

Daniel R. Uden

School of Natural Resources
Department of Agronomy and Horticulture
Center for Resilience in Agricultural Working Landscapes
University of Nebraska–Lincoln
302 Hardin Hall South
3310 Holdrege Street
Lincoln, NE 68583-0987
Telephone: (402) 472-3424 / Email: duden2@unl.edu

EDUCATION

Ph.D.—Natural Resource Sciences. Major: Applied Ecology.
University of Nebraska–Lincoln; May 2017.

M.S.—Natural Resource Sciences. Major: Wildlife Ecology.
University of Nebraska–Lincoln; August 2012.

B.A.—Major: Geography; Minors: Biology and History.
Concordia University, Seward; May 2010.

EMPLOYMENT

- Assistant Professor. University of Nebraska–Lincoln. School of Natural Resources; Department of Agronomy and Horticulture; Center for Resilience in Agricultural Working Landscapes. 2020–present.
- Post-doctoral Research Associate. University of Nebraska–Lincoln. School of Natural Resources; Department of Agronomy and Horticulture. 2017–2020.
- Graduate Research Assistant (M.S. and Ph.D.). University of Nebraska–Lincoln. Nebraska Cooperative Fish and Wildlife Research Unit; School of Natural Resources. 2010–2017.

FELLOWSHIPS

University of Nebraska–Lincoln

- Daugherty Water for Food Global Institute Faculty Fellow. 2021–present.

GRANTS PENDING

Estimating landscape-level contributions in ecosystem goods and services from the Conservation Reserve Program in Nebraska. Wuellner, M.R. (P.I.), J. Jonas-Bratten, G.J. Pec, L.M. Reichart, S. Banerjee, P. Iranah, A.R. Little, **D.R. Uden** (co-P.I.), Y. Qi, and T. Roy. Nebraska Research Initiative. \$149,947. 06/01/2022–06/30/2024.

GRANTS AWARDED

A rapid mapping tool for quantifying multi-scale grassland management outcomes. Roberts, C.P. (P.I.), B. DeGregorio (Co-P.I.), K.M. Weaver (Co-P.I.), **D.R. Uden** (Collaborator), R. Diener (Collaborator), N. Childers (Collaborator), and M. Asher (Collaborator). U.S. Geological Survey and U.S. Fish and Wildlife Service Science Support Partnership Program. \$102,636. January 2022–May 2024.

- Pilot methodology for mapping vegetation transitions at multiple scales.
- Deliver science (map) products to collaborators.
- Relate vegetation transitions to wildlife populations and grassland management actions.

Remotely Sensed Early Warning of Toxic Algal Blooms in Nebraska Lakes. **Uden, D.R.** (P.I.), J. Corman, E. Van Wormer, C. Roberts, Y. Qi, and C.R. Allen. Daugherty Water for Food Global Institute Graduate Student Support Award. University of Nebraska. \$17,500. 01/01/2022–12/31/2022.

- Advise M.S. student.
- Pilot research on remote early detection of harmful algal blooms.
- Facilitate interdisciplinary team conversation and collaboration.

Assessing tradeoffs of rangeland management approaches using collaborative adaptive management. C.R. Allen (P.I.), J. Jenkins, J. Parsons, W. Schacht, M. Stephenson, **D.R. Uden** (co-P.I.), and J. Volesky. USDA North-central Region Sustainable Agriculture Research and Education Program. \$247,011. 11/01/2021–10/31/2024.

- Serve on graduate committees of students studying collaborative adaptive management.
- Participate in stakeholder planning meetings at Barta Brothers Ranch.
- Monitor vegetation responses to management with remote sensing (airborne) data.

A framework for evaluating the current and future contributions of the Conservation Reserve Program to ecosystem goods and services in the State of Nebraska. Wuellner, M.R. (P.I.), L.M. Reichart, D. Ranglack, P. Iranah, A.R. Little, **D.R. Uden** (co-P.I.), Y. Qi, and T. Roy. Nebraska Research Initiative. \$21,258. 01/01/2021–06/30/2022.

- Advise undergraduate student worker in ecosystem service geodatabase development.
- Identify focal landscapes for ecosystem service assessments.
- Collaborate with UNL and UNK faculty on additional grant submissions.

Adaptive Management of Sandhills Grasslands. Allen, C.R. (P.I.), J. Parsons, W. Schacht, and **D.R. Uden** (co-P.I.). Nebraska Environmental Trust. \$546,011. 5/15/2021–5/14/2024.

- Serve on graduate committees of students studying collaborative adaptive management.
- Participate in stakeholder planning meetings at Barta Brothers Ranch.
- Monitor vegetation responses to management with remote sensing (airborne) data.

Identifying and Prioritizing Habitat for Pheasant Conservation and Management in Agriculturally Dominated Landscapes. Little, A. (P.I.), J. Carroll, L. Powell, Y. Qi, D. Twidwell, A. Tyre, and **D.R. Uden** (co-P.I.). Nebraska Game and Parks Commission. \$699,940. 01/01/2021–12/31/2025.

- Participated in search and hiring of two Ph.D. students.
- Assisted with identification of pheasant survey routes and locations.
- Co-lead monthly modeling meetings with Ph.D. students.

Conservation Outcomes in Great Plains Rangelands. Twidwell, D. (P.I.), C.P. Roberts, and **D.R. Uden** (Co-P.I.). USDA NRCS. \$203,001. 08/01/2020–07/31/2021.

- Map rangeland vegetation transitions of concern at multiple scales.

- Deliver science (map) products to collaborators for informing decision-making.
- Relate vegetation transition data to wildlife populations and management actions.

Improving the performance of conservation investments on Eastern redcedar invasions. Twidwell, D. (P.I.), C.P. Roberts, and **D.R. Uden** (co-P.I.). Nebraska Environmental Trust. \$156,310. 07/01/2020–06/30/2022.

- Participated in search and hiring of statewide eastern redcedar coordinator.
- Map transitions from grassland to woodland at multiple scales.
- Deliver data products to collaborators for informing decision-making.

Resilience informatics for the convergence of critical capacities to address regional-scale environmental change. Twidwell, D. (P.I.), B.C. Chaffin, C.R. Allen, S. Banerjee, T. Floyd, **D.R. Uden** (co-performer), and B.W. Allred. National Science Foundation. Nebraska EPSCoR, Track II. \$3,953,265. 08/01/2019–07/31/2023.

- Map rangeland vegetation transitions of concern in the western United States.
- Converge biophysical and social science products for proactive transition management.
- Collaborate with researchers across multiple disciplines and academic institutions.

Teaching socio-environmental synthesis with case studies: Biome-scale woody plant transitions in the Great Plains. Fogarty, D. (P.I.), **D.R. Uden** (co-P.I.), V.M. Donovan, and C. Barnes. National Socio-Environmental Synthesis Center (SESYNC). \$5,020. 07/29/2019–08/02/2019.

- Completed a weeklong socio-environmental case study workshop.
- Developed a socio-environmental case study for integration into courses.
- Applied fuzzy cognitive mapping to understanding of woody plant encroachment.

Mapping spatial regimes in rangelands. Twidwell, D. (P.I.), C.R. Allen, and **D.R. Uden** (co-performer). University of Montana. \$140,000. 05/01/2018–06/30/2019.

