

CORINNA RIGINOS

The Nature Conservancy, 258 Main Street, Lander, WY 82520

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I work to understand and conserve areas of high biodiversity through a combination of research, education, and close partnerships with natural resource managers. I have experience in a range of topics, including road ecology; large herbivore habitat selection patterns; rangeland management, monitoring, and restoration; and impacts of invasive species, land-use change, and climate change on natural systems.

EDUCATION

Ph.D. 2008 University of California, Davis: Ecology.
B.S. 2000 Brown University: Environmental Science (*Magna Cum Laude*)

APPOINTMENTS

Conservation Scientist The Nature Conservancy, Lander, WY	<i>2017-present</i>
Adjunct Associate Professor Department of Zoology and Physiology & Haub School for Environment and Natural Resources, University of Wyoming, Laramie, WY	<i>2013-present</i>
Research Associate Northern Rockies Conservation Cooperative, Jackson, WY Soft-money appointment	<i>2015-present</i>
Research Associate Utah State University, Department of Wildland Resources	<i>2015- 2016</i>
Research Ecologist, Teton Research Institute Teton Science Schools, Jackson, WY	<i>2013- 2015</i>
Berry Biodiversity Conservation Center Postdoctoral Fellow University of Wyoming, Laramie, WY	<i>2012- 2013</i>
Council on Science and Technology Postdoctoral Fellow Princeton University, Princeton, NJ	<i>2008- 2012</i>
Doctoral Student Ecology Graduate Group, University of California, Davis, CA	<i>2003-2008</i>
Fulbright U.S. Student Scholar University of Stellenbosch, Stellenbosch, South Africa	<i>2000- 2002</i>

FELLOWSHIPS AND AWARDS

- Ecological Society of America Early Career Fellow (honorary award for past and potential future contributions to the field in terms of scholarship, education, and conservation), 2015
- Shapiro Award for Academic Excellence (best dissertation thesis in ecology), UC Davis, 2009
- National Science Foundation Graduate Research Fellowship, 2003 (\$96,000)
- Graduate Scholars Fellowship, UC Davis, 2003 (\$32,000)

- Fulbright Fellowship, 2000 (\$20,000)
- Phi Beta Kappa, Brown University, 2000

MAJOR GRANTS AND CONTRACTS

- Wyoming Department of Environmental Quality: Seed technologies for sagebrush restoration. *PI*. 2018-2021. (\$428,056)
- Wyoming Department of Transportation: Effectiveness of reduced night-time speed limit in reducing wildlife-vehicle collisions. *PI*. 2016-2018 (\$250,000)
- NSF Population and Community Ecology: Landscape-scale consequences of mutualism disruption: invasive ants threaten a widespread ant-plant mutualism in East Africa. *Co-PI and lead author*. (\$1,200,00)
- National Fish and Wildlife Foundation: Priority areas for reducing Golden eagle-vehicle mortalities. *PI*. 2016-2017 (\$102,000)
- Wyoming Department of Transportation: Traffic thresholds in deer-vehicle collisions. *PI*. 2016-2018 (\$38,000)
- Wyoming Department of Transportation: Planning-support for mitigation of wildlife-vehicle collisions and highway impacts on migration routes in Wyoming. *PI*. 2014-16 (\$27,000)
- NSF Long-term Research in Environmental Biology: KLEE: Scaling up and scaling out at the Kenya Long-term Exclosure Experiment in Laikipia rangelands. *Lead author and Co-PI*. 2013-2018. (\$449,900)
- Livestock-Climate Change CRSP: A cost-effectiveness framework for landscape rehabilitation and carbon sequestration in northern Kenya. *Lead author and Co-PI*. 2010-2012. (\$80,000)
- USAID and Laikipia Wildlife Forum, Kenya: Sub-contract to provide training and support for rangeland monitoring and to develop a database for archiving monitoring data in Laikipia, Kenya. *Project Leader*. 2009-2012. (\$36,000)
- USAID and CARE International: Sub-contract to produce a monitoring manual for the Horn of Africa region. *Project Leader*. 2009-2010. (\$50,000)
- Princeton University Water, Savannas, and Society Initiative: Can simulated cattle migrations facilitate wild herbivores? *Lead author and Co-PI*. 2008-2011. (\$150,000)
- NSF Long-term Research in Environmental Biology: KLEE: Scaling up and scaling out at the Kenya Long-term Exclosure Experiment in Laikipia rangelands. *Co-author and Co-PI*. 2008-2013. (\$499,800)
- NSF International Research Fellowship Program: Can simulated cattle migrations facilitate wild herbivores? *Author and PI*. 2008-2010. (\$25,000)

