Neil Henderson Carter

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Assistant Professor
School for Environment and Sustainability
University of Michigan
440 Church St
Ann Arbor, MI 48109

RESEARCH INTERESTS

- Spatial ecology, landscape ecology, wildlife management and policy, wildlife ecology and conservation, complexity of coupled human and natural systems, and sustainability science

APPOINTMENTS

University of Michigan, Ann Arbor, MI
Assistant Professor, School for Environment and Sustainability **2019 –**

Boise State University, Boise, ID
Assistant Professor, Human-Environment Systems **2015 – 2019**

PROFESSIONAL PREPARATION

National Socio-Environmental Synthesis Center, Annapolis, MD
Postdoctoral Fellow (advisor: Dr. Simon Levin at Princeton University) **2013 – 2015**
Complexity of improving human well-being and conserving biodiversity

Michigan State Univ., Lansing, MI
Ph.D. from Department of Fisheries and Wildlife (advisor: Dr. Jianguo Liu) **2013**
Dissertation: "Coupled Human and Natural System Approach to Tiger Conservation in Chitwan National Park, Nepal and Beyond"

Univ. of Michigan, Ann Arbor, MI
M.S. in Terrestrial Ecology from School of Natural Resources and Environment (advisor: Dr. Daniel Brown) **2007**
Thesis: "Predicting the Ecological and Social Suitability of Black Bear Habitat in Michigan's Lower Peninsula"

Univ. of California San Diego, San Diego, CA
B.S. in Ecology, Behavior, and Evolution **2003**

Peking Univ., Beijing, China
Undergraduate junior year travel abroad **2002**
Full time student for 13 months studying Chinese language, history, and culture

RESEARCH ACTIVITIES

PEER-REVIEWED JOURNAL ARTICLES, BOOK REVIEWS, AND BOOK CHAPTERS

*indicate publications with current or former graduate students or postdocs in my research group

2019

(34) Jones, K., Abrams, J., Belote T., Beltrán, B.J., Brandt, J., Carter, N.H., Castro, A.J., Chaffin, B.C., Metcalf, A., Roesch-McNally, G, Wallen, K.E., and M.A. Williamson. 2019. The American West as a social-ecological

region: Drivers, dynamics and implications for nested social-ecological systems. *Environmental Research Letters*. In press.

(33) Carter, N.H., Grimm, V., and S. Levin. 2019. Effects of human-induced prey depletion on large carnivores in protected areas: lessons from modelling tiger populations in stylized spatial scenarios. *Ecology and Evolution*. In press.

(32) Carter, N.H., Baeza, A., and N. Magliocca. 2019. Emergent conservation outcomes of shared risk perception in human-wildlife systems. *Conservation Biology.* In press.

(31) Carter, N.H., Bruskotter, J., Vucetich, J., Crabtree, R., Jaicks, H., Karns, G., Nelson, M.P., Smith, D., Linnell, J.D.C. 2019. Toward human-wildlife coexistence through the integration of human and natural systems: the case of grey wolves in the Rocky Mountains, USA. In "Human-Wildlife Interactions: Turning Conflict into Coexistence" edited by Frank, B., Glickman, J., and Marchini, S. for Cambridge University Press.

(30) Easter*, T., Bouley, P., and N.H. Carter. 2019. Spatial prediction of mammal richness outside Mozambique's Gorongosa National Park for landscape corridor planning. *Biological Conservation* 232, 217-227.

(29) Ceausu, S., Graves*, R., Killion*, A., Svenning, J., and N.H. Carter. 2018. Governing trade-offs in ecosystem services and disservices to achieve human-wildlife coexistence. *Conservation Biology*. https://doi.org/10.1111/cobi.13241. (Recommended by Faculty of 1000).

(28) Killion*, A., Lindquist, E., Melvin, T.A., and N.H. Carter. 2018. Tracking a half-century of media reporting on gray wolves. *Conservation Biology*. https://doi.org/10.1111/cobi.13225.

2018

(27) Bouyer, J., Carter, N.H, Batavia, C., and M. Nelson. 2019. The ethics of eradicating harmful species – the case of the tsetse fly. *BioScience*. https://doi.org/10.1093/biosci/biy155 (February cover issue).

(26) Bouley, P., M. Poulos*, R. Branco, and N.H. Carter. 2018. Post-war recovery of the African lion in response to large-scale ecosystem restoration. Biological Conservation 227: 233-242.