- Piloted a methodology for vegetation transition mapping.
- Mapped vegetation transitions of concern at multiple scales in the western United States.
- Contributed data products to the Rangeland Analysis Platform (rangelands.app).

SCIENCE PRODUCTS UNDER DEVELOPMENT

i-Tree Pest Predictor Tool

- Predict risk of high-impact non-native insect invasion for North American tree species.
- Contributed to training and validation of statistical models for risk prediction.
- To be hosted with i-Tree tools: <https://www.itreetools.org/tools>

Nebraska Public Lands Woody Encroachment Screening Tool. Nebraska Game and Parks Commission.

- Track intensity of grass:tree transitions on public lands and surroundings (1990–2020).
- Identify grassland conservation demonstration sites.
- To be hosted online.

SCIENCE PRODUCTS DEVELOPED AND DELIVERED

Conservation Plains Grassland Biome: A Framework for Conservation Action. Natural Resources Conservation Service Working Lands for Wildlife. 2021–2025.

- Grassland biome conservation framework: <https://wlfw.rangelands.app/great-plains/>
- Guide for scaling up grassland conservation on private working lands.
- Contributed maps of woody transitions in Great Plains grasslands (page 11).

Nebraska woody transitions ArcGIS layer package

- Assembly of GIS data layers on grass:tree transitions in Nebraska rangelands.
- Informs spatial targeting of grassland conservation.
- Delivered to Nebraska Natural Resources Conservation Service (08/13/2021).
- Delivered to Nebraska Game and Parks Commission Verdigris-Bazile Biologically Unique Landscape (09/22/2021).

Great Plains woody transition GIS data layers

- GIS layers showing grass:tree transitions at multiple scales from 1990–2020.
- Unveiled to NRCS state conservationists in two-day webinar (July 8–9, 2020).
- Hosted online on the Rangeland Analysis Platform (rangelands.app/rap).

Kansas woody transition maps

- Maps of grass:tree transitions in three ecoregions from 2000–2018.
- Maps of statewide intact rangeland cores from 2000–2018.
- Presented to NRCS personnel and private landowners by Dirac Twidwell:
 - Medicine Lodge, KS (12/31/2020) – Southwest Kansas landowners
 - Hays, KS (11/21/2019) – Kansas NRCS

Montana cheatgrass transition maps

- Maps of annual grass:shrub transitions in Montana from 2000–2018.
- Focused on priority sage grouse conservation areas.
- Presented to Montana NRCS and U.S. Bureau of Land Management staff by Jeremy Maestas and Dirac Twidwell (11/05/2019).

Idaho, Wyoming, Nevada, and Utah cheatgrass transition maps and GIS data layers

- Maps of annual grass:shrub transitions and intact shrubland cores from 2000–2018.
- Featured in NRCS's *Cheatgrass Challenge* webinar (09/11/2019).
- Delivered to NRCS personnel as ArcGIS layer packages.

Nebraska woody transition maps

- Maps of grass:tree transitions in various Nebraska landscapes from 2000–2018.
- Maps of intact grassland cores from 2000–2018.
- Presented to Nebraska landowners by Dirac Twidwell, Dillon Fogarty, and Shelly Kelley (Sandhills Task Force):
 - Burwell, NE (04/03/2020) – Sandhills Task Force

- Enders, NE (03/10/2020) – Southwest Nebraska landowners
- Imperial, NE (02/17/2020) – Southwest Nebraska landowners
- Arnold, NE (12/04/2019) – Sandhills Task Force
- Brewster, NE (12/03/2019) – Sandhills Task Force
- Curtis, NE (10/18/2019) – Loess Canyons Rangeland Alliance
- Thedford, NE (10/17/2019) – Sandhills Task Force

Nebraska Game and Parks Commission (NGPC)

- Verdigris-Bazile Biologically Unique Landscape (BUL). Lincoln, NE. January 15, 2020.
 - Screen BUL for transitions between grass and woody plant dominance at multiple spatial scales from 2000–2018.
 - Map intact grassland cores in BUL in 2000 and 2018.
 - Overlay management data on transition signal and intact grassland core maps.
 - Map products supported strategic discussions with biologists and land managers about spatially targeting woody plant management.
- Southeast District Wildlife Management Areas (WMAs). Lincoln, NE. October 29, 2019.
 - Screened all 81 WMAs in Southeast District for transitions between grass and woody plant dominance at multiple spatial scales from 2000–2018.
 - Identified WMAs in grass *versus* tree spatial regimes in 2000 and 2018.
 - Participated in strategic discussions with WMA managers about spatially targeting woody plant management in and around WMAs.
- Milkweed scenario planning exercise. Webinar. May 23, 2017.
 - Participated in 16-state discussion led by Kristal Stoner (NGPC) on recruiting 1.6 billion new milkweed stems along monarch butterfly migratory corridors for conservation of six hectares of overwintering monarchs in Mexico.
- Pine Ridge scenario planning workshops. Scenario planning exercise hosted by the Nebraska Natural Legacy Project in Chadron, NE (September 17, 2014 and December 3, 2015) and Gering, NE (October 8, 2014).
 - Led a participatory scenario planning exercise with land managers from multiple state and federal agencies and NGOs on the future of the Pine Ridge.
 - Aggregated manager perspectives on future drivers of change into three scenario storylines.
 - Simulated landcover change under each scenario with cellular automata.
 - Presented maps and scenarios to managers for iterative refinement.

Nebraska Cattlemen

- Annual Convention and Trade Show. Kearney, NE. December 5, 2019.
 - Screened range-dominated Nebraska ecoregions for transitions between grass and woody plant dominance at multiple scales from 2000–2018.
 - Mapped intact grassland cores in 2000 and 2018.
 - Map and data products used in presentation to all attendees by Dirac Twidwell.

Nebraska Legislature

- LR 387 Interim Study Report. Interim study to examine issues relating to the spread of Eastern Redcedar Trees. August 31, 2018. One hundred-fifth legislature. Second session.

- Contributed spatial and tabular data on percent tree cover across the State of Nebraska and in selected landscapes from 2000–2017.
- Available online at:
https://nebraskalegislature.gov/pdf/reports/committee/natural/lr387_2018.pdf

Natural Resources Conservation Service (NRCS)

- Kansas NRCS. November 21, 2019. Hays, KS.
 - Screened Kansas rangelands (focus on Flint Hills, Smoky Hills, and Red Hills ecoregions) for transitions between grass and woody plant dominance at multiple scales from 2000–2018.
 - Mapped intact grassland cores throughout Kansas in 2000 and 2018.
 - Map and data products supported strategic group discussion on woody plant management led by Dirac Twidwell.
- Montana NRCS and United States Bureau of Land Management (BLM). November 5, 2019. Delivered via webinar.
 - Follow-up to NRCS’s “Cheatgrass Challenge” webinar, which addressed problematic vegetation transitions on western U.S. rangelands.
 - Screened Montana rangelands for transitions between bare ground/perennial grass/shrub and annual grass dominance at multiple scales from 2000–2018 (focus on priority sage grouse conservation areas).
 - Tested for temporal growth cycles in annual grass abundance at multiple six spatial scales.
 - Map and data products supported strategic management discussions led by Jeremy Maestas (NRCS) and Dirac Twidwell.
- Idaho NRCS and Wyoming NRCS. September 11, 2019. Delivered via webinar.
 - Featured in NRCS’s “Cheatgrass Challenge” webinar, which addressed problematic vegetation transition in western U.S. rangelands.
 - Screened Idaho, Wyoming, Nevada, and Utah rangelands for transitions between bare ground/perennial/shrub and annual grass dominance at multiple scales from 2000 – 2018 (focus on priority sage grouse conservation areas).
 - Tested for temporal growth cycles in annual grass abundance at multiple six spatial scales.
 - Identified intact cores of native shrub habitat in 2000 and 2017.
 - Delivered spatial data of statewide transition signals and intact shrub core areas to NRCS personnel as ArcGIS layer packages.

