

PROFESSIONAL ADDRESS

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EDUCATION

Ph.D. December 1996. Wildlife Ecology, Department of Wildlife Ecology, University of Maine, Orono (with William B. Krohn)
Thesis title: *An Assessment of Terrestrial Vertebrate Diversity in Maine*

M.S. December 1991. Wildlife Management, Department of Wildlife Ecology, University of Maine, Orono (with Raymond J. O'Connor)
Thesis title: *Construction of A Database Used in Analyses of Bird Populations and Agriculture, with a Study of Density Dependence*

B.S. May 1986. Wildlife Science, Department of Fisheries and Wildlife, Oregon State University, Corvallis. Minor: Computer science

PROFESSIONAL EMPLOYMENT

Research Scientist – September 2000 – Present
Natural Resource Ecology Laboratory, Colorado State University

Professor – July 2014 – Present
Department of Ecosystem Science and Sustainability, Colorado State University

Associate Professor – July 2014 – June 2014
Department of Ecosystem Science and Sustainability, Colorado State University

Associate Professor – August 2010 – June 2011
Department of Forestry, Rangeland, and Watershed Stewardship,
Colorado State University

And affiliations:

Faculty member of the Graduate Degree Program in Ecology
Colorado State University (March 2007 – Present)

Affiliate Associate Professor of Anthropology
Colorado State University (February 2012 – Present)

Scholar, School of Global Environmental Sustainability
Colorado State University (December 2008 – Present)

Research Associate – July 1998 – August 2000
Employer: Natural Resource Ecology Laboratory, Colorado State University

OTHER PROFESSIONAL EXPERIENCE

Select manuscripts and proposals reviewed

Ecological Applications	Global Ecology and Biogeography
Journal of Avian Biology	Journal of Biogeography
Journal of Mammalogy	Journal of Field Ornithology
Northeastern Naturalist (Guest Editor)	Landscape Ecology
Journal of Arid Environments	Ecological Modelling
Rangeland Ecology & Management	Oikos
Ecology	Ecological Applications
US National Science Foundation	US Environmental Protection Agency

Consulting experience

Compensated reviewer of proposals for the U.S. Environmental Protection Agency's High Performance Computing and Communications research program and their STAR research program. Also for the Texas Higher Education Coordinating Board Advanced Research Program

Paid consultant designing World-Wide Web pages

Paid consultant conducting ecosystem modeling of East African conservation areas.

Paid consultant creating a global rangeland model, G-Range

Computing experience

More than twenty years experience with GIS technologies, including “Introductory” and “Advanced” training in Arc/Info supplied by ESRI, Inc.

Experience programming in AML, advanced expertise in GRID, and familiarity with ArcView and ArcGIS.

Experience with remote sensing, especially NDVI and Landsat imagery.

Programmed in: Visual Basic, FORTRAN, Java, C, Pascal.

Many software packages used, including various versions of Excel, Word, SYSTAT, Access, R, PowerPoint, Paint Shop Pro, NetLogo.

Experience in HTML, web, and graphic design, and expertise in image manipulation.

AWARDS

ESA Sustainable Science Award (for Reid et al. 2009), Ecological Society of America Art and Science Exhibition 2009, Colorado State University, Honorable Mention of work Best Invited Paper (for Boone and Hobbs 2004), Grassland Society of Southern Africa Natural Resource Ecology Laboratory Outstanding Post Doctoral Fellow, 1999 Department of Wildlife Ecology Outstanding Graduate Student Award, 1996

PROFESSIONAL AFFILIATIONS

The Wildlife Society
IUCN Species Survival Commission Equid Specialist Group

PROFESSIONAL HONOR SOCIETY

Alpha Zeta Honor Fraternity

TRAINING, MENTORING, AND TEACHING

I conducted two workshops during April of 2000 training personnel in integrated assessment tools, including SAVANNA, involving 26 participants. I joined graduate students in presenting modeling results to Maasai pastoralists in Kajiado District, Kenya. I co-instructed EY592 in Spring 2003 at CSU, with N. Hanan and others, discussing biocomplexity. I co-taught, with D. Swift and others, NR 581A2, discussing ecology and society in semi-arid Africa. I have taught NR 505, Concepts in GIS. I have co-taught a university laboratory course as a graduate student, and have guest lectured in many courses. Current and recent courses include:

