. T. Wickersham, M. Ackerman, D. Garren, M. Campbell, and **R. Van Kirk**. Using SNP DBA markers for assessing movement and reproductive success of rainbow trout *Oncorhynchus mykiss* in the Buffalo River, Idaho and their contributions to the Henry's Fork fishery. Idaho Chapter American Fisheries Society, March 2016, Coeur d'Alene, ID.

Wickersham, T., L. Redfield, M. Ackerman, D. Garren, M. Campbell, and **R. Van Kirk**. Evaluating single nucleotide polymorphisms for assessing movement and reproductive success of rainbow trout *Oncorhynchus mykiss* in the Buffalo River, Idaho and their contributions to the Henry's Fork fishery. Idaho Chapter American Fisheries Society, March 2015, Boise, ID.

Kuzniar\*, Z.J., E.B. Snyder, and **R.W. Van Kirk**. Seasonal effects of macrophyte growth on rainbow trout habitat in the Henry's Fork of the Snake River, Idaho. Joint Aquatic Sciences Meeting, May 2014, Portland, OR.

Emery, A.M., J. DeRito, L. Mabey, G. Schoby, and **R. Van Kirk**. Seasonal use of a spring-fed tributary by wild rainbow trout in an isolated reach of the Henry's Fork Snake River, Idaho. Idaho Chapter American Fisheries Society, February 2014, Idaho Falls, ID.

**Van Kirk, R.** and 10 co-authors. Hydrological and sociological implications of development on irrigated agricultural lands in the Henry's Fork watershed southeast Idaho. USDA/NOAA Land and Sea Grant National Water Conference, February 2011, Washington, DC.

**Van Kirk, R.** and 10 co-authors. Conservation of surface and ground water in a Western watershed experiencing rapid loss of irrigated agricultural land to development. USDA/NOAA Land and Sea Grant National Water Conference, February 2010, Hilton Head, SC.

**Van Kirk, R.**, S. Moller\*, W. Schrader and A. Jenkins\*. Hydrologic regime as a factor in displacement of native cutthroat trout by nonnative rainbow trout in the upper Snake River basin. American Fisheries Society, September 2005, Anchorage, AK.

Patla, D.B., C.R. Peterson and **R.W. Van Kirk**. Distribution and status of amphibians of the Greater Yellowstone Ecosystem. Society for Conservation Biology, June 2000, Missoula, MT.

**Van Kirk, R.**, D. Delany, J. Griffith, M. Gambelin and J. Gregory. Status of Yellowstone cutthroat trout in the upper Henry's Fork watershed, Idaho. Wild Trout VI Symposium, August 1997, Bozeman, MT.

## Seminar and colloquium presentations

- Boise State University Department of Geosciences (3)
- Brigham Young University-Idaho Department of Mathematics

- Draper Museum of Natural History, Cody, WY
- Humboldt State University Department of Fisheries
- Humboldt State University Department of Geology
- Humboldt State University Department of Mathematics (7)
- Idaho State University Department of Biological Sciences (2)
- Idaho State University Department of Geosciences (2)
- Idaho State University Department of Mathematics (3)
- University of California-Davis Department of Environmental Science and Policy
- University of California-Davis Department of Fish, Wildlife and Conservation Biology
- Idaho Water Resources Research Institute, University of Idaho, Hydrology Seminar (4)
- Utah State University Department of Aquatic, Watershed and Earth Resources

## STUDENT RESEARCH SUPERVISION

### Graduate thesis advisor

DeVita, E. 2014. Modeling population interactions between native Yellowstone cutthroat trout and invasive rainbow trout in the South Fork Snake River. M.S. in Environmental Systems: Mathematical Modeling, Humboldt State University.

Peterson, K.D. 2011. An analytical model of surface water/groundwater interactions in a Western watershed experiencing changes to water and land use. M.S. in Environmental Systems: Mathematical Modeling, Humboldt State University.

Ross, K. 2011. A simulation model for wilderness use in Yosemite National Park. M.S. in Environmental Systems: Mathematical Modeling, Humboldt State University.

Gledhill, M. 2011. Modeling effects of toxin exposure in fish on long-term population size, with an application to selenium toxicity in bluegill (*Lepomis macrochirus*). M.S. in Environmental Systems: Mathematical Modeling, Humboldt State University.

Batenhorst, N.D. 2010. Stochastic density-dependent colony budding as a predictor of argentine ant spread rate. M.S. in Environmental Systems: Mathematical Modeling, Humboldt State University.

Bayrd, G.B. 2006. The influences of geology and water management on hydrology and fluvial geomorphology in the Henry's Fork of the Snake River, eastern Idaho and western Wyoming. M.S. in Geology, Idaho State University.