The Nature Conservancy (TNC)

- Bend, Oregon. October 2, 2019. Delivered via email.
 - Follow-up to NRCS’s “Cheatgrass Challenge” webinar, which addressed problematic vegetation transitions on western U.S. rangelands.
 - Screened the Great Basin ecoregion for broad-scale transitions between shrub and annual grass dominance from 2000–2018.
 - Delivered map products to Matthew Cahill (TNC Sagebrush Sea Program Director for the Western U.S.).

Rainwater Basin Joint Venture (RWBJV)

- Rainwater Basin Wetland Inundation Decision Support System. 2013.
 - Collaborated with RWBJV staff to develop a predictive model and corresponding ArcGIS tool for predicting springtime wetland ponding (migratory waterbird habitat) in the Rainwater Basin.
 - Employed scenario planning to predicted ponding under down-scaled regional climate change projections.
 - Used to inform spring and autumn flooding of wetlands with groundwater.
 - Details in Uden et al. (2015) paper in *Ecosphere*.

MEDIA COVERAGE OF RESEARCH

Strategic Discussions for Nebraska 2022. Stress Biology: UNL Center for Resilience in Agricultural Working Landscapes.

- Digital issue to be available at: <https://sdn.unl.edu/>

Center for Resilience in Agricultural Working Landscapes. University of Nebraska–Lincoln. Ronica Stromberg. April 8, 2022. Nebraska Scientists Creating Early Warning System to Save Prairies.

- Overviews contributions to a National Science Foundation award.
- Demonstrates utility of the ecological screening approach I co-developed for building and maintaining resilience in grassland landscapes.
- Available at: <https://centerforresilience.unl.edu/nebraska-scientists-creating-early-warning-system-save-prairies>

Institute for Agriculture and Natural Resources. Center for Resilience in Agricultural Working Landscapes. University of Nebraska–Lincoln. Ronica Stromberg. April 6, 2022. University burns patch of Sandhills grassland in test of fire and grazing.

- Documents my contributions to a stakeholder-driven collaborative adaptive management project in the Nebraska Sandhills.
- Available at: <https://ianrnews.unl.edu/university-burns-patch-sandhills-grassland-test-fire-and-grazing>

Tying Spatial Imaging, Education, and History into Resilience: An Interview with Dr. Dan Uden. What the Heck is Resilience Anyway? University of Nebraska–Lincoln Council for Resilience Education Podcast. May 12, 2021.

- Podcast interview on resilience concepts in my research.
- Available on Spotify, Apple, Stitcher, and Soundcloud: <https://soundcloud.com/whra/tying-spatial-imaging-education-and-history-into-resilience-an-interview-with-dr-dan-uden>

USDA NRCS Working Lands for Wildlife newsletter. January 29, 2020. Transitions in focus: How landowners and managers are using new technologies to improve rangeland management.

- Demonstrates the utility of regime shift screening (Uden et al. 2019, *Frontiers in Ecology and Evolution*) for rangeland conservation with multiple map products.
- Illustrates how regime shift screening is based in resilience theory and contributes to resilience-based land management.
- Links to December 20, 2019, *Nebraska Today* article by Scott Schrage.

- Available online at: <https://email.connectablenews.com/t/ViewEmail/y/A246C0D68AD69DE2/781CFDD76C54FD566E6039C17E42EE19>

Midwest Messenger. Jon Burlison. February 5, 2020. Red cedar menace to rangeland.

- Addresses the implications of ecological regime shifts for cattle production.
- Describes utility of screening technology I co-developed for tracking regime shifts (Uden et al. 2019, *Frontiers in Ecology and Evolution*).
- Available online at: https://www.agupdate.com/midwestmessenger/news/livestock/red-cedar-menace-to-rangeland/article_a677d0f8-484d-11ea-8fad-cb32325c239b.html

Lesser Prairie Chicken Initiative – Ask An Expert Series. September 23, 2019. What you should know about the eastern redcedar science literacy project.

- Features maps of a biome-scale regime shift from grass to woody plant dominance.
- Demonstrates ability of regime shift screening to detect large-scale vegetation transitions.
- Available online at: <https://www.lpcinitiative.org/why-you-should-know-about-the-eastern-redcedar-science-literacy-project/>

Nebraska Today. University of Nebraska–Lincoln. Scott Schrage. December 18, 2019. Early warning: Ecological screening looks to preserve Sandhills, native ecosystems.

- University-wide communication on publication of Uden et al.'s (2019) paper in *Frontiers in Ecology and Evolution* on screening for and imaging ecological regime shifts.
- Highlights utility of science products delivered to Nebraska ranchers (quotes from Shelly Kelly, Sandhills Task Force program director) and the Nebraska Game and Parks Commission (quotes from Alicia Hardin, Wildlife Division Administrator).
- Available online at: <https://research.unl.edu/blog/early-warning-ecological-screening-looks-to-preserve-sandhills-native-ecosystems/>

Nebraska Today. University of Nebraska. Tiffany Lee. October 1, 2019. Early detection of changing ecosystems is aim of Nebraska-led research.

- University-wide communication on the awarding of Twidwell et al.'s EPSCoR Grant, which features regime shift screening.
- Highlights contributions of grant investigators and collaborators from Nebraska and Montana.
- Available online at: <https://news.unl.edu/newsrooms/today/article/early-detection-of-changing-ecosystems-is-aim-of-nebraska-led-research/>

Nebraska Today. University of Nebraska. Shawna Richter-Ryerson. April 2, 2018. Researchers: Focus policy to better control red cedar invasion.

- University-wide communication on publication of Roberts et al.'s (2018) paper in *PLoS ONE*.
- Documents the history and role of policy in the challenge of managing woody plant encroachment in the Great Plains.
- Available online at: <https://news.unl.edu/newsrooms/today/article/researchers-focus-policy-to-better-control-red-cedar-invasion/>

PEER-REVIEWED MANUSCRIPTS IN PREPARATION OR REVIEW

Barg, A., **D.R. Uden**, K.I.T. Bird, D.S. Bauloye, M. Baldissara, J. Hodge, J.F. Hinnant, N. Berkowitz, C.R. Nielson, A.R. Little, D.H. Ranglack, H. Ellerman, B. Zhao, R. Allen, and U.V.C. Ogbenna. 2022. Impacts of high streamflow events on white-tailed deer habitat use in central Nebraska. *Landscape Ecology*. In preparation.