PEER-REVIEWED PUBLICATIONS

- Riginos, C.**, T.A. Monaco, K.E. Veblen, K. Gunnell, E. Thacker, D. Dahlgren, and T. Messmer. Potential for post-fire recovery of Greater Sage-grouse habitat. In review. *Ecosphere*.
- Lautz, L., C. Kelleher, P. Vidon, J. Coffman, **C. Riginos**, and H. Copeland. 2019. Restoring stream ecosystem function with beaver dam analogues: let's not make the same mistake twice. *Hydrological Processes Today* 33: 174-177.
- Riginos, C.**, K.E. Veblen, E.T. Thacker, K.L. Gunnell, and T.A. Monaco. Disturbance type and sagebrush

- community type affect plant community structure following shrub reduction. *Rangeland Ecology and Management*. In press.
- Charles, G., **C. Riginos**, T.P. Young, K.E. Veblen, and D. Kimuyu. Unexpected dynamism in an ecosystem engineer: responses of mound-building termites to biotic changes in a Kenyan savanna. *Oecologia*. In revision.
- LaMalfa, E., R.L. Sensenig, D. Kimuyu, **C. Riginos**, T.P. Young and K.E. Veblen. Tree resprout dynamics following fire depend on herbivory by wild ungulate herbivores. *Journal of Ecology*. In revision.
- Koerner, S.E., et al. (many authors). 2018. Resolving variation in herbivore effects on plant biodiversity – change in dominance as a global mechanism. *Nature Ecology and Evolution*.
<https://doi.org/10.1038/s41559-018-0696-y>
- Odadi, W.O., **C. Riginos**, and D.I. Rubenstein. 2018. Tightly bunched herding improves cattle performance in an African savanna rangeland. *Rangeland Ecology and Management* 71: 481-491.
- Young, T.P., L.M. Porensky, **C. Riginos**, K.E. Veblen, Wilfred O. Odadi, Duncan M. Kimuyu, Grace K. Charles, and Hillary S. Young. 2018. Relationships between cattle and biodiversity in multiuse landscape revealed by Kenya Long-Term Exclosure Experiment. *Rangeland Ecology and Management* 71: 281-291.
- Riginos, C.** L.M. Porensky, K.E. Veblen, and T.P. Young. 2018. Large-mammal herbivory promotes long-term compositional stability in a savanna understory plant community. *Ecological Applications* 28: 323-335.
- Riginos, C.**, M.W. Graham, M.J. Davis, A. Johnson, A. May, K.W. Ryer, and L.E. Hall. 2018. Wildlife warning reflectors and white cloth reduce deer-vehicle collisions and risky behavior. *Wildlife Society Bulletin* 42: 119-130.
- Herrick, J.E., J.W. Karl, S.E. McCord, M. Buenemann, **C. Riginos**, E. Courtright, J. Van Zee, A.C. Ganguli, J. Angerer, J.R. Brown, D.W. Kimiti, R. Saltzman, A. Beh, and B. Bestelmeyer. 2017. Two new mobile apps for rangeland inventory and monitoring by landowners and land managers. *Rangelands* 39: 46-55.
- Palmer, T.M., **C. Riginos**, R.E. Damiani, N. Morgan, J.S. Lemboi, J. Lengingiro, J.C. Ruiz-Guajardo, R.M. Pringle. 2017. Influence of neighboring plants on the dynamics of an ant-acacia protective mutualism. *Ecology* 98: 3034-3043.
- Sensenig, R.L., D.K. Kimuyu, J.C.R. Guajardo, K.E. Veblen, **C. Riginos**, and T.P. Young. 2017. Species-specific ant behaviors help explain short-term and long-term shifts in an acacia ant community after fire. *Ecology* 98: 1455-1464.
- Kimuyu, D., K. Veblen, **C. Riginos**, and T.P. Young. 2017. Cattle competition with grazing and browsing wildlife varies with season and presence of megaherbivores. *Ecological Applications* 27: 786- 798.
- Weinstein, S., G. Titcomb, V. Kobata, B. Agwanda, **C. Riginos**, and H. Young. 2017. Mechanism matters: predicting parasite response to defaunation in the African savanna. *Ecology* 98: 1839-1848.
- Odadi, W.O., D.M. Kimuyu, R.L. Sensenig, K.E. Veblen, **C. Riginos**, and T.P. Young. 2017. Fire-induced negative responses of cattle to shared foraging with native ungulates in an African savanna. *Journal of Applied Ecology* 54: 935-944.
- Kimiti, D.W., **C. Riginos**, and J. Belnap. 2017. Low-cost grass restoration using erosion barriers in a degraded African rangeland. *Restoration Ecology* 25: 376-384.
- Charles, G., L.M. Porensky, **C. Riginos**, K.E. Veblen, and T.P. Young. 2017. Grazing intensity drives herbaceous productivity, but herbivore identity constraints variability in productivity in an African savanna. *Ecological Applications* 27: 143-155.