## Graduate committee member

<b>Student</b>	<b>Degree</b>	<b>Year</b>	<b>Program</b>	<b>Institution</b>
Heather Rice	M.S.	2018	Water Resources	Univ. of Idaho
Zachary Kuzniar	M.S.	2015	Biology	Grand Valley State
Christopher Tenant	Ph.D.	2015	Geology	Idaho State
Ken Lindke	M.S.	2014	Fisheries Biology	Humboldt State
Kathryn Crane	M.S.	2014	Fisheries Biology	Humboldt State
Rosalea Bond	M.S.	2013	Forest, Watershed, Wildland Sci.	Humboldt State
Brian Apple	M.S.	2013	Env. Engineering	Humboldt State
Amanda Admire	M.S.	2013	Geology	Humboldt State
Kevin Boggs	Ph.D.	2013	Geology	Univ. of Idaho
Edward Jones	M.S.	2012	Fisheries Biology	Humboldt State
Brian Poxon	M.S.	2012	Fisheries Biology	Humboldt State
Andrew Wertz	M.S.	2012	Biology	Humboldt State
Michelle Jones	M.S.	2012	Fisheries Biology	Humboldt State
Erin Banwell	M.S.	2011	Forest, Watershed, Wildland Sci.	Humboldt State
Mark Douglas	M.S.	2011	Environmental Science	Humboldt State
Lora Liegel	M.S.	2011	Environment and Community	Humboldt State
Jason Jones	M.S.	2008	Biology	Idaho State
Jessica Mitchell	M.S.	2007	Geology	Idaho State
Robert Podgorney	Ph.D.	2007	Geology	Univ. of Idaho
Eric Rafn	M.S.	2007	Geology	Idaho State
Martin Koenig	M.S.	2006	Fisheries Biology	Utah State
Vidya Nandikolla	Ph.D.	2006	Engineering and Applied Science	Idaho State
Suhas Parkute	Ph.D.	2006	Engineering and Applied Science	Idaho State
Elena Valasquez	D.A.	2006	Mathematics	Idaho State
Bradley Johnson	M.S.	2006	Geology	Idaho State
Zachery Lifton	M.S.	2005	Geology	Idaho State
Christopher Meehan	M.S.	2005	Geology	Idaho State
Kimberly Kaiser	M.S.	2004	Environmental Science	Univ. of Idaho
Amy Jenkins	M.S.	2004	Biology	Idaho State
Bonnie Moon	D.A.	2004	Mathematics	Idaho State
Russ Potter	D.A.	2003	Mathematics	Idaho State
Donna Cosgrove	Ph.D.	2001	Geology	Univ. of Idaho

## Undergraduate research advisor

<b>Student</b>	<b>Year</b>	<b>Topic</b>
Abigail Proctor	2011	Demographics of cutthroat and rainbow trout in the Snake R.
Kimberly Peterson	2005	Modeling hydrologic alteration on Teton Creek, Idaho
Kirsten Keetch	2005	Hydrology of the Henry's Fork and Teton rivers, Idaho
Boyd Burnett	2003–2004	Hydrologic alteration in the Henry's Fork watershed, Idaho

## EXTERNAL PROFESSIONAL SERVICE

### Editor and organizer of special collections and symposia

**Van Kirk, R.W.**, J.M. Capurso and M.A. Novak, organizers and proceedings editors. Exploring differences between fine-spotted and large-spotted Yellowstone cutthroat trout. Idaho Chapter American Fisheries Society, Idaho Falls, ID, February 2006. [http://www.fs.usda.gov/Internet/FSE\\_DOCUMENTS/fsm8\\_047783.pdf](http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fsm8_047783.pdf)

Gregory, J. and **R. Van Kirk**, editors. 2002. Henry's Fork of the Snake River Subbasin Summary (Draft). Northwest Power Planning Council, Portland, OR. 148 pp. plus appendices.

**Van Kirk, R.W.**, J.M. Capurso and B.L. Gamett, organizers and proceedings editors. The Sinks symposium: exploring the origin and management of fishes in the Sinks drainages of southeast Idaho. Idaho Chapter American Fisheries Society, Pocatello, ID, February 2002. [http://www.fs.usda.gov/Internet/FSE\\_DOCUMENTS/fsm8\\_047784.pdf](http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fsm8_047784.pdf)

**Van Kirk, R.W.** and A.V. Zale, editors. 2000. Henry's Fork Aquatic Resources Special Issue, *Intermountain J. Sciences* 6(3).