Hogan, K.F.E., D.T. Fogarty, H. Ellerman, C.T. Fill, D. Morales, B. Seguin, **D.R. Uden**, and C.R. Allen. 2022. Vulnerability of grasslands and forests to roadside tree invasion in the Northern Great Plains. *Biological Invasions*. In review.

Ludwig, A.K., C.P. Roberts, **D.R. Uden**, E.F. Stuber, D.T. Fogarty, T.L. Walker, Jr., and D. Twidwell. 2022. Hierarchical conservation efforts increase abundance of the threatened American burying beetle (*Nicrophorus americanus*) in the Central Great Plains. *Biological Conservation*. In preparation.

Uden, D.R., A.M. Mech, N.P. Havill, A.N. Schulz, M.P. Ayres, D.A. Herms, A.M. Hoover, K.J.K. Gandhi, R.A. Hufbauer, A.M. Liebhold, T.D. Marsico, K.F. Raffa, K.A. Thomas, P.C. Tobin, and C.R. Allen. 2022. Phylogenetic risk assessment: a case study of herbivorous insect invasions in North American conifer forests. *Ecological Applications*. In preparation.

Uden, D.R. and D. Twidwell. 2022. Conservation prioritization in an era of biome collapse. *Conservation Letters*. In preparation.

PEER-REVIEWED MANUSCRIPTS

Roberts, C.P., **D.R. Uden**, C.R. Allen, D.G. Angeler, L.A. Powell, B.W. Allred, M.O. Jones, J.D. Maestas, and D. Twidwell. 2022. Tracking spatial regimes in animal communities: Implications for resilience-based management. *Ecological Indicators* 136:108567. <https://doi.org/10.1016/j.ecolind.2022.108567>

Vallury, S., A. Smith, B.C. Chaffin, H. Nesbitt, S. Gulab, S. Banerjee, T. Floyd, S. Lohani, A.L. Metcalf, D. Twidwell, **D.R. Uden**, M. Williamson, and C.R. Allen. 2022. Adaptive capacity beyond the household: A systematic review of empirical social–ecological research. *Environmental Research Letters*. In press.

Allred, B.W., B.T. Bestelmeyer, C.S. Boyd, C. Brown, K.W. Davies, L.M. Ellsworth, T.A. Erickson, S.D. Fuhlendorf, T.V. Griffiths, V. Jansen, M.O. Jones, J. Karl, A. Knight, J.D. Maestas, J.J. Maynard, S.E. McCord, D.E. Naugle, H.D. Starns, D. Twidwell, and **D.R. Uden**. 2021. Improving Landsat predictions of rangeland fractional cover with multi-task learning and uncertainty. *Methods in Ecology and Evolution* 12(5):841–849. <https://doi.org/10.1111/2041-210X.13564>

Allred, B.W., M.K. Creutzburg, J.C. Carlson, C.J. Cole, C.M. Dovichin, M.C. Duniway, M.O. Jones, J.D. Maestas, D.E. Naugle, T.W. Nauman, G.S. Okin, M.C. Reeves, M. Rigge, S.L. Savage, D. Twidwell, **D.R. Uden**, and B. Zhou. 2021. Guiding principles for using satellite-

derived maps in rangeland management. *Rangelands*. In press.
<https://doi.org/10.1016/j.rala.2021.09.004>

Cady, S.M., C.A. Davis, S.D. Fuhlendorf, R. Scholtz, **D.R. Uden**, and D. Twidwell. 2021. Habitat selection is site-dependent for a generalist bird. *Ecology and Evolution* 11(18):12714–12727. <https://doi.org/10.1002/ece3.8016>

Donovan, V.M., C.P. Roberts, C.L. Wonkka, **D.R. Uden**, D.G. Angeler, C.R. Allen, D. Wedin, R.A. Drijber, and D. Twidwell. 2021. Collapse, reorganization, and regime identity. *Ecology and Society*. 26(2):27. <https://doi.org/10.5751/ES-12340-260227>

Roberts, C.P., **D.R. Uden**, S.M. Cady, B.W. Allred, S.D. Fuhlendorf, M.O. Jones, J.D. Maestas, D.E. Naugle, A.C. Olsen, J. Smith, J. Tack, and D. Twidwell. 2021. Tracking spatial regimes as an early warning for a species of conservation concern. *Ecological Applications* 32(1):e02480. <https://doi.org/10.1002/eap.2480>

Scholtz, R., S.D. Fuhlendorf, **D.R. Uden**, B.W. Allred, M.O. Jones, D.E. Naugle, and D. Twidwell. 2021. Challenges of brush management treatment longevity in southern Great Plains, USA. *Rangeland Ecology and Management* 77(1):57–65. <https://doi.org/10.1016/j.rama.2021.03.007>

Schulz, A.N., A.M. Mech, M.P. Ayres, K.J.K. Gandhi, N.P. Havill, D.A. Herms, A.M. Hoover, R.A. Hufbauer, A.M. Liebhold, T.D. Marsico, K.F. Raffa, P.C. Tobin, **D.R. Uden**, and K.A. Thomas. 2021. Predicting non-native insect impact: Focusing on the trees to see the forest. *Biological Invasions* 23:3921–3936. <https://doi.org/10.1007/s10530-021-02621-5>

Uden, D.R., D.J. Wishart, L.A. Powell, R.B. Mitchell, C.R. Allen, and G. Steinauer. 2021. Adaptive fuel procurement in nineteenth century Great Plains landscapes. *Environment and History* 27(1):65–95. <https://doi.org/10.3197/096734019X15463432086946>

Angeler, D.G., B.C. Chaffin, S.M. Sundstrom, A.S. Garmestani, K.L. Pope, **D.R. Uden**, D. Twidwell, and C.R. Allen. 2020. Coerced regimes: Managing artificial feedbacks to navigate the Anthropocene. *Ecology and Society* 25(1):4. <https://doi.org/10.5751/ES-11286-250104>

Donovan, V.M., D. Twidwell, **D.R. Uden**, T. Tadesse, B.D. Wardlow, C.H. Bielski, M.O. Jones, B.W. Allred, D.W. Naugle, and C.R. Allen. 2020. Resilience to large, ‘catastrophic’ wildfires in North America’s grassland biome. *Earth’s Future* 8(7):e2020EF001487. <https://doi.org/10.1029/2020EF001487>

Fogarty, D.T., C.P. Roberts, **D.R. Uden**, V.M. Donovan, C.R. Allen, D.E. Naugle, M.O. Jones, B.W. Allred, and D. Twidwell. 2020. Woody plant encroachment and the sustainability of priority conservation areas. *Sustainability* 12(20):8321. <https://doi.org/10.3390/su12208321>

Jones, M.O., D.E. Naugle, D. Twidwell, **D.R. Uden**, J.D. Maestas, and B.W. Allred. 2020. Beyond inventories: Emergence of a new era in rangeland monitoring. *Rangeland Ecology and Management* 73(5):577–583. <https://doi.org/10.1016/j.rama.2020.06.009>