(25) Guerrero, A., Bennett, N., Wilson, K., Carter, N.H., Gill, D., Mills, M., Ives, C., Selinske, M., Larrosa, C., Bekessy, S., Januchowski-Hartley, F., Travers, H., Wyborn, C., Nuno, A. 2018. Achieving the promise of integration in social-ecological research: A review and prospectus. *Ecology and Society* 23(3):38

(24) Gaynor, K., Hojnowski, C.E., Carter, N.H., Brashares, J.S. 2018. Human activity creates a more nocturnal natural world. *Science* 360: 1232-1235 (Recommended by Faculty of 1000)

(23) Carter, N.H., Bouley, P., Moore, S., Poulos*, M., Bouyer, J., and S. Pimm. 2018. Climate change, disease range shifts, and the future of Africa lion. *Conservation Biology* DOI: 10.1111/cobi.13102

(22) Easter*, T., Killion*, A., and N.H. Carter. 2018. Climate change, cattle, and the challenge of sustainability in a telecoupled system in Africa. *Ecology and Society* 23(1):10. https://doi.org/10.5751/ES-09872-230110.

(21) Lute, M.L., Carter, N.H., López-Bao, J.V. and Linnell, J.D. 2018. Conservation professionals agree on challenges to coexisting with large carnivores but not on solutions. *Biological Conservation* 218: 223-232

(20) O'Bryan, C., Beyer, H.L., Braczkowski, A.R., Carter, N.H., Watson, J.E.M., and E. McDonald-Madden. 2018. The contribution of predators and scavengers to human health and well-being. *Nature Ecology and Evolution* 2: 229–236.

2017

(19) Bruskotter, J. T., J. A. Vucetich, G. Karns, M. J. Manfredo, C. Wolf, K. Ard, N. H. Carter, J. Lopez-Bao, S. Gehrt, and W. J. Ripple. 2017. Modernization, risk and conservation of the world's largest carnivores. *BioScience* 67: 646-655.

(18) Carter, N.H., J.V. López-Bao, J.T. Bruskotter, M. Gore, G. Chapron, A. Johnson, M. Shrestha, J. Frank, O. Ohrens, and A. Treves. 2017. A conceptual framework for understanding illegal killing of large carnivores. *AMBIO* 46: 251-264. (April cover issue)

(17) Carter, N.H. 2017. Evolution and complexity in biotic systems and human cultures. Review of Book "Complexity" in *BioScience* 67: 92-95.

2016

(16) Carter, N.H. and J.D.C. Linnell. 2016. Mainstreaming Coexistence with Wildlife: Reply to Gallagher. *Trends in Ecology and Evolution*. http://dx.doi.org/10.1016/j.tree.2016.08.007.

(15) Carter, N.H. and T. Allendorf. 2016. Gendered perceptions of tigers in Chitwan National Park, Nepal. *Biological Conservation* 202: 69-77.

(14) Carter, N.H. and J.D.C. Linnell. 2016. Co-adaptation is key to coexistence with large carnivores. *Trends in Ecology and Evolution*. DOI: http://dx.doi.org/10.1016/j.tree.2016.05.006.

(13) Inskip, C., N.H. Carter, S.J. Riley, Z. Fahad, T. Roberts, and D. MacMillan. 2016. Towards human-carnivore coexistence: understanding tolerance for tigers in Bangladesh. PLoS One. DOI: 10.1371/journal.pone.0145913.

(12) Carter, N., An, L., and Liu, J. 2016. Cross-site synthesis of complexity in coupled human and natural systems, in: Liu, J., Hull, V., Yang, W., Viña, A., Ouyang, Z., and Zhang, H. (Eds.), Pandas and People: Coupling Human and Natural Systems for Sustainability. Oxford University Press, Oxford, p. 278.

(11) Liu, J., Hull, V., Yang, W., Viña, A., An, L., Carter, N., Chen, X., Liu, W, Ouyang, Z., and Zhang, H. 2016. Lessons from local studies for global sustainability, in: Liu, J., Hull, V., Yang, W., Viña, A., Ouyang, Z., and Zhang, H. (Eds.), Pandas and People: Coupling Human and Natural Systems for Sustainability. Oxford University Press, Oxford, p. 278.

(10) Liu, J., Hull, V., Carter, N., Viña, A., and Yang, W. 2016. Framing sustainability of coupled human and natural systems, in: Liu, J., Hull, V., Yang, W., Viña, A., Ouyang, Z., and Zhang, H. (Eds.), Pandas and People: Coupling Human and Natural Systems for Sustainability. Oxford University Press, Oxford, p. 278.

2015

(9) Carter, N.H., S. Levin, A. Barlow, and V. Grimm. 2015. Modeling tiger population and territory dynamics using an agent-based approach. *Ecological Modelling* 312: 347-362.

(8) Carter, N.H., M. Jasny, B. Gurung, and J. Liu. 2015. Impacts of people and tigers on leopard spatiotemporal activity patterns in a global biodiversity hotspot. *Global Ecology and Conservation*. http://dx.doi.org/10.1016/j.gecco.2014.11.013

2014

(7) Carter, N.H., A. Viña, V. Hull, W. McConnell, W. Axinn, D. Ghimire, and J. Liu. 2014. Coupled human and natural systems approach to wildlife research and conservation. *Ecology and Society* 19(3):43.