ESS 211, *Fundamentals of Ecosystem Science* (with D. Ojima)

NR 322, *Introduction to GIS*

NR 505, *Concepts in GIS* (for M. Laituri)

NR 544B/D, *Conservation Methods: GIS*

NR 554 / ANTH 554, *Ecological and Social Agent-based Modeling*

I currently serve on seventeen graduate student committees, include two for which I serve as advisor or co-advisor. This semester I mentored five undergraduate students in their research.

EXTRAMURAL FUNDING

“Predict condor range expansion to reduce development threats”, US National Park Service. 2016-2019. PI, with student Adrianna Punzalan, \$95,763.

“CNH-S: Andes Bofedales and Cattle: The Impacts of Changing Hydrology and Glacial Retreat on Community Livelihoods in Peru's Cordillera Blanca”, National Science Foundation, 2016-2021. Co-PI (G. Bowser, PI), \$499,992.

“DD: Comp Hydro: integrating data, computation, and visualization for model-based water literacy”, National Science Foundation. 2015-2018. Scientific Investigator (J. Moore, PI), \$2,199,999.

“Modeling carrying capacity of free-roaming horses”, US Geological Survey. 2015-2017. Co-PI (S. King, PI), \$581,256.

“IRES: Student-led social-ecological research in the Kenyan drylands”, National Science Foundation. 2015-2018. Co-PI (S. Lynn, PI) \$249,994.

“Agent-based modeling of Subsistence Tradeoffs” Service for National Science Foundation project, University of Alaska, Fairbanks, G.P. Kofinas, PI. 2013-2014. PI on service agreement. \$32,278.

“CNH: Assessing vulnerability of provisioning services in the southern highlands of Ethiopia”, National Science Foundation. 2013-2015. Co-PI (P. Evangelista, PI) \$250,000.

“Modeling avian responses to climate change using evolving occurrence models” National Science Foundation. 2013-2015. PI. \$142,452.

“Quantifying lost livelihoods by defining risk thresholds of productive assests among urban-proximate pastoral communities in southern Kenya” Center for Sustainable Dryland Ecosystems and Societies, University of Nairobi. 2013-2014. Co-PI (L. MacOpiyo, PI) \$8,000.

“Centre for Sustainable Drylands: a university collaboration for transforming higher education in Africa at the University of Nairobi” US Higher Education Initiative, USAID. 2011-2013. Co-PI (R. Reid, PI). \$1,100,100.