Mech, A.M., K.A. Thomas, T.D. Marsico, D.A. Herms, C.R. Allen, M.P. Ayres, K.J.K. Gandhi, J. Gurevitch, N.P. Havill, R.A. Hufbauer, A.M. Liebhold, K.F. Raffa, A.N. Schultz, **D.R. Uden**, and P.C. Tobin. 2019. Evolutionary history predicts the impact of non-native herbivorous insects on North American conifers. *Ecology and Evolution* 9(21):12216–12230. <https://doi.org/10.1002/ece3.5709>

Uden, D.R., D. Twidwell, C.R. Allen, M.O. Jones, D.E. Naugle, J.D. Maestas, and B.W. Allred. 2019. Spatial imaging and screening for regime shifts. *Frontiers in Ecology and Evolution* 7:407. <https://doi.org/10.3389/fevo.2019.00407>

Burnett, J.L., K.L. Pope, A. Wong, C.R. Allen, D.M. Haak, B.J. Stephen, and **D.R. Uden**. 2018. Thermal tolerance limits of the Chinese mysterysnail (*Bellamya chinensis*): Implications for management. *American Malacological Bulletin* 36(1):140–144. <https://doi.org/10.4003/006.036.0106>

Ou, G., F. Munoz-Arriola, **D.R. Uden**, D. Martin, and C.R. Allen. 2018. Climate change implications for irrigation and groundwater in the Republican River Basin, U.S.A. *Climatic Change* 151(2):303–316. <https://doi.org/10.1007/s10584-018-2278-z>

Roberts, C.P., **D.R. Uden**, C.R. Allen, and D. Twidwell. 2018. Doublethink and scale mismatch polarize policies for an invasive tree. *PLoS ONE* 13(3):e0189733. <https://doi.org/10.1371/journal.pone.0189733>

Uden, D.R., C.R. Allen, F. Munoz-Arriola, G. Ou, and N. Shank. 2018. A framework for tracing social–ecological trajectories and traps in intensive agricultural landscapes. *Sustainability* 10(5):1646. <https://doi.org/10.3390/su10051646>

Streit Krug, A., **D.R. Uden**, C.R. Allen, and D. Twidwell. 2017. Culturally induced range infilling of eastern red-cedar: A problem in ecology, and ecological problem, or both? *Ecology and Society* 22(2):46. <https://doi.org/10.5751/ES-09357-220246>

Allen, C.R., H.E. Birgé, S.L. Bartelt-Hunt, R.A. Bevans, J.L. Burnett, B.A. Cosens, X. Cai, A.S. Garmestani, I. Linkov, E.A. Scott, M.D. Solomon, and **D.R. Uden**. 2016. Avoiding decline: Fostering resilience and sustainability in midsize cities. *Sustainability* 8(9):844. <https://doi.org/10.3390/su8090844>

Allen, C.R., D.G. Angeler, G.S. Cumming, C. Folke, D. Twidwell, and **D.R. Uden**. 2016. Quantifying spatial resilience. *Journal of Applied Ecology* 53(3):625–635. <https://doi.org/10.1111/1365-2664.12634>

Angeler, D.G., C.R. Allen, **D.R. Uden**, and R.K. Johnson. 2015. Spatial scaling patterns and functional redundancies in a changing boreal lake landscape. *Ecosystems* 18:889–902. DOI: 10.1007/s10021-015-9871-z

Uden, D.R., C.R. Allen, A.A. Bishop, R. Grosse, C.F. Jorgensen, T.G. LaGrange, R.G. Stutheit, and M.P. Vrtiska. 2015. Predictions of future ephemeral springtime waterbird habitat availability under global change. *Ecosphere* 6(11):215. <https://doi.org/10.1890/ES15-00256.1>

Uden, D.R., C.R. Allen, D.G. Angeler, L. Corral, and K.A. Fricke. 2015. Adaptive invasive species distribution modeling: A framework for incipient invasions. *Biological Invasions* 17(10):2831–2850. DOI: 10.1007/s10530-015-0914-3

Uden, D.R., C.R. Allen, R.B. Mitchell, T.D. McCoy, and Q. Guan. 2015. Predicted avian responses to bioenergy development scenarios in an intensive agricultural landscape. *Global Change Biology Bioenergy* 7(4):717–726. <https://doi.org/10.1111/gcbb.12157>

Uden, D.R., M.L. Hellman, D.G. Angeler, and C.R. Allen. 2014. The role of reserves and anthropogenic habitats for functional connectivity and resilience of ephemeral wetlands. *Ecological Applications* 24(7):1569–1582. DOI: 10.1890/13-1755.1

Allen, C.R., K.T. Nemeck, K.L. Decker, D.A. Wardwell, M. Brust, D. Fogell, J.D. Hoffman, J. Hogue, A. Lotz, T. Miller, M. Pummill, L.E. Ramirez-Yanes, and **D.R. Uden**. 2013. Predictors of regional establishment success and spread of introduced nonindigenous vertebrates. *Global Ecology and Biogeography* 22(7):889–899. <https://doi.org/10.1111/geb.12054>

Stephen, B.J., N.M. Chaine, C.R. Allen, K.A. Fricke, D.M. Haak, M.L. Hellman, R.A. Kill, K.T. Nemeck, K.L. Pope, N.A. Smeenk, **D.R. Uden**, K.M. Unstad, A.E. VanderHam, and A. Wong. 2013. Fecundity of the Chinese mystery snail in a Nebraska Reservoir. *Journal of Freshwater Ecology* 28(3):439–444. <https://doi.org/10.1080/02705060.2013.769127>

Uden, D.R., C.R. Allen, R.B. Mitchell, Q. Guan, and T.D. McCoy. 2013. Scenarios of bioenergy development impacts on regional groundwater withdrawals. *Journal of Soil and Water Conservation* 68(5):124A–128A. <https://doi.org/10.2489/jswc.68.5.124A>

Uden, D.R., R.B. Mitchell, C.R. Allen, T.D. McCoy, and Q. Guan. 2013. The feasibility of generating adequate biomass for year-round cellulosic ethanol production in an intensive agricultural fuelshed. *Bioenergy Research* 6(3):930–938. <https://doi.org/10.1007/s12155-013-9311-x>

Unstad, K.M., **D.R. Uden**, C.R. Allen, N.M. Chaine, D.M. Haak, D.M., R.A. Kill, K.L. Pope, B.J. Stephen, and A. Wong. 2013. Survival and behavior of Chinese mystery snails (*Bellamya chinensis*) in response to simulation water body drawdowns and air exposure. *Management of Biological Invasions* 4(2):123–127. <http://dx.doi.org/10.3391/mbi.2013.4.2.04>

Wong, A., C.R. Allen, N.M. Hart, D.M. Haak, K.L. Pope, N.A. Smeenk, B.J. Stephen, and **D.R. Uden**. 2013. Enamel-based mark performance for marking Chinese mystery snail *Bellamya chinensis*. *Management of Biological Invasions* 4(3):231–234. <http://dx.doi.org/10.3391/mbi.2013.4.3.05>

Chaine, N.M., C.R. Allen, K.A. Fricke, D.M. Haak, M.L. Hellman, R.A. Kill, K.T. Nemec, K.L. Pope, N.A. Smeenk, B.J. Stephen, **D.R. Uden**, K.M. Unstad, and A.E. Vanderham. 2012. Population estimate of Chinese mystery snail (*Bellamya chinensis*) in a Nebraska reservoir. *BioInvasion Records* 1(4):283–287. <http://dx.doi.org/10.3391/bir.2012.1.4.07>

Mitchell, R.B., K.P. Vogel, and **D.R. Uden**. 2012. The feasibility of switchgrass for biofuel production. *Biofuels* 3(1):47–59. <https://doi.org/10.4155/bfs.11.153>

PEER-REVIEWED BOOK CHAPTERS

Allen, C.R., D.G. Angeler, A. Garmestani, C.P. Roberts, S. Sundstrom, D. Twidwell, and **D.R. Uden**. 2022. Applications of spatial regimes. In: Gunderson, L.H., C.R. Allen, and A. Garmestani (eds.). *Applied panarchy: Applications and diffusion across disciplines*. Island Press, Washington, D.C., U.S.A. 352 pp.