- Veblen, K.E., L.M. Porensky, **C. Riginos**, and T.P. Young. 2016. Are cattle surrogate wildlife? Savanna plant community composition explained by total herbivory, not herbivore identity. *Ecological Applications* 26: 1610-1623.
- Pringle, R.M., D. Kimuyu, R.L. Sensenig, T.M. Palmer, **C. Riginos**, K.E. Veblen, and T.P. Young. 2015. Synergistic indirect effects of elephants and fire in an African savanna. *Journal of Animal Ecology* 84: 1637-1645.
- Cotterill-Oriol, A., M. Valeix, L.G. Frank, **C. Riginos**, and D.W. Macdonald. 2015. The landscape of coexistence: consequences of fear for large carnivores living in human-dominated areas. *Oikos* 124: 1263-1273.
- Riginos, C.**, M.A. Karande, D.I. Rubenstein, and T.M. Palmer. 2015. Disruption of a protective ant-plant mutualism by an invasive ant increases elephant damage to savanna trees. *Ecology* 96: 654-661.
- Riginos, C.** 2015. Climate and the landscape of fear in an African savanna. *Journal of Animal Ecology* 84: 124-133.
- Kimuyu, D.K., R.L. Sensenig, **C. Riginos**, K.E. Veblen, and T.P. Young. 2014. Native and domestic browsers and grazers reduce fuels, fire temperatures, and acacia-ant mortality in an African savanna. *Ecological Applications* 24: 741-749.
- Porensky, L.M., S.E. Wittman, **C. Riginos**, and T.P. Young. 2013. Herbivory and drought interact to enhance diversity and spatial patterning in a savanna understory. *Oecologia* 173: 591-602.
- Donihue, C.M., L.M. Porensky, J. Foufopoulos, **C. Riginos**, and R.M. Pringle. 2013. Glade cascades: indirect legacy effects of pastoralism enhance the abundance and spatial structuring of arboreal fauna. *Ecology* 94: 827-837.
- Riginos, C.**, L.M. Porensky, K.E. Veblen, W.O. Odadi, R.L. Sensenig, D. Kimuyu, F. Keesing, M.L. Wilkerson, and T.P. Young. 2012. Lessons on the relationship between pastoralism and biodiversity from the Kenya Long-term Exclosure Experiment (KLEE). *Pastoralism* 2:10.
- Herrick, J.E., S. Andrews, G. Baldi, B.T. Bestelmeyer, J. Brown, J. Davies, M. Duniway, K.M. Havstad, D. Peters, J. Quinton, **C. Riginos**, P. Shaver, D. Steinaker, and S. Twomlow. 2012. Revolutionary land use change in the 21st century: is (rangeland) science relevant? *Rangeland Ecology and Management* 65: 590-598.
- Riginos, C.**, J.E. Herrick, S.R. Sundaresan, C. Farley, and J. Belnap. 2011. A simple graphical approach to quantitative monitoring of rangelands. *Rangelands* 133: 6-13.
- Sundaresan, S.R., **C. Riginos**, and E.S. Abelson. 2011. Management and analysis of camera trap data: alternative approaches (response to Harris et al., 2010). *Bulletin of the Ecological Society of America*. April 2011.
- Augustine, D.J., K.E. Veblen, J.R. Goheen, **C. Riginos** & T.P. Young. 2011. Pathways for positive cattle-wildlife interactions in semi-arid rangelands. In *Conserving Wildlife in African Landscapes: Kenya's Ewaso Ecosystem* (N.J. Georgiadis, ed.). Smithsonian Contributions to Zoology Number 632: 55-72.
- Riginos, C.** and J.H. Herrick. 2010. *Monitoring Rangeland Health: A Guide for Pastoralist Communities and Other Land Managers in Eastern Africa, Version II*. Nairobi, Kenya: ELMT-USAID/East Africa. <http://jornada.nmsu.edu/monit-assess/manuals/StickMethod>
- Treydte, A.C., **C. Riginos**, and F. Jeltsch. 2010. Enhanced use of beneath-canopy vegetation by grazing ungulates in African savannas. *Journal of Arid Environments* 74: 1597-1603.