(6) Carter, N.H., S.J. Riley, A. Shortridge, B. Shrestha, and J. Liu. 2014. Spatial assessment of attitudes toward tigers in Nepal. *AMBIO* 43: 125-137. (March cover issue)

2013

(5) Carter, N.H., B. Gurung, A. Viña, H. Campa III, J. Liu, and J. Karki. 2013. Assessing spatiotemporal changes in tiger habitat across different land management regimes. *Ecosphere* 4:art124.

(4) Carter, N.H., B. Shrestha, J. Karki, N. Pradhan, and J. Liu. 2013. Reply to Goswami et al., Karanth et al., and Harihar et al.: Fine-scale interactions between tigers and people. *PNAS.* doi:10.1073/pnas.1217414110.

2012

(3) Carter, N.H., B. Shrestha, J. Karki, N. Pradhan, and J. Liu. 2012. Coexistence between wildlife and humans at fine spatial scales. *PNAS* 109: 15360-15365. (Highlight in Nature 489:181 and recommended by Faculty of 1000).

(2) Carter, N.H., S.J. Riley, J. Liu. 2012. Utility of a psychological framework for carnivore conservation. *Oryx* 46: 525-535.

2010

(1) Carter, N.H., Brown, D.G., Etter, D.R., and L.G. Visser. 2010. American black bear habitat selection in northern Lower Peninsula, Michigan, USA, using discrete-choice modeling. *URSUS* 21: 57-71.

OTHER PUBLICATIONS AND REPORTS

- Carter, N.H, Hengaju, K, and Pradhan, M. 2018. Reducing impacts of linear infrastructure on tiger's habitat in Nepal's Chitwan National Park- a UNESCO site. Final report for IUCN Rapid Response Facility Small Grant Program.
- Carter, N.H. 2012. Small Numbers – Large Impacts: Conserving Tigers in Nepal. Box 13.1, page 178 in Human Dimensions of Wildlife Management. Decker, D. J., Riley, S. J., & Siemer, W. F. (Eds.). Johns Hopkins Univ. Press.

- Carter, N.H. 2012. Coupled human and natural systems approach to tiger conservation in Chitwan National Park, Nepal and beyond. Final report for NASA Earth and Space Science Fellowship Program project No. NNX09AO34H.
- Carter, N.H., J. Liu. 2012. Coupled human and natural systems approach to tiger conservation in Chitwan National Park, Nepal and beyond. Final report for USFWS Rhinoceros and Tiger Conservation Fund project No. F10AP00320.
- Carter, N.H. 2011. Tiger Tales: Evaluating wildlife acceptance capacity in Nepal. MSU Fisheries and Wildlife SPOTLIGHT. Issue 7. Pages 17 – 19.

CONFERENCE PRESENTATIONS AND POSTERS

- Carter, N.H. 2019. Spatially predicting impacts of anthropogenic nightlight and noise on wildlife habitat integrity across the contiguous United States. NASA Biodiversity and Ecological Forecasting Annual Meeting (Washington, DC).
- Carter, N.H., A. Baeza-Castro, and N. Magliocca. 2018. Social contagion of risk perception in human-wildlife interactions. North American Congress for Conservation Biology (Toronto, CA)
- Gaynor, K., C. Hojnowski, N.H. Carter and J. Brashares. 2018. Human activity creates a more nocturnal natural world. North American Congress for Conservation Biology (Toronto, CA).
- Marescot, L., A. Lyet, R. Singh, N.H. Carter and O. Gimenez. 2018. Developing a multispecies dynamic patch-occupancy model to infer poaching in Southeast Asia. International Statistical Ecology Conference (St Andrews, UK).
- Carter, N.H., A. Baeza-Castro, and N. Magliocca. 2017. Mechanistic modeling of social-ecological systems for wildlife conservation. International Congress for Conservation Biology (Cartagena, Colombia).
- Carter, N.H. 2017. Behavioral responses of tigers to humans on shared landscapes: Implications for human-wildlife coexistence. International Association for Landscape Ecology (Baltimore, MD, USA).
- Carter, N.H., M.L. Lute, J.D.C. Linnell, and J.V. López-Bao. 2016. Does the conservation community agree on human-carnivore coexistence in the age of the Anthropocene? North American Congress for Conservation Biology (Madison, Wisconsin).
- Carter, N.H., S. Levin, and V. Grimm. 2016. Modeling the effects of different spatial distributions and magnitudes of human disturbance on tiger population dynamics inside protected areas. International Society for Ecological Modelling Global Conference (Towson, Maryland).
- Carter, N.H. 2015. Realizing coexistence between people and large carnivores in shared landscapes (poster). International Congress for Conservation Biology (Montpellier, France).
- Carter, N.H. 2014. The keys to coexistence: realizing the potential for integrating large carnivores into multi-use landscapes. North American Congress for Conservation Biology (Missoula, MT, USA).
- Carter, N.H., A. Viña, H. Campa III, and J. Karki. 2013. Effects of different land management regimes on wildlife habitat: the case of tigers in Nepal (poster). International Association of Landscape Ecology annual meeting (Austin, TX, USA).
- Carter, N.H., B. Shrestha, J. Karki, N. Pradhan, and J. Liu. 2012. Adaptation of tigers in space and time to high human densities in Nepal: implications for conservation across the tiger's range. The Wildlife Society annual meeting (Portland, OR, USA).
- Carter, N.H., A. Shortridge, S.J. Riley, and B. Shrestha, J. Liu. 2012. Evaluating the spatial distribution of local intolerance to tigers. Pathways to Success: Integrating Human Dimensions into Fisheries and Wildlife Management (Breckenridge, CO, USA).
- Carter, N.H., A. Shortridge, S.J. Riley, and B. Shrestha. 2012. Evaluating the spatial distribution of attitudes, beliefs, and perceptions towards tigers: implications for conservation in human-dominated regions. Association for Nepal and Himalayan Studies (Kalamazoo, MI, USA).
- Carter, N.H., A. Shortridge, S.J. Riley. 2012. Using geospatial models to map local attitudes, beliefs, and perceptions towards a conflict-prone predator. American Association for Geographers (New York, NY, USA).
- Carter, N.H., J. Liu, and H. Campa. 2011. Impacts of community-based natural resource management on large vertebrate habitat with implications on landscape scale conservation in Nepal. International Congress for Conservation Biology (Auckland, New Zealand).