Stephenson, M.B. and **D.R. Uden**. 2022. Innovations in Sandhills rangeland monitoring. In: Norby, N., S. Fritz, and K. Hachiya (eds.). *Nebraska Sandhills: An Atlas*. In press.

Twidwell, D., **D.R. Uden**, C.P. Roberts, B.W. Allred, M.O. Jones, D.E. Naugle, and C.R. Allen. 2022. Mapping panarchy to improve visualization of complex environmental change. Pages 136–152 In: Gunderson, L.H., C.R. Allen, and A. Garmestani (eds.). *Applied panarchy: Applications and diffusion across disciplines*. Island Press, Washington, D.C., U.S.A. 352 pp.

Allen, C.R., **D.R. Uden**, A.R. Johnson, and D.G. Angeler. 2015. Spatial modeling approaches for understanding and predicting the impacts of invasive alien species on native species and ecosystems. Pages 162–170 In: Vennette, R.C. (ed). *Pest risk modelling and mapping for invasive alien species*. CAB International, Wallingford, U.K. 252 pp.

BOOK REVIEWS

Uden, D.R. 2018. “Comanche marker trees of Texas” by Steve Houser, Linda Pelon, and Jimmy W. Arterberry (review). *Great Plains Research* 28(2): 218. DOI: 10.1353/gpr.2018.0042

Uden, D.R. 2016. “As Far as the Eye Could Reach: Accounts of animals along the Santa Fe Trail, 1821-1880” by Phyllis S. Morgan (review). *Great Plains Research* 26(2):147–148.

Uden, D.R. 2015. “This far-off wild land: The Upper Missouri letters of Andrew Dawson” by Wischmann, L. and A.E. Dawson (review). *Great Plains Quarterly* 35(2):225.

CONFERENCE PROCEEDINGS

Mech, A.M., K.A. Thomas, T.D. Marsico, D.A. Herms, C.R. Allen, M.P. Ayres, K.J.K. Gandhi, J. Gurevitch, N.P. Havill, R.A. Hufbauer, A.M. Liebhold, K.F. Raffa, A.N. Schulz, **D.R. Uden**, and P.C. Tobin. 2021. How available data can be used to predict the impact of non-native forest insects. Society of American Foresters 2020 National Convention Proceedings (Supplemental Information). *Journal of Forestry* 119(2), pp. S87, <https://doi.org/10.1093/jofore/fvab002>

ORAL RESEARCH PRESENTATIONS

Roberts, C.P., C.R. Allen, B.W. Allred, D.G. Angeler, V.M. Donovan, B. Edwards, D.E. Naugle, R. Scholtz, J. Tack, D. Twidwell, and **D.R. Uden**. 2022. What happens when biomes collapse, move, or contract? The Wildlife Society Annual Conference. Spokane, WA. November 6–10.

Lohani, S. B.C. Chaffin, **D.R. Uden**, M.A. Williamson, A.L. Metcalf, S. Vallury, C.R. Allen, and D. Twidwell. 2021. Evaluating predictors of landscape-scale social-ecological regime shift signals in near real-time in Great Plains rangelands. Spring 2021. University of Montana Department of Society and Conservation Seminar. Virtual. March.

Lohani, S. B.C. Chaffin, **D.R. Uden**, M.A. Williamson, A.L. Metcalf, S. Vallury, C.R. Allen, and D. Twidwell. 2021. Evaluating predictors of landscape-scale social-ecological regime shift signals in near real-time on private rangelands in Nebraska. International Association for Society and Natural Resources (IASNR). Virtual. June.

Schulz, A.N., N.P. Havill, C.F. Aoki, M.P. Ayres, K.J.K. Gandhi, D.A. Herms, A.M. Hoover, R.A. Hufbauer, A.M. Liebhold, S. Maco, T.D. Marsico, K.F. Raffa, K.A. Thomas, P.C. Tobin, **D.R. Uden**, and A.M. Mech. November 2021. i-Tree Pest Predictor: A new, forthcoming tool to forecast impact of non-native insects on North American tree species. 69th Annual Meeting of the Entomological Society of America. Denver, CO. Contributed Presentation.

Schulz, A.N., R.A. Hufbauer, C.F. Aoki, M.P. Ayres, K.J.K. Gandhi, N.P. Havill, D.A. Herms, A. Hoover, A.M. Liebhold, S. Maco, T.D. Marsico, K.F. Raffa, K.A. Thomas, P.C. Tobin, **D.R. Uden**, and A.M. Mech. May 2021. Synthesis and utilization of big data for forecasting the impacts of non-native forest insects in North America. North American Forest Insect Work Conference. Virtual Conference. Contributed Presentation.

Schulz, A.N., A.M. Mech, C.F. Aoki, M.P. Ayres, K.J.K. Gandhi, N.P. Havill, D.A. Herms, A.M. Liebhold, S. Maco, T.D. Marsico, K.F. Raffa, K.A. Thomas, P.C. Tobin, **D.R. Uden**, and R.A. Hufbauer. April 2021. Forecasting impact of non-native, phytophagous insects relies on different factors based on host tree specialization. 2021 International Association for Landscape Ecology – North America Annual Meeting. Virtual Conference. Contributed Presentation.

Ahamad, M., D. Fogarty, C. Roberts, **D.R. Uden**, S. Morford, M.O. Jones, U.P. Kreuter, J. Weir, L. Goodman, S.D. Fuhlendorf, W.E. Rogers, M. Treadwell, B. Wu, J. Walker, B.P. Wilcox, D.E. Naugle, B.W. Allred, and D. Twidwell. 2020. Economics of scaling up brush management. 10th Annual Nebraska Natural Legacy Conference. Virtual. October.

Roberts, C., D. Fogarty, M. Ahamad, C. Barnes, V.M. Donovan, A. Ludwig, R. Scholtz, **D.R. Uden**, and D. Twidwell. 2020. Is the Nebraska Loess Canyons Ecoregion one of the greatest conservation success stories in the Great Plains? 2020. 10th Annual Nebraska Natural Legacy Conference. Virtual. October.

Twidwell, D., D. Fogarty, and **D.R. Uden**. 2020. Nebraska woody encroachment models. Nebraska Game and Parks Commission Meeting. Virtual invited meeting. May.

Twidwell, D., **D.R. Uden**, R. Scholtz, and D. Fogarty. 2020. A cultural movement to conserve the last grasslands. Nebraska Conservation Partners Workshop. Invited Virtual Workshop. July.