- Sundaresan, S., and **C. Riginos**. 2010. Lessons learned from biodiversity conservation in the private lands of Laikipia, Kenya. *Great Plains Research* 20: 2-10.
- Goheen, J.R., T. M. Palmer, F. Keesing, **C. Riginos**, and T.P. Young. 2010. Large herbivores facilitate savanna tree establishment via diverse and indirect pathways. *Journal of Animal Ecology* 79: 372-382.
- Riginos, C.**, J.H. Herrick, J. Belnap, S.R. Sundaresan, J.S. Worden, and M.F. Kinnaird. 2009. *Monitoring Rangeland Health: A Guide for Facilitators and Pastoralist Communities, Version I*. Nairobi, Kenya: ELMT-USAID/East Africa.
- Riginos, C.**, J.B. Grace, D.J. Augustine, and T.P. Young. 2009. Local versus landscape-scale effects of savanna trees on grasses. *Journal of Ecology*, 97: 1337-1345.
- Riginos, C.** 2009. Grass competition suppresses savanna tree growth across multiple demographic stages. *Ecology* 90: 335-340.
- Riginos, C.**, and J.B. Grace. 2008. Tree density, wild ungulate habitat use and the herbaceous community in a Kenyan savanna: Top-down versus bottom-up effects. *Ecology* 89: 2228-2238.
- Okello, B.D., T.P. Young, **C. Riginos**, D. Kelly and T. O'Connor. 2008. Short-term survival and long-term mortality of *Acacia drepanolobium* after a controlled burn. *African Journal of Ecology* 46:395-401.
- Riginos, C.**, M.S. Heschel, and J. Schmitt. 2007. Maternal effects of drought stress and inbreeding in *Impatiens capensis* (Balsaminaceae). *American Journal of Botany* 94: 1984-1991.
- Riginos, C.** and T.P. Young. 2007. Positive and negative effects of grasses and wild and domestic herbivores on *Acacia* saplings in an East African savanna. *Oecologia* 153: 985-995.
- Riginos, C.**, S.J. Milton, and T. Wiegand. 2005. Context-dependent interactions between adult shrubs and seedlings in a semi-arid shrubland. *Journal of Vegetation Science* 16: 331-340.
- Heschel, M.S. and **C. Riginos**. 2005. Mechanisms of selection for drought stress tolerance and avoidance in *Impatiens capensis* (Balsaminaceae). *American Journal of Botany* 92: 37-44.
- Riginos, C.** and M.T. Hoffman. 2003. Changes in population biology of two succulent shrubs along a grazing gradient. *Journal of Applied Ecology* 40: 615-625.