- Carter, N.H. 2011. Acceptance capacity for tigers in Nepal: Implications for conservation of predators in human-dominated landscapes. Association for Nepal and Himalayan Studies (St. Paul, MN, USA).
- Carter, N.H., J. Liu, S.J. Riley, H. Campa, and A. Shortridge.2011. Integrating natural and human dimensions to advance tiger conservation. Ecological Society of America (Austin, TX, USA).
- Carter, N.H., A. Viña, J. Liu, D. Dangol, B. Shrestha. 2011. Impacts of decentralized natural resource management on wildlife habitat around a protected area in Nepal. International Symposium on Society and Resource Management (Madison, WI, USA).
- Carter, N.H., J. Liu, S.J. Riley, H. Campa, and A. Shortridge. 2011. Coupled human and natural systems approach to tiger conservation (poster). American Association for the Advancement of Science Annual Meeting (Washington, DC, USA).
- Carter, N.H., S.J. Riley, and J. Liu. 2010. Local Acceptance Capacity towards Tigers. Midwest Fish and Wildlife Conference (Minneapolis, MN, USA).
- Carter, N.H., A. Viña, J. Liu, D. Dangol, and B. Shrestha. 2010. Evaluating the Impacts of Community Forests on Vegetation at Chitwan National Park, Nepal. Global Land Project Open Science Meeting (Tempe, AZ, USA).
- Carter, N.H., S.J. Riley, and J. Liu. 2010. Evaluating and Modeling Local Acceptance Capacity towards Tigers in Chitwan National Park, Nepal. Pathways to Success: Integrating Human Dimensions into Fisheries and Wildlife Management (Estes Park, CO, USA).
- Carter, N.H. 2010. Coupled Human and Natural System Approach to Tiger Conservation in Chitwan National Park, Nepal and Beyond. Annual meeting on the status of endangered species in Nepal (Kathmandu, Nepal).
- Carter, N.H., Brown, D.G., Etter, D.R., and L.G. Visser. 2009. Predicting Black Bear Habitat Suitability in Michigan's Lower Peninsula. American Association of Geographers (Las Vegas, NV, USA).
- Carter, N.H., Brown, D.G., Etter, D.R., and L.G. Visser. 2008. Predicting the Ecological Suitability of Black Bear Habitat in Michigan's Lower Peninsula. Midwest Fish and Wildlife Conference (Columbus, OH, USA).