Uden, D.R. and D. Twidwell. 2019. Mapping cross-scale rangeland transitions. Society for Range Management (SRM) Annual Meeting. Minneapolis, MN. February 11.

Uden, D.R. 2017. Tree species distribution models in Indian Cave State Park. Nebraska Natural Legacy Conference. Nebraska City, NE. October 11.

Uden, D.R., C.R. Allen, A.A. Bishop, R. Grosse, C.F. Jorgensen, T.G. LaGrange, R. Stutheit, and M.P. Vrtiska. 2017. Predictions of future waterbird stopover habitat. Midwest Fish and Wildlife Conference. Lincoln, NE. February 7.

Allen, C.R., **D.R. Uden**, M.L. Hellman, and D.G. Angeler. 2015. The contribution of reserves and anthropogenic habitat for functional connectivity and resilience of ephemeral wetland networks. American Geophysical Union (AGU) Fall Meeting. San Francisco, CA. December 14–18.

Uden, D.R., C.R. Allen, T.D. McCoy, R.B. Mitchell, and Q. Guan. 2012. Potential impacts of biofuels and landuse change on grassland bird abundance. International Association for Landscape Ecology (IALE) North America Annual Meeting. Newport, RI. April 8–12.

POSTER RESEARCH PRESENTATIONS

Schulz, A.N., R.A. Hufbauer, C.F. Aoki, M.P. Ayres, K.J.K. Gandhi, N.P. Havill, D.A. Herms, A.M. Hoover, A.M. Liebhold, S. Maco, T.D. Marsico, K.F. Raffa, K.A. Thomas, P.C. Tobin, **D.R. Uden**, and A.M. Mech. November 2021. i-TPP: A New i-Tree Tool to Predict Impact of Non-Native Insects on North American Trees. Society of American Foresters 2021 National Convention. Virtual Conference. Poster.

Thomas, K.A., A.N. Schulz, A.M. Mech, C.F. Aoki, M.P. Ayres, K.J.K. Gandhi, N.P. Havill, D.A. Herms, A.M. Liebhold, S. Maco, T.D. Marsico, K.F. Raffa, P.C. Tobin, **D.R. Uden**, and R.A. Hufbauer. April 2021. The impact of non-native insects on forest trees relies on different factors based on host tree specialization. Entomological Society of America Pacific Branch Meeting. Virtual Conference. Poster.

Ludwig, A.K., **D.R. Uden**, and D. Twidwell. 2019. Prescribed fire as a land management tool for the endangered American burying beetle. Nebraska Prescribed Fire Conference, Kearney, NE. December 10.

Roberts, C.P., K.F.E. Hogan, D.T. Fogarty, J.L. Burnett, V.M. Donovan, H. Ellerman, C.T. Fill, B. Seguin, D. Twidwell, **D.R. Uden**, M. Whitby, and C.R. Allen. 2018. Some don't mind the heat: Biome-scale responses of grassland birds to fire. Nebraska Prescribed Fire Conference. Kearney, NE. December 6.

Uden, D.R. 2014. The role of ecological reserves and anthropogenic habitats for the functional connectivity and resilience of ephemeral wetlands. Nebraska Chapter Meeting of The Wildlife Society (TWS). Kearney, NE. February 7.

Jezierski, C., E. Zach, **D.R. Uden**, C.R. Allen, M. Koch, J. Fontaine, R. Schneider, T.D. McCoy, and B. Larsen. 2013. Renewable energy development and wildlife in Nebraska—Striving for co-existence. Rural Futures Conference. Lincoln, NE. November 3–5.

Uden, D.R., C.R. Allen, R.B. Mitchell, Q. Guan, and T.D. McCoy. 2013. Potential impacts of a perennial bioenergy feedstock on groundwater withdrawals under scenarios of future change. Water for Food Global Conference. Lincoln, NE. May 5–8.

PEER-REVIEWED MANUSCRIPT REVIEWER

- *Biological Invasions*. 2021. One manuscript.
- *Earth Interactions*. 2021. One manuscript.
- *Ecology and Society*. 2021. Three manuscripts.
- *Land*. 2021. One manuscript.
- *Arabian Journal of Geosciences*. 2020. One manuscript.
- *Conservation Biology*. 2020. One manuscript.
- *Ecological Indicators*. 2020. One manuscript.
- *Ecology and Society*. 2020. One manuscript.
- *Environment Systems and Decisions*. 2020. One manuscript.
- *Oecologia Australis*. 2020. One manuscript.
- *Ecological Indicators*. 2019. One manuscript.
- *Journal of Tropical Ecology*. 2019. One manuscript.
- *Landscape Ecology*. 2019. One manuscript.
- *Plant Ecology*. 2019. One manuscript.
- *Sustainability*. 2019. One manuscript.
- *Tropical Conservation Science*. 2019. One manuscript.
- *African Journal of Ecology*. 2018. One manuscript.
- *Ecological Informatics*. 2018. One manuscript.
- *Ecology Letters*. 2018. One manuscript.
- *Ecosphere*. 2018. One manuscript.
- *International Journal of Disaster Risk Reduction*. 2018. One manuscript.
- *Journal of Field Ornithology*. 2018. One manuscript.
- *Landscape and Urban Planning*. 2018. One manuscript.
- *Landscape Ecology*. 2018. One manuscript.
- *Journal of the American Water Resources Association*. 2018. One manuscript.
- *Sustainability*. 2018. One manuscript.
- *Journal of Environmental Informatics*. 2017. One manuscript.
- *Copeia*. 2017. One manuscript.
- *Diversity and Distributions*. 2017. One manuscript.
- *Ecological Indicators*. 2017. One manuscript.
- *Environmental Conservation*. 2017. One manuscript.

- *Frontiers in Ecology and the Environment*. 2017. One manuscript.
- *Land*. 2017. One manuscript.
- *Landscape and Urban Planning*. 2017. One manuscript.
- *PLOS ONE*. 2016. One manuscript.
- *Quail VIII: Proceedings of the Eighth National Quail Symposium*. 2016. One manuscript.
- *African Journal of Environmental Science and Technology*. 2015. One manuscript.
- *Biological Invasions*. 2015. Two manuscripts.
- *Ecological Indicators*. 2015. Two manuscripts.
- *Ecology and Society*. 2015. One manuscript.
- *Conservation Biology*. 2011. One manuscript.

COURSES UNDER DEVELOPMENT

Research Experiences in Grasslands. University of Nebraska–Lincoln. Fall 2023.

- New, undergraduate-level course (0–3 credits).
- Service students across departments conducting grassland research.
- Co-developed with Cheryl Dunn.

COURSES DEVELOPED AND/OR TAUGHT

Applications of Circuit Theory in Ecological Research. University of Nebraska–Lincoln. Spring 2022.

- New, graduate-level independent study course (3 credits).
- Serviced one graduate student researching ecological impacts of wildfire (2022).
- Research project-based course that contributes to student thesis.

Great Plains Ecosystems. University of Nebraska–Lincoln. Spring 2021, 2022.