- “Cougar prey distribution: probability of occurrence data surfaces for ungulates and meso-carnivores in the Front Range of Colorado” Colorado Parks and Wildlife. 2012-2013. PI, with student Kevin Blecha. \$42,007.
- “Black Ridge desert bighorn sheep habitat project” USDI Bureau of Land Management. 2011-2016. PI, with student Ben Wilson. \$90,000.
- “Hydrology, ecology, and pastoralism in the Sahel: ephemeral and perennial water sources in a dynamic coupled system” National Science Foundation. 2010-2014. PI. \$411,011 (Subaward from South Dakota State University, Brookings, SD, N. Hanan, PI. \$1,300,000)
- “Scaling from local to global: teacher professional development to provide a framework for classroom instruction on climate change and associated environmental consequences for the region” National Aeronautics and Space Administration. Co-PI (J. Moore, PI). \$399,365.
- “Wildebeest forage acquisition in fragmented landscapes under variable climates” National Science Foundation. 2009-2012. PI. \$658,524
- “Bayesian hierarchical modeling of disease dynamics – a case example using chronic wasting disease” National Science Foundation. 2009-2014. Co-PI (N.T. Hobs, PI). \$2,499,935.
- “Developing resource management and monitoring protocols for areas of extensive energy extraction” Bureau of Land Management. 2009-2011. Co-PI (D.M. Swift, PI). \$108,603.
- “Adaptation of dryland peoples and ecosystems to global change: a collaborative proposal to link African and US universities.” Higher Education for Development. 2009. Co-PI (R.S. Reid, PI). \$50,000.
- “Land use on privatized pastoral land in Kenya: the impact of household strategies on livelihoods and the environment” National Science Foundation. 2009-2011. PI. \$115,016 (Subaward from Washington University, St. Louis, MO, C. Lesorogol, PI, \$226,575)
- “Development of a long-term research, education and outreach program in coupled human-natural systems in Africa” Warner Mini-Grant, Warner College of Natural Resources, Colorado State University. Co-PI (R.S. Reid, PI). \$9930.
- “People in Places” Western Association of Fish and Wildlife Agencies. Co-PI (M.J. Manfredo, PI). \$157,322
- “Habitat Assessment Modeling through the Habitat Partnership Program” Colorado Division of Wildlife. 2006-2009. PI. \$250,000.
- “Extreme weather events, state interventions, and pastoral livelihoods: social and ecological impacts of spring snowstorms on the Tibetan Plateau” National Science Foundation. 2006-2009. Co-PI (J.A. Klein, PI). \$618,999.
- “DRU: Decision-making in rangeland systems: an integrated ecosystem-agent-based modeling approach to resilience and change (DREAMAR)” National Science Foundation. 2005-2009. Co-PI (K.A. Galvin, PI). \$630,000.
- “Optimizing aspects of land use intensification in southern Kajiado District, Kenya” International Livestock Research Institute, Nairobi, Kenya. 2005-2006. PI (Subaward from International Livestock Research Institute, R.S. Reid, PI). \$14,250.
- “Diversified market development strategies for sheep, goats and fiber.” Global Livestock Collaborate Research Support Program. 2004-2005. Co-PI (K.A. Gavin, PI, Subaward from University of Wyoming, R.H. Stobart, PI). \$71,256.

“Biocomplexity, spatial scale and fragmentation: Implications for arid and semi-arid ecosystems (SCALE).” National Science Foundation. 2002-2006. Co-PI (N.T. Hobbs, PI). \$1,900,002.

“Effects of forest fragmentation on community structure and metapopulation dynamics of amphibians.” US Environmental Protection Agency. 2000-2003. PI. \$38,497 (Subaward from Natural Resource Research Institute, Duluth, MN, L. Johnson, PI, \$769,623).

PUBLICATIONS

Refereed Publications

59. Lesorogol, C.K. and R.B. **Boone**. In press. Which way forward? Using simulation models and ethnography to understand changing livelihoods among Kenyan pastoralists in a "new commons". *International Journal of the Commons*
58. Stabach, J.A., G. Wittemyer, **R.B. Boone**, R.S. Reid, and J.S. Worden. 2016. Variation in habitat selection by white-bearded wildebeest across different degrees of human disturbance. *Ecosphere* 7(8):e01428. 10.1002/ecs2.1428.
57. Milne, E., E. Aynekulu, A. Bationo, N.H. Batjes, **R. Boone**, R. Conant, J. Davies, N. Hanan, D. Hoag, J.E. Herrick, W. Knausenberger, C. Neely, J. Njoka, M. Ngugi, B. Parton, K. Paustian, R. Reid, M. Said, K. Shepard, D. Swift, P. Thornton, S. Williams. 2016. Grazing lands in sub-Saharan Africa and their potential role in climate change mitigation: what we do and don't know. *Environmental Development* 19:70-74.
56. Stabach, J.A., **R.B. Boone**, J.S. Worden, and G. Florant. 2015. Habitat disturbance effects on the physiological stress response in resident Kenyan white-bearded wildebeest (*Connochaetes taurinus*). *Biological Conservation* 182:177-186.
55. Galvin, K.A., T.A. Beeton, **R.B. Boone**, and S.B. BurnSilver. 2015. Nutritional status of Maasai pastoralists under change. *Human Ecology* 43:411-424.
54. de Pinho, J.R., C. Grilo, **R.B. Boone**, K.A. Galvin, and J.G. Snodgrass. 2014. Influence of aesthetic appreciation of wildlife species on attitudes towards their conservation in Kenya agropastoralist communities. *PLOS One* DOI: 10.1371/journal.pone.0088842
53. Klein, J.A., K.A. Hopping, E.T. Yeh, Y. Nyima, **R.B. Boone**, and K.A. Galvin. 2014. Unexpected climate impacts on the Tibetan Plateau: local and scientific knowledge in findings of delayed summer. *Global Environmental Change* 28:141-152.
52. Moore, J.C., **R.B. Boone**, A. Koyama, and K. Holfelder. 2014. Enzymatic and detrital influences on the structure, function, and dynamics of spatially-explicit model ecosystems. *Biochemistry* DOI:10.1007/s10533-013-9932-3.
51. Havas, K.A., **R.B. Boone**, A.E. Hill, and M. Salman. 2013. A brucellosis disease control strategy for the Kekheti region of the country of Georgia: an agent-based model. *Zoonoses and Public Health*, doi:10.1111/zph.12066
50. Hoag, D.L.K., **R.B. Boone**, and C.M.H. Keske. 2011. The cost for agriculture to coexist with wildlife in Colorado. *Human Dimensions of Wildlife* 16:318-329.
49. **Boone, R.B.**, K.A. Galvin, S.B. BurnSilver, P.K. Thornton, D.S. Ojima, and J.R. Jawson. 2011. Using coupled simulation models to link pastoral decision making and ecosystem services. *Ecology and Society* 16(2):6 [online] URL: <http://www.ecologyandsociety.org/vol16/iss2/art6/>