ORGANIZED WORKSHOPS, SYMPOSIUMS, AND INVITED PRESENTATIONS

- August 2019: Co-organized 3-day workshop at the University of Alabama titled "Convergent Research Priorities, Data Sources, and Methodologies for Understanding the Socio-Environmental Impacts of Illicit Supply Networks."
- March 2019: Wildlife ecology in a brighter and louder world. Seminar to the School of Environmental and Forest Sciences at the University of Washington.
- March 2019: Interdisciplinary insights on living with tigers and grizzly bears. Presentation for San Diego Zoo Institute for Conservation Research.
- February 2019: Human activity creates a more nocturnal natural world. Presentation for Boise Rotary Club.
- February 2019: Human-Wildlife Coexistence. Presentation for Zoo Boise fund raising event.
- January 2019. Effects of artificial light at night on wildlife habitats: integrating science with decision-support tools. Invited public talk presented at the Consortium for Dark Skies Studies meeting.
- January 2019. A complex adaptive systems approach to understanding coexistence between humans and wildlife. Seminar to the School for Environment and Sustainability at the University of Michigan.
- May 2018: Co-developed and led 3-day workshop that brought together ~35 interdisciplinary scholars from 20 universities to discuss the "Social-Ecological Future of the American West." Products from the workshop are expected to be included in an ongoing Focus Collection in *Environmental Research Letters*.
- 2018. Modeling human-wildlife coexistence. Center for Modeling Complex Interactions, University of Idaho, Moscow, ID.
- 2018. Multi-model approach to understanding human-wildlife systems. Invited as part of symposium on agricultural and land-use policy trade-offs for wildlife connectivity. North American Congress for Conservation Biology (Toronto, Canada).
- 2017. Using multi-agent models to inform anti-poaching decision making. WWF conference on "Science and Law Enforcement". Phnom Penh, Cambodia.
- 2017. Human-Wildlife Coexistence. Zoo Boise Conservation Series (Boise, ID, USA).

- 2015. Approaching carnivore poaching with a global framework. USC Conference on Conservation, Computation, and Criminology (Washington, DC, USA).
- 2014. Understanding human-tiger conflict. World Wildlife Fund human-tiger conflict working group meeting in Chitwan, Nepal.
- Carter, N.H. and M. Lute (co-organizers). 2014. Symposium: "Human-Carnivore Coexistence? Integrating Science, Ethics, and Practice to Address a Major Conservation Challenge" for North American Congress for Conservation Biology (Missoula, MT, USA).
- 2014. Synthesizing social and environmental data and theories to advance tiger conservation. Helmholtz Centre for Environmental Research – UFZ (Leipzig, Germany).
- 2013. Integrating social and ecological sciences for coexistence. Carnivore Coexistence Lab, Nelson Institute for Environmental Studies, Univ. of Wisconsin (Madison, WI, USA).
- 2012. Bridging human and natural sciences to advance tiger conservation in Nepal and beyond. Wildlife Conservation Society headquarters (Bronx, NY, USA).

GRANTS

- USDA Idaho Conservation Innovation Grant (**$73,744**): PI on "Co-developing decision-support tools to minimize risks from predation and improve wildlife habitats in grazinglands." **2018-2020**
- IUCN Rapid Response Facility (**$28,620**): Co-PI on "Reducing impacts of linear infrastructure on tigers in Nepal's Chitwan National Park – a UNESCO site." **2018**
- Wood River Women's Foundation (**$25,000**): Co-PI on "Corridors for Coexistence." **2018 – 2019**
- NASA Ecological Forecasting (**$585,057**): PI on "Using NASA resources to better inform wildlife conservation in the Anthropocene: Spatially predicting impacts of anthropogenic nightlight and noise on wildlife habitat integrity across the contiguous United States." Co-PIs: Clinton Francis (CalPoly), Jesse Barber (BSU), Andrew Molthan (NASA), and David Stoner (USU). **2017 – 2021**
- MILES IWG grant (**$8,395**): Co-PI on "The social-ecological dynamics of ecosystem service provision on private lands in the High Divide." Co-PIs: Vicken Hillis (PI), Bray Beltran, Jodi Brandt, and Morey Burnham. **2017**
- NASA Idaho Space Grant Consortium EPSCOR Research Initiation Grant (**$27,500**): PI on "Using satellite sensors to investigate effects of artificial nightlight on large mammals along the wildland-urban interface of Boise, Idaho." Co-PIs: Jesse Barber (BSU), Nancy Glenn (BSU), and David Stoner (USU). **2016 – 2017**
- TOPFORSK Research Council of Norway (**$3,073,292**): Non-funded research partner on "Developing heuristics for human-wildlife coexistence in the Anthropocene." Co-PIs: researchers from Norwegian Institute for Nature Research. **2016 – 2020**
- UK Department for Environment, Food, and Rural Affairs Darwin Initiative (**$270,000**): Non-funded project advisor on "Living with Tigers in Nepal: poverty reduction for human-wildlife coexistence." **2016 – 2019**
- SESYNC Venture (**$100,000**): PI on "New tools to predict and prevent human-wildlife conflicts." **2014 – 2016**
- The Biodiversity Foundation: Small Grants for Science and Conservation (**$6,942**): Co-PI on "Building the foundations for conservation action: assessing human-tiger conflict research and management needs in the Terai, Nepal." **2014**
- U.S. Fish and Wildlife Service, Rhinoceros and Tiger Conservation Fund Grant (**$42,859**): PI on "Coupled human and natural systems approach to tiger conservation in Chitwan, Nepal, and beyond." **2010 – 2012**