- Undergraduate- and graduate-level course (3 credits).
- Added asynchronous online section to accommodate remote graduate students.
- Developed new material (lectures, exams, activities) to integrate with existing.
- Supported student TA (2021, 2022).
- Co-taught with Dirac Twidwell.

Landscape Ecology. University of Nebraska–Lincoln. Spring 2015, Fall 2021.

- Graduate-level course (3 credits).
- Developed new lectures, lab exercises, and exams.
- Facilitated a class publication project.
- Co-taught with Andy Little (2021), Hannah Birgé (2015), and Craig Allen (2015).

Resilience Thinking in Landscape Systems. University of Nebraska–Lincoln. Spring 2021. January three-week session.

- New undergraduate-level special topics course (2 credits).
- Developed new lectures and activities.
- Promoted systems thinking and resilience thinking.

Resilience Informatics. University of Nebraska–Lincoln. Fall 2019.

- New graduate-level independent study course

- Co-develop research products with spatial resilience themes.
- Co-taught with Dirac Twidwell.

No such thing as a free lunch: Trade-offs of trees in grassy ecosystems. Summer 2019.

- Socio–environmental case study for integration into future courses.
- Designed with an interdisciplinary research team at the National Socio-Environmental Synthesis Center (SESYNC) in Annapolis, MD.
- Uses concept maps to promote systems thinking and understanding of social–environmental linkages.
- Available online at: <https://www.sesync.org/no-such-thing-as-a-free-lunch-trade-offs-of-trees-in-grassy-ecosystems>

GUEST LECTURES

Livestock Management on Range and Pasture

- University of Nebraska–Lincoln (Fall 2021).
- Undergraduate- and graduate-level.
- Lectured on resilience in rangeland and ranch systems.

Complex Biosystems Seminar

- University of Nebraska–Lincoln (Fall 2020).
- Graduate-level.
- Lectured on theory–data–technology linkages in working agricultural landscapes.

Great Plains Ecosystems

- University of Nebraska–Lincoln (Spring 2020).
- Undergraduate- and graduate-level.
- Lectured on the history of agriculture and afforestation in the Great Plains biome.

Ecosystem Monitoring and Assessment

- University of Nebraska–Lincoln (Fall 2018; Fall 2019).
- Undergraduate- and graduate-level.
- Lectured on innovations for large-scale rangeland monitoring.

Intro to Geographic Information Science/Systems.

- University of Nebraska–Lincoln (Summer 2019); Concordia University, Nebraska (2011–2017, 2019)
- Undergraduate-level.
- Lectured on remote sensing, spatial analysis, and geospatial cloud-computing.

Synergies in Urban Sustainability

- University of Nebraska–Lincoln (Fall 2017).
- Undergraduate- and graduate-level.
- Lectured on managing for resilience in social–ecological systems.

Environmental Planning and Policy

- University of Nebraska–Lincoln (Fall 2017).
- Undergraduate- and graduate-level.
- Lectured on the roles of policy and management in landcover change research.

Spatial Ecology

- University of Nebraska–Lincoln (Summer 2017).
- Graduate-level.
- Lectured and delivered a laboratory exercise on functional connectivity in R.

Physical Geography and Geology.

- Concordia University, Nebraska (Fall 2012)
- Undergraduate-level.
- Lectured on geography and landuse in the Rainwater Basin landscape of Nebraska.

ADVISING/CO-ADVISING

University of Nebraska–Lincoln

- Postdoctoral Research Associates
 - Mazbahul Ahamad. Department of Agronomy and Horticulture. Summer 2021–Fall 2021.
- M.S. Graduate Research Assistants
 - Mercy Kipenda. School of Natural Resources. Spring 2022–present.
 - Paul Akpejelu. School of Natural Resources. Spring 2021–present.
 - Daniel Bauloye. School of Natural Resources. Fall 2020–present.
- M.S. Graduate Online Students
 - Drew Ratkovec. Department of Agronomy and Horticulture. Spring 2022–present.

STUDENT COMMITTEE SERVICE

University of Nebraska–Lincoln

- Undergraduate
 - Integrated Sciences Major Committee
 - Reagan Salverson. Summer 2021–Spring 2022.
- Graduate
 - Master of Science (M.S.) Committee
 - Christian Nielsen. School of Natural Resources. Spring 2022–present.
 - Jackson Ebbers. Department of Agronomy and Horticulture. Spring 2022–present.
 - Connor Hart. School of Natural Resources. Fall 2021–present.
 - Jacob Wagner. School of Natural Resources. Fall 2021–present.
 - Kleidy Camela. School of Natural Resources. Summer 2021–present.
 - Kate Bird. School of Natural Resources. Spring 2021–present.
 - Travis Millikan. Department of Agronomy and Horticulture. Summer 2021–present.
 - Daniel Morales. School of Natural Resources. Fall 2019–present.
 - Alison Ludwig. Department of Agronomy and Horticulture. Fall 2019–Fall 2021. <https://digitalcommons.unl.edu/agronhortdiss/225/>

- Master of Applied Science (M.A.S.) Committee
 - Seth Peterson. School of Natural Resources. Fall 2020.
- Doctor of Philosophy (Ph.D.) Committee
 - Allison Barg. School of Natural Resources. Fall 2021–present.
 - Catherine Chan. School of Natural Resources. Fall 2021–present.
 - Heydi Calderon Ambelis. Department of Biological Systems Engineering. Fall 2021–present.

DEPARTMENTAL AND CENTER COMMITTEE SERVICE

School of Natural Resources. University of Nebraska–Lincoln.

- Spatial Science Curriculum Group. 2021–present.
- Natural Resources Diversity and Inclusion (NRDI) Committee. 2018–2021.
<http://snr.unl.edu/employeeinfo/people/committee/nrdi.aspx>

Center for Grassland Studies. University of Nebraska–Lincoln.

- Grassland Systems Faculty Committee. 2021–present.
<https://grassland.unl.edu/grassland-systems>
- Position search committees
 - Grazing Lands Ecologist and Center for Grassland Studies Director. Committee member. Fall 2021.

Nebraska Integrated Beef Systems (NIBS) Hub

- NIBS Hub Faculty Committee. 2021–present.
<https://news.unl.edu/newsrooms/today/article/nebraska-integrated-beef-systems-hub-recaps-milestones/>

Department of Agronomy and Horticulture. University of Nebraska–Lincoln.

- Agronomy and Horticulture Seminar Series Committee. 2021–present.
<https://agronomy.unl.edu/agronomy-and-horticulture-seminar-series>
- Position search committees
 - Grazing Lands Ecologist and Center for Grassland Studies Director. Committee member. Fall 2021.
 - Eastern Redcedar Statewide Coordinator. Committee member. Spring 2021.

PROFESSIONAL DEVELOPMENT

University of Nebraska–Lincoln

- Institute of Agriculture and Natural Resources.
 - Supervisor Training. May 27, 2021
- Office of the Executive Vice Chancellor
 - New Faculty Development Program. Fall 2020–Spring 2021
- Center for Transformative Teaching.
 - Designing Your Course: Showcasing the CAS Flexible Course Models. July 27, 2020
 - Building a Better Container: Accessibility, Access, and Universal Design. July 16, 2020.
 - Summer Institute for Online Teaching. April–May 2020.

- Transforming your research into teaching. June–July 2019.