48. **Boone, R.B.** 2010. Simulating species richness using agents with evolving niches, with an example of Galapagos plants. *International Journal of Ecology* 2010:id150606, doi:10.1155/2010/150606
47. Derry, J.F. and **R.B. Boone.** 2010. Grazing systems are a result of equilibrium and non-equilibrium dynamics. *Journal of Arid Environments* 74:307-309.
46. Reid, R., D. Nkedianye, M. Said, D. Kaelo, M. Neselle, O. Makui, L. Onetu, S. Kiruswa, N. Ole Kamuaro, P. Kristjanson, S. BurnSilver, M. Goldman, **R. Boone**, N. Dickson, and W. Clark. 2009. Evolving models to support communities and policy makers with science: balancing pastoralism and wildlife conservation in East Africa. *Proceedings of the National Academy of Science* doi:10.1073/pnas.0900313106
45. Wang, G., N.T. Hobbs, S. Twombly, **R.B. Boone**, A.W. Illius, I.J. Gordon, and J.E. Gross. 2008. Density dependence in northern ungulates: interactions with predation and resources. *Population Ecology* 51:123-132.
44. Hobbs, N.T., K.A. Galvin, C.J. Stokes, J.M. Lockett, A.J. Ash, **R.B. Boone**, R.S. Reid, and P.K. Thornton. 2008. Fragmentation of rangelands: implications for humans, animals, and landscapes. *Global Environmental Change* 18:776-785.
43. Bulte, E.H., **R.B. Boone**, R. Stringer, and P.K. Thornton. 2008. Elephants or onions? Paying for nature in Amboseli, Kenya. *Environmental and Development Economics* 13:395-414.
42. Thayn, J.B., K.P. Price, and **R.B. Boone.** 2008. Satellite-based metrics of rangeland complexity and cattle stocking rates in Kansas. *Transactions of the Kansas Academy of Science* 111:292-300.
41. **Boone, R.B.** 2007. Effects of fragmentation on cattle in African savannas under variable precipitation. *Landscape Ecology* 22:1355-1369.
40. Thornton, P.K., **R.B. Boone**, K.A. Galvin, S.B. BurnSilver, M.M. Waithaka, J. Kuyiah, S. Karanja, E. Gonzalez-Estrada, and M. Herrero. 2007. Coping strategies in livestock-dependent households in East and southern Africa: a synthesis of four case studies. *Human Ecology* 35:461-476.
39. **Boone, R.B.** and G. Wang. 2007. Cattle dynamics in African grazing systems under variable climate. *Journal of Arid Environments* 70:495-513.
38. **Boone, R.B.**, J.M. Lockett, K.A. Galvin, D.S. Ojima, and C.J. Tucker III. 2007. Links and broken chains: evidence of human-caused changes in land cover in remotely sensed images. *Environmental Science & Policy* 10:135-149.
37. **Boone, R.B.**, K.A. Galvin, P.K. Thornton, D.M. Swift, and M.B. Coughenour. 2006. Cultivation and conservation in Ngorongoro Conservation Area, Tanzania. *Human Ecology* 34:809-828.
36. **Boone, R.B.**, C.M. Johnson, and L.B. Johnson. 2006. Simulating wood frog movement in central Minnesota, USA using a diffusion model. *Ecological Modelling* 198:255-262.
35. **Boone, R.B.**, S.J. Thirgood, and J.G.C. Hopcraft. 2006. Serengeti wildebeest migratory patterns modeled from rainfall and new vegetation growth. *Ecology* 87:1987-1994.
34. **Boone, R.B.**, C.M. Johnson, and L.B. Johnson. 2006. Simulating vernal pool hydrology in central Minnesota. *Wetlands* 26:581-592.
33. Galvin, K.A., P.K. Thornton, J.R. de Pinho, J. Sunderland, and **R.B. Boone.** 2006. Integrated modeling and its potential for resolving conflicts between conservation and people in the rangelands of East Africa. *Human Ecology* 34:155-183.