- Michigan Department of Natural Resources and Environment Research Grant (**$10,000**): PI on "American black bear habitat in Northern Lower Peninsula, Michigan. **2007**

AWARDS AND FELLOWSHIPS

- NASA-MSU Professional Enhancement Award ($600). Award provides travel support to the 2013 US-IALE annual meeting and networking opportunities **2013**
- Travel support ($1,600) to International Congress for Conservation Biology from Michigan State Univ. **2011**
- CHANS-Net: International Network of Research on Coupled Human and Natural Systems fellowship. Fellowship included travel support to 2011 AAAS annual meeting ($1,000) and networking opportunities. **2011**
- 2010 Global Land Project (GLP) travel support from GLP (funding through NSF and NASA) **2010**
- NASA Earth and Space Science Graduate Fellowship – 3 year duration ($150,000) **2009 – 2012**
- Michigan State Univ. Pre-dissertation Travel Award ($3,000) **2008**
- Michigan State Univ. Distinguished Fellowship – 2 year duration ($100,000) **2007 – 2008**
- School of Natural Resources and Environment faculty elected Howard M. Wight Memorial Award for the Outstanding Wildlife Graduate Student **2007**
- Joseph G. Schotthoefer Memorial Student Award from Safari Club International ($1,000) **2006**
- Univ. of Michigan Rackham Graduate School Discretionary Fund ($1,500) **2006**

COURSE LEAD

Human-Environment Systems, Boise State University, Boise, ID, USA
Professor – "HES 597/BIOL 597/GEOS 597, Agent-based Modeling of Human-Environment Systems" **Spring semesters**
The overarching objective of this course is to train graduate students to use agent-based models as a means of understand and predict the dynamics of human-environment systems.

Human-Environment Systems, Boise State University, Boise, ID, USA
Professor (co-taught) – "HES 597/BIOL 597/PUBADM 597/GEOS 597, Research Design in Human-Environment Systems Science" **Fall semesters**
The overarching objective of this course is to train graduate students to design HES research and introduce them to the variety of methods employed in HES science. My module focuses on agent-based modeling.

Human-Environment Systems, Boise State University, Boise, ID, USA
Professor – "HES/BIOL/GEOS 497/597, Foundations in Human-Environment Systems Science" **Fall semesters**
This course provides students with a foundational understanding of the theories, methods, and applications of HES science.

Human-Environment Systems, Boise State University, Boise, ID, USA
Professor – "HES 598, Seminar in Human-Environment Systems Science" **Spring or Fall semesters**

GUEST LECTURES

Human-Environment Systems, Boise State University, Boise, ID, USA
Guest Lecturer – "HES 297, Complex Systems and Sustainability" **2018**
Discussed complex systems as applied to wildlife conservation.

Ecology, Evolution, and Behavior Program, Boise State University, Boise, ID, USA
Guest Lecturer – "EEB 601, Principles in EEB" **2017**
Discussed predator-prey systems in anthropogenic landscapes.

Department of Biology, Boise State University, Boise, ID, USA
Guest Lecturer – "BIOL 422, Conservation Biology" **2017**
Discussed conservation biology in the field.

Department of Biology, Boise State University, Boise, ID, USA
Guest Lecturer – "BIOL 497/597, Science and Society" **2016, 2017, 2018**
Discussed human-wildlife coexistence.

National Socio-Environmental Synthesis Center, Annapolis, MD, USA
Co-teacher – "Teaching Socio-Environmental Synthesis with Case Studies" **2014**
Discussed use of quantitative complex models to teach students about socio-environmental systems with a group of advanced graduate students, postdocs, and professors. Developed hands-on exercise and agent-based model along with lecture materials.

Fisheries and Wildlife, Michigan State Univ., East Lansing, USA
Guest Lecturer – "FW 434, Human Dimensions of Fisheries and Wildlife Management" **2011, 2012**
Discussed the application of human dimensions research in Nepal

Institute for Social and Environmental Research, Chitwan, Nepal
Lecturer – "Introduction to Geographic Information Systems" **2010**
Developed and taught 2-day training course to staff from wildlife conservation agencies and local Univ. students in environmental science.

TEACHING ASSISTANTSHIPS

School of Natural Resources, Univ. of Michigan, Ann Arbor, USA
Graduate Student Instructor – "Biology 390, Evolution" **2006**
Organized and led weekly discussions on lecture topics, held office hours, and administered grades.

School of Natural Resources, Univ. of Michigan, Ann Arbor, USA
Graduate Student Instructor – "NRE 531, Principles of Geographic Information Systems" **2006**
Organized and led weekly laboratory sessions, held office hours, and administered grades.