REPRESENTATIVE MEDIA COVERAGE

- Science* online: Invading ant threatens unique African ecosystem. 8 September, 2014.
<http://news.sciencemag.org/africa/2014/09/invading-ant-threatens-unique-african-ecosystem>
- New York Times*: Tree-Protecting Ants Can't Protect Themselves. 15 September, 2014.
<http://www.nytimes.com/2014/09/16/science/tree-protecting-ants-cant-protect-themselves.html>
- WyoFile*: Climate change likely to kill Yellowstone's forests. 9 June, 2015.
<http://www.wyofile.com/report-climate-change-likely-to-kill-yellowstone-forests/>
- Jackson Hole News and Guide*: Future could scorch Tetons. 10 June, 2015.
http://www.jhnewsandguide.com/news/environmental/future-could-scorch-tetons/article_d8529b00-3e5c-549a-8664-beb9a21975c3.html
- Planet Jackson Hole*: Teton temperatures rising. 10 June, 2015.
<http://planetjh.com/2015/06/09/the-buzz-teton-temperatures-rising/>
- Wyoming Public Radio*: Study claims Yellowstone forests could disappear due to climate change. 17 June, 2015 <http://wyomingpublicmedia.org/post/study-claims-yellowstone-forests-could-disappear-due-climate-change>

Jackson Hole News and Guide: A scrap of white cloth is found to deter deer. 15 July, 2015. Re-published in: *Deseret News* (Salt Lake City, UT), *Billings Gazette* (Billings, MT), *Post Register* (Idaho Falls, ID), *U.S. News Hub*, *S.F. Gate* (San Francisco, CA), *Cheyenne Sun Times* (Cheyenne, WY), *Boise Sun Times* (Boise, ID), and *Seattle PI* (Seattle, WA):

http://www.jhnewsandguide.com/news/environmental/a-scrap-of-white-cloth-is-found-to-deter-deer/article_167e479b-aad0-5631-9f1f-3dafcebf225.html

KSL Channel 5 (Salt Lake City): UDOT considers new deer deterrent for safer roads. 16 July, 2015:

<http://www.ksl.com/?sid=35536549&nid=148>

Buckeye Sportsman radio: Ecologist/ deer researcher Corinna Riginos talks about a recent study. : 1

August 2015: <http://buckeyesportsman.net/podcast/august-1-2015/>

Brainerd Outdoors radio: www.brainerdoutdoors.com

KULR8 News (Billings): WYDOT studies nighttime speed limits to help prevent wildlife crashes. 22

November 2016: <http://www.kulr8.com/story/33777879/wydot-studies-nighttime-pe>

REPORTS

Riginos, C., C. Smith, E. Fairbank, E. Hansen, and P. Hallsten. 2018. Traffic thresholds in deer road-crossing behavior. Wyoming Department of Transportation, WY-18/07F.

Riginos, C., B.Bedrosian, and H.E. Copeland. 2017. Priority areas for reducing Golden Eagle vehicle mortalities in Wyoming. Final report to the National Fish and Wildlife Foundation.

Riginos, C., H. Copeland, C. Smith, H. Sawyer, K. Krasnow and T Hart. 2016. Planning-support for mitigation of wildlife-vehicle collisions and highway impacts on migration routes in Wyoming. FHWA-WY-16/10F.

Riginos, C., M.W. Graham, C.S. Smith, M. Davis, and A. Johnson. 2015. Effects of wildlife warning reflectors (“deer delineators”) on wildlife-vehicle collisions in central Wyoming. FHWA-WY-15/03F.

Riginos, C., and M. Newcomb. 2015. The coming climate: ecological and economic impacts of climate change on Teton County. Charture Institute and Teton Research Institute.

Riginos, C., K. Krasnow, L.E. Hall, M. Graham, S.R. Sundaresan, D. Brimeyer, G. Fralick, and D. Wachob. 2013. Mule deer (*Odocoileus hemionus*) movement and habitat use patterns in relation to roadways in northwest Wyoming. FHWA-WY-13/08F.

Riginos, C., E. Wakoli, D. Melly, and D. Kimiti. 2012. Restoration in Laikipia’s community lands: successes, challenges, and lessons learned. Report to the Laikipia Wildlife Forum and USAID.