32. Wang, G., N.T. Hobbs, **R.B. Boone**, A.W. Illius, I.J. Gordon, J.E. Gross, and K.L. Hamlin. 2006. Spatial and temporal variability modify density dependence in populations of large herbivores. *Ecology* 87:95-102.
31. Thornton, P.K., S.B. BurnSilver, **R.B. Boone**, and K.A. Galvin. 2006. Modelling the impacts of group ranch subdivision on agro-pastoral households in Kajiado, Kenya. *Agricultural Systems* 87:331-356.
30. **Boone, R.B.**, S.B. BurnSilver, P.K. Thornton, J.S. Worden, and K.A. Galvin. 2005. Quantifying declines in livestock due to subdivision. *Rangeland Ecology & Management* 58:523-532.
29. **Boone, R.B.** 2005. Quantifying changes in vegetation in shrinking grazing areas. *Conservation & Society* 3:150-173.
28. Metzger, K.L., M.B. Coughenour, R.M. Reich, and **R.B. Boone**. 2005. Effects of seasonal grazing on plant species diversity and vegetation structure in a semi-arid ecosystem. *Journal of Arid Environments* 61:147-160.
27. **Boone, R.B.** and N.T. Hobbs. 2004. Lines around fragments: Effects of fencing on large herbivores. *African Journal of Range and Forage Sciences* 21:147-158.
26. Galvin, K.A., P.K. Thornton, **R.B. Boone**, and J. Sunderland. 2004. Climate variability and impacts on East African livestock herders. *African Journal of Range and Forage Sciences* 21:183-189.
25. **Boone, R.B.**, K.A. Galvin, M.B. Coughenour, J.W. Hudson, P.J. Weisberg, C.H. Vogel, and J.E. Ellis. 2004. Ecosystem modeling adds value to a South African climate forecast. *Climatic Change* 64:317-340.
24. Thornton, P.K., R.H. Fawcett, K.A. Galvin, **R.B. Boone**, J.W. Hudson, and C.H. Vogel. 2004. Evaluating management options that use climate forecasts: modelling livestock production systems in the semi-arid zone of South Africa. *Climate Research* 26:33-42.
23. Thornton P.K., K.A. Galvin, and **R.B. Boone**. 2003. An agro-pastoral household model for the rangelands of East Africa. *Agricultural Systems* 76:601-622.
22. **Boone, R.B.**, M.B. Coughenour, K.A. Galvin, and J.E. Ellis. 2002. Addressing management questions for Ngorongoro Conservation Area using the Savanna Modeling System. *African Journal of Ecology* 40:138-150.
21. Galvin, K.A., **R.B. Boone**, N.M. Smith, and S.J. Lynn. 2001. Impacts of climate variability on East African pastoralists: linking social science and remote sensing. *Climate Research* 19:161-172.
20. **Boone, R.B.** and W.B. Krohn. 2000. Relationship between avian range limits and plant transition zones in Maine. *J. Biogeography* 27:471-482.
19. **Boone, R.B.** and W.B. Krohn. 2000. Partitioning sources of variation in vertebrate species richness. *J. Biogeography* 27:457-470.
18. **Boone, R.B.**, K.A. Galvin, N.M. Smith, and S.J. Lynn. 2000. Generalizing El Niño effects upon Maasai livestock using hierarchical clusters of vegetation patterns. *Photogrammetric Engineering and Remote Sensing* 66:737-744.
17. **Boone, R.B.** and W.B. Krohn. 2000. Predicting broad-scale occurrences of vertebrates in patchy landscapes. *Landscape Ecology* 15:63-74.
16. **Boone, R.B.**, A. Hoffman, L. Daley, and B. Arbogast. 2000. How Taxol was found in hazelnut trees. *Australian Nutgrower* 14:36.