MENTORSHIP

POSTDOCTORAL RESEARCHERS

- Mark Ditmer (University of Michigan) – Started in July 2018. He is conducting large-scale analyses to examine the effects of artificial nightlight and human-made noise on wildlife distributions and behaviors.
- Rose Graves (Boise State) – Started in July 2017. She is playing vital role in the High Divide research project, which includes researchers and conservation practitioners from throughout Idaho and Montana. She is co-advised with Vicken Hillis and Jodi Brandt.
- Michael Poulos (Boise State) – Started in summer 2016. He ran sophisticated analyses on data on lion recovery in Mozambique, disease dynamics in eastern Africa, and wildlife response to artificial nightlight in Boise. He has contributed to three papers based on those analyses.

MAIN GRADUATE ADVISOR

- Alex Killion – Started PhD (EEB) in January 2016. He is interested in evaluating what factors influence the effectiveness of carnivore conservation policies across large landscapes. He is planning to integrate existing and new datasets into simulation models to assess policy effectiveness under different conditions.
- Tara Easter – Started PhD (EEB) in August 2018. She is developing spatial tools to understand and reduce illegal wildlife poaching and trafficking.
- Abigail Sage – Started MS (Biology) in August 2017. She is evaluating the social-ecological suitability of habitat for grizzly bears. She is integrating social survey information with spatial data on habitat suitability.
- Edward Trout – Started MS (Biology) in August 2018. He is examining the effects of sheep herding on wildlife community dynamics, including predators, in order to develop a decision-support tool to mitigate human-wildlife conflict.

COMMITTEE MEMBER

- Maia Chicherio – MS (Sociology at Idaho State University) graduate committee member. Maia is using a life/family history research approach to investigate the social and cultural processes that shape hunter-wolf interactions and relations.
- Hunter Cole – MS (Biology) graduate committee member. Hunter is evaluating the effects of different light spectra on bat roosting patterns and bat-insect dynamics.
- Teague Scott – MS (Biology) graduate committee member. Teague is evaluating the effects of human activities on endangered vulture behavior in Gorongosa National Park, Mozambique.
- Mitch Levenhagen – MS (Biology) graduate committee member. Mitch is conducting a coupled systems project evaluating interactions among the soundscape, human experience of nature, and bird diversity/behavior.
- Ellie Opdahl – MS (Anthropology) graduate committee member. Ellie conducted a coupled systems project evaluating whether physiological stress in humans is reduced in response to outdoor recreation. Completed in 2018.

UNDERGRADUATE MENTORSHIP

- Jessica Mueller – Undergraduate in Chemistry at Boise State University. Mentored Summer 2018.
- Anna Roser – Post-graduate student at Boise State University. Directed independent study in Spring 2018.
- Chinmay Sonawane – Undergraduate at Harvard University. Directed independent study in Summer 2017.
- Julie Ramirez – Undergraduate in Environmental Biology at Boise State University. Mentored Spring 2017-Fall 2018.
- Javier Luna – Undergraduate in Environmental Studies at Boise State University. Mentored Spring/Summer 2017.
- Micah Jasny – Undergraduate at College of William and Mary. Mentored from May – August 2013
- Randall Malcolm – Undergraduate at Michigan State Univ. Mentored from May – Sept. 2010

COMPLETED DEGREES

- 2019 – Abigail Sage, MS in Biology (Boise State), Integrating social dimensions into spatial connectivity planning for grizzly bears
- 2018 - Tara Easter, MS in Biology (Boise State), Quantifying mammalian interactions and distributions to inform conservation planning in Mozambique

SERVICE AND OUTREACH ACTIVITIES

JOURNAL AND BOOK CHAPTER REVIEWS

- Journal of Applied Ecology, Ecological Economics, AMBIO, African Journal of Ecology, Ecological Modelling, Ecography, Conservation Letters, Ecological Applications, Global Ecology and Conservation, Conservation Biology, Diversity and Distributions, Biological Conservation, Biodiversity and Conservation, Human Dimensions of Wildlife, PeerJ, BioScience, Animal Conservation, PLoS One, Regional Environmental Change, Journal of Mammalogy, Conservation and Society, Landscape Ecology, Ecology and Society, Journal of Wildlife Management, Oryx, Ecosphere, Canadian Journal of Zoology, URSUS, Land, Michigan Journal of Sustainability, Serengeti IV: Sustaining biodiversity in a coupled human-natural system (Book)

SERVICE

- Guest Editor for Special Issue on "Methods for integrated assessment of human-wildlife interactions and coexistence in agricultural landscapes" in the journal *Conservation Science and Practice*. **2019**
- Guest Editor for Focus Collection on The Social-Ecological Future of the American West" in the journal *Environmental Research Letters.* **2019**
- Boise State mentor for the NSF Gateway Scholars Program **2018**
- On search committee for one faculty in Human-Environment System Center (College of Innovation and Design). We successfully hired Dr. Kelly Hopping. **2017**
- Elected member of Graduate Studies Committee for Ecology, Evolution, and Behavior PhD program **2017-2021**
- Key participant in NSF-EAGER grant titled "Aligning Stakeholders and Structures to Enable Risk Taking (ASSERT)" led by Will Hughes and Donna Llewellyn (Boise State). **2016-2017**
- On search committee for two faculty in Human-Environment Systems Center (College of Innovation and Design). We successfully hired Dr. Vicken Hillis. **2016**