### Journal referee

- *Applied Mathematics and Computation*
- *Ecological Applications*
- *Ecological Modelling*
- *Ecology of Freshwater Fish*
- *Environmental Monitoring and Assessment*
- *Global Ecology and Biogeography*
- *Hydrogeology Journal*
- *Journal of the American Water Resources Association*
- *Journal of Fish and Wildlife Management*
- *Journal of Mathematical Biology*
- *Journal of Theoretical Biology*
- *Journal of Water Resources Planning and Management*
- *Natural Resource Modeling*
- *North American Journal of Fisheries Management*
- *Numerical Methods for Partial Differential Equations*
- *The American Naturalist*
- *Theoretical Ecology*
- *Transactions of the American Fisheries Society*
- *Water*
- *Wildlife Research*

### Grant proposal reviewer

- Idaho National Engineering and Environmental Laboratory
- Laird Norton Foundation
- National Fish and Wildlife Foundation

- National Science Foundation
- U.S. Department of Agriculture

### **Reviewer of books, monographs, and book chapters**

- American Fisheries Society (chapter in book on watershed restoration)
- Hawkes Publishing (intermediate algebra textbook)
- University of California Press (book on cutthroat trout)
- University of Idaho Forest, Wildlife and Range Policy Analysis Group (policy monograph)

### **Natural resources management research and management committee member**

- Henry's Fork Drought Management Planning Committee, 2003–2008, 2013–present
- Henry's Fork Watershed Council Steering Committee, 2002–present
- Friends of the Teton River Science Advisory Committee, 2001–present
- Inland Northwest Research Alliance Water Resources Committee, 2006–2008
- South Fork Snake River Research and Management Group, 2001–2008
- Trumpeter Swan Implementation Plan, Henrys Fork Flow Subcommittee, 2001
- Henry's Fork Watershed Council Native Trout Conservation Subcommittee, 1997–2005
- Henry's Fork Watershed Council Water Quality Subcommittee, 1997–1999
- Island Park Hydroelectric Project Advisory Committee, 1995–1998
- U.S. Bureau of Land Management Upper Snake Resource Advisory Council, 1995–1997
- Idaho Forest, Wildlife and Range Policy Analysis Group Advisory Committee, 1995–1997

### **DEPARTMENTAL, COLLEGE, AND UNIVERSITY SERVICE**

- Coordinator, Natural Resources Graduate Program, 2012–2013
- Chair, Department of Mathematics Personnel Committee, 2012–present
- College of Natural Resources and Sciences Dean Search Committee, 2010–2011
- Chair, WASC Accreditation Educational Effectiveness Review Committee, 2009–2010
- Chair, departmental statistics curriculum review and revision committee, 2009–2010
- University Curriculum Council, 2007–2008
- University Graduate Council, spring 2007
- Chair, Department of Mathematics Graduate Committee, 2006–2008
- Departmental committee to establish new programs in statistics, 2006–2007
- University Undergraduate Research Committee, 2003–2005 (chair 2004–2005)
- Engineering and Applied Science Ph.D. program committee, 2003–2005
- Chair, departmental calculus curriculum review and revision committee, 2002–2003
- Co-advisor, Mathematics/CS Club and Mathematical Modeling Contest Teams, 2002–2005
- Search committees at departmental level (4)
- Promotion/tenure and sabbatical review committees at departmental and college levels (4)



## COURSES TAUGHT

\*indicates course I developed

### Graduate

- Methods of Applied Mathematics (year-long sequence, 2 times)
- Ordinary Differential Equations
- Partial Differential Equations
- Spatial Population Modeling\*
- Model Fitting\* (2 times)
- Environmental Systems Data Collection and Analysis Practicum (2 times)

### Advanced undergraduate/beginning graduate

- Partial Differential Equations (2 times)
- Mathematical Methods in Hydrogeology\* (short course for professionals, 2 times)
- Quantitative Hydrogeology (team-taught)
- Water Resources of Idaho\*
- Applied Multivariate Statistics (2 times)
- Modern Statistical Modeling

### Undergraduate

- Mathematics and Modern Society: Mathematics and Water Management\* (honors)
- Geometry for Elementary School Teachers (2 times)
- College Algebra/Trigonometry/Precalculus (15 times)
- Applied Calculus (5 times)
- Calculus I/II/III (9 times)
- Introduction to Linear Algebra
- Ordinary Differential Equations
- Elementary Analysis (2 times)
- Elementary Statistics (2 times)
- Introductory Biostatistics (2 times)
- Linear Regression/ANOVA (6 times)

### Remedial

- Pre-algebra and Arithmetic
- Beginning Algebra (2 times)
- Intermediate Algebra (5 times)

## PROFESSIONAL SOCIETY MEMBERSHIPS

- American Fisheries Society (Idaho Chapter Secretary/Treasurer, 2002–2003)
- American Mathematical Society
- American Water Resources Association
- Geological Society of America

## REFERENCES

Available upon request.