15. Krohn, W.B., **R.B. Boone**, and S.L. Painton. 1999. Quantitative delineation and characterization of hierarchical biophysical regions of Maine. *Northeastern Naturalist* 6:125-150.
14. **Boone, R.B.** and W.B. Krohn. 1999. Modeling the occurrence of bird species: are the errors predictable? *Ecological Applications* 9:835-848.
13. O'Connor, R.J., M.T. Jones, **R.B. Boone**, and T.B. Lauber. 1999. Linking continental climate, land use and land patterns with grassland bird distribution across the coterminous United States. *In Ecology and conservation of grassland birds in the western hemisphere*, P. Vickery and J. Herkert (editors). *Studies in Avian Biology* 19:45-59.
12. Hoffman, A., W. Khan, J. Worapong, G. Strobel, D. Griffin, B. Arbogast, D. Barofsky, **R.B. Boone**, L. Ning, P. Zheng, and L. Daley. 1998. Bioprospecting for taxol in angiosperm plant extracts. *Spectroscopy* 13:22-32.
11. **Boone, R.B.** 1997. Modeling the climate of Maine for use in broad-scale ecological analyses. *Northeastern Naturalist*. 44:213-230.
10. **Boone, R.B.** and M.L. Hunter, Jr. 1996. Using diffusion models to simulate the effects of land use on grizzly bear dispersal in the Rocky Mountains. *Landscape Ecology* 11:51-64.
9. Krohn, W.B., K.D. Elowe, and **R.B. Boone**. 1995. Relations among fishers, snow, and martens: development and evaluation of two hypotheses. *The Forestry Chronicle* 71:97-105.
8. Marzluff, J.M., **R.B. Boone**, and G.W. Cox. 1994. Historical changes in populations and perceptions of native pest bird species in the West. *Studies in Avian Ecology* 15:202-220.
7. Dixon, A.R., **R.B. Boone**, A. Gardea, L.S. Daley, and T.L. Righetti. 1990. Analysis of electrophoresis isozyme patterns using a microcomputer-based imaging system. *HortScience* 25:961-964.
6. **Boone, R.B.** and R.S. Mesecar, III. 1989. Telemetric egg for use in egg turning studies. *J. Field Ornithology* 60:315-322.
5. Eskelsen, S.R., G.D. Crabtree, **R.B. Boone**, and L.S. Daley. 1989. Determining herbicide damage to light harvesting apparatus of radishes (*Raphanus sativus*). *Proc. Western Soc. Weed Sci.* 42:44-51.
4. Sanchez, E.E., R.A. Menendez, L.S. Daley, **R.B. Boone**, O.L. Jahn, and P.B. Lombard. 1988. Characteristics of quince (*Cydonia*) cultivars using polyacrylamide gel electrophoresis. *J. Environ. Hort.* 6:53-59.
3. Daley, L.S., J.R. Powell, G.A. Strobel, **R.B. Boone**, J. Postman, M. Willie, and J.H. Brown. 1988. Spectroscopic methods of detection of differences in photosynthetic apparatus and function in plants. *Plant Physiol. Biochem.* 26:683-694.
2. Jeong, B.-R., L.S. Daley, D.C. Smith, **R.B. Boone**, and E.J. Zais. 1988. Genetic modeling of visible spectroscopy of intact leaves of red-leafed hazel (*Corylus*). *Spectroscopy* 3:26-31.
1. Daley, L.S., J.M. Montano, R.A. Menendez, A.H. Soeldner, and **R.B. Boone**. 1987. Spectroscopic evaluation of freeze damage in pear trees using fourth-derivative visible spectroscopy of bark sections. *Spectroscopy* 2:32-36.