IMPACTS AND OUTREACH

- 2018. *Science* paper covered in NY Times, Nature, Scientific American, and over 100 other news outlets.
- 2018. Discussed *Science* paper on NPR weekend edition.
- 2018. *Conservation Biology* paper featured in the Royal Geographical Society's Geographical magazine.
- 2018. *Nature Ecology and Evolution* paper discussed in The Conversation
- 2018. Research in *Nature Ecology and Evolution* mentioned in over 30 news outlets.
- 2018. Research in *Biological Conservation* featured in Boise State news update and newswise.
- 2017. Presentation at the Foothills Learning Center about "Predators of the Foothills" with Tara Easter.
- 2017. Human-Environment Systems featured in the Boise Arbiter
- 2016. Human-Environment Systems featured in the Idaho Statesman
- 2016. Research on Gender, Attitudes, and Tigers highlighted in Newswise Boise News Update, Biosphere, and Mongabay
- 2016. Discussed research in interview on Boise State NPR
- 2016. Research on coexistence highlighted in "takepart" blog post
- 2016. Research on tolerance to tigers and coexistence highlighted in Boise News Update
- 2014. Presentation at Café Scientifique (49 West Coffee Shop) on "Integrating science, ethics, and practice to advance carnivore conservation in a human-dominated world".
- 2013. Research on community forestry and tiger habitat highlighted in Yale e360
- 2013. Presentation at Annapolis High School on "Tigers and Biodiversity Conservation"
- 2013. SESYNC Blog: Protecting Predators, Protecting People
- 2013. Research highlighted in Conservation Magazine
- 2012. Discussed research in interviews with Science Update and Voice of America
- 2012. Research highlighted in BBC, New York Times, Discovery Channel, AAAS, Scientific American, NSF, Nature and Science magazines, Conservation Magazine, and as comic called Night Growl.
- 2011. Spartan Saga. "Understanding the human-nature dance".
- 2011. MSUToday show (No 26). "Living with Tigers".

RELEVANT TRAINING, EMPLOYMENT, AND ACTIVITIES

TRAINING AND CERTIFICATIONS

- 2011 – 2012. Awarded one of 20 competitive positions in Emerging Wildlife Conservation Leaders (EWCL) training and mentoring initiative.

  EWCL provides intense training in conservation campaign development. My EWCL team and I developed a lion conservation and awareness campaign in Northern Kenya called LION WATCH.
- 2008. Chemical immobilization of wildlife from Safe Capture International, Cleveland, OH
- 2008. Chemical immobilization of big cats from Henry Doorly Zoo, Omaha, NE
- 2005. Received GIS certification from San Diego Mesa Community College, San Diego, CA

RELEVANT EMPLOYMENT

World Bank, Sustainable Development Department, Washington, DC
Consultant **2014**
I assisted in a research project examining the bioeconomic potential of the Ruaha-Rungwa region in Tanzania. My research entailed the development and coupling of models pertaining to African lion-prey dynamics and household economics and land-use decisions.

Environmental Spatial Analysis Lab, Univ. of Michigan, Ann Arbor, MI
Geographic Information Systems Research Assistant **2005**
I assisted in a project, financed by NASA, which analyzed the feedback between human settlement and land-cover/land-use change around the Poyang Lake region in China. I also worked on a project that examined the relationship between obesity and landscape characteristics at 5 major cities.

City of San Diego Information Technology Department, San Diego, CA
Geographic Information Systems Intern **2004 - 2005**
My duties included developing and maintaining geographic databases, testing software, map production for various departments using ESRI's ArcGIS desktop software, coordinating application development with City Departments, and business meeting support.

Center for Biological Diversity, San Diego, CA
Researcher **2004**
I assisted project staff in research of conservation status of endangered species, project compliance with conservation laws and other duties. I helped write and publish two petitions to put local butterflies on the Endangered Species List.

RELATED ACTIVITIES

- 2007. Volunteered with Montana Cooperative Wildlife Research Unit to track and record the presence of wolves and wolf rendezvous sites in Idaho.
- 2006. Volunteered with United States National Park Service in the Upper Peninsula, Michigan, capturing black bears to obtain bear population information in the region.

PROFESSIONAL AFFILIATIONS AND MEMBERSHIPS (PAST AND PRESENT)

- International Association for Landscape Ecology, American Association for the Advancement of Science, Society for Conservation Biology, Association of American Geographers, Ecological Society of America, The Wildlife Society, International Association for Society and Natural Resources ,and Coupled Human and Natural Systems Network (CHANS-Net.org)