Riginos, C., J.E. Herrick and P. Shaver. 2012. Maximizing returns on investments in land management with ecological site information. Research Brief #6, Adapting Livestock Systems to Climate Change – Global Collaborative Research Support Program (USAID).

Riginos, C., J. Belnap, and D. Kimiti. 2012. Cost effectiveness of simple technologies to reduce erosion and promote grass establishment. Research Brief #4, Adapting Livestock Systems to Climate Change – Global Collaborative Research Support Program (USAID).

TEACHING AND MENTORING

- Fellowship Coordinator, Wyoming Chapter of The Wildlife Society’s fellowship program (2014-2015)
- Mentored 8 students/interns (B.A.; 2 B.Sc.; 3 M.Sc.; 1 Ph.D.; senior thesis), 2008-2014.

- Instructor, ECOL 5620: Conservation and Management of Grazing Systems, University of Wyoming, Fall 2012.
- Instructor, EEB 320: Ecology and Conservation of African Landscapes, Princeton University, Spring semesters 2009-2012.

OUTREACH AND PROFESSIONAL SERVICE

Professional service

- Board Member At-Large, Wyoming Chapter of The Wildlife Society (2016-2018)
- Awards Committee, Shreve and Whittaker awards, Ecological Society of America (2016)

Public understanding of science

- Recent invited public presentations:
 - Buffalo Bill Center of the West, Cody, WY, October 2017
 - Jackson Hole Conservation Alliance winter speaker series, March 2017
 - AMK Ranch Harlow Seminar Series, Jackson, WY, June 2016
 - Murie Center, Mardy's Front Porch Conversation, Jackson, WY, July 2016
 - Impacts of Climate Change on the Tetons Area, Grand Teton National Park, Jackson, WY, October 2016
- Have given numerous other public presentations of research in Kenya and Wyoming
- Lead organizer of the Jackson Hole Wildlife Symposium, December 2014 (>150 participants)
- Founded and edited (2 years) the *Mpala Memos* newsletter of the Mpala Research Centre, for local stakeholders
- Authored 12 popular articles for stakeholders and the public in Kenya
- Research featured in prominent popular press (see above)

Outreach and partnership with managers and agencies

- Worked closely with the Wyoming Department of Transportation and Wyoming Game and Fish Department to plan and host the first ever Wyoming Wildlife and Roadways Summit
- Worked closely with the Wyoming Department of Transportation and Wyoming Game and Fish Department on design, analysis, and interpretation of three studies on wildlife-vehicle collisions
- In collaboration with several NGOs and with funding from USAID, developed methods for simple, quantitative monitoring of rangeland health in East Africa
- Authored the guidebook *Monitoring Rangeland Health: A Guide for Pastoralist Communities and Other Land Managers in Eastern Africa* (published by USAID)
- These monitoring methods now being used by organizations with a footprint of 35,000 km² in eastern and southern Africa and our data sheet has been translated into >10 languages
- Have led numerous outreach workshops in Kenya and Ethiopia on rangeland monitoring

Capacity building

- Through this partnership, have supported, trained, and mentored six Kenyan post-bachelors and one post-masters students. All have gone on to more permanent employment or further study.
- Have also supported three groups of undergraduates (~40 each) from the University of Nairobi to visit field sites and research projects. Without such support, Kenyan students have very little exposure to field research.

Peer and editorial review

- Have reviewed numerous manuscripts and book chapters for *Ecology Letters*, *Ecology*, *Journal of Ecology*, *Journal of Arid Environments*, *Oecologia*, *Society and Natural Resources*, *Journal of Vegetation Science*, *Land Degradation and Development*, *Ecography*, *Forest Ecology and Management*, *Pastoralism* and *East African Journal of Natural History*
- Reviewer for Natural Research Foundation (South Africa) grant proposals'

OTHER SKILLS AND QUALIFICATIONS

- Proficient in variety of statistical methods including GLMMs, zero-inflated models, resource selection functions, structural equation modeling, and Brownian bridge movement modeling
- Software skills: R, ArcGIS, Access
- Trained in rangeland assessment (Interpreting Indicators of Rangeland Health), Jornada Experimental Range, November 2009
- Wilderness First Responder (current)