Books

1. Dong, S., K.-A. S. Kassam, J.F. Tourrand, and **R.B. Boone** (eds.). 2016. Building resilience of human-natural systems of pastoralism in the developing world. Springer, Switzerland.

Book Chapters

18. **Boone, R.B.** and C.K. Lesorogol. 2016. Modelling coupled human-natural systems of pastoralism in East Africa. Pastoralism in the developing world: an exploration of interdisciplinary strategies for sustainable pastoralism (Dong, S., K.-A. S. Kassam, J.F. Tourrand, and **R.B. Boone**, eds.) Springer, Switzerland, pp. 251-280.
17. **Boone, R.B.** and K.A. Galvin. 2014. Simulation as an approach to social-ecological integration, with an emphasis on agent-based modeling. In: Understanding society and natural resources: forging new strands of integration across the social sciences. Manfredo, M., et al. (eds.). Springer, pp. 179-202.
16. Galvin, K.A., **R.B. Boone**, T. McCabe, A.L. Magennis, and T. Beeton. 2015. Transitions in the Ngorongoro Conservation Area: the story of cultivation, human well-being and conservation. In: Sustaining biodiversity in a coupled human-natural system. Sinclair, A.R.E., Mduma, S.A.R., and Packer, C. (eds.). Chicago University Press.
15. Bucini, G., N.P. Hanan, **R.B. Boone**, I.P.J. Smit, S. Saatchi, M.A. Lefsky, and G.P. Asner. 2010. Woody fractional cover in Kruger National Park, South Africa: remote-sensing-based maps and ecological insights. *In* Ecosystems Function in Savannas: Measurement and Modeling at Landscape to Global Scales (M.J. Hill and N.P. Hanan, eds.) CRC Press, Taylor & Francis Group, Boca Raton, Florida.
14. Galvin, K.A., **R.B. Boone**, S.B. BurnSilver, and P.K. Thornton. 2008. Humans and wildlife as ecosystem components in integrated assessments. *In* Wildlife and Society in the Twenty-first century (M.J. Manfredo, J.J. Vaske, P.J. Brown, and D.J. Decker) Island Press, Washington, D.C. Pages 129-142.
13. **Boone, R.B.**, S.B. BurnSilver, and R.L. Kruska. 2008. Comparing landscape and infrastructural heterogeneity within and between ecosystems. *In* Fragmentation of semi-arid and arid landscapes: consequences for human and natural systems (K. A. Galvin, R. Reid, R. H. Behnke, and N. T. Hobbs, eds.) Springer Publishing, Dordrecht, The Netherlands. Pages 341-367.
12. Galvin, K.A., **R.B. Boone**, P.K. Thornton, and L.M. Knapp. 2008. Northwest Province, South Africa: Communal and commercial livestock systems in transition. *In* Fragmentation of semi-arid and arid landscapes: consequences for human and natural systems (K. A. Galvin, R. Reid, R. H. Behnke, and N. T. Hobbs, eds.) Springer Publishing, Dordrecht, The Netherlands. Pages 281-304.
11. Galvin, K.A., P.K. Thornton, **R. B. Boone**, and L.M. Knapp. 2008. Ngorongoro Conservation Area, Tanzania: fragmentation of a unique region of the Greater Serengeti Ecosystem. *In* Fragmentation of semi-arid and arid landscapes: consequences for human and natural systems (K. A. Galvin, R. Reid, R. H. Behnke, and N. T. Hobbs, eds.) Springer Publishing, Dordrecht, The Netherlands. Pages 255-279.
10. BurnSilver, S.B., J.S. Worden, and **R.B. Boone**. 2008. Processes of fragmentation in the Amboseli Ecosystem. *In* Fragmentation of semi-arid and arid landscapes: consequences

- for human and natural systems (K. A. Galvin, R. Reid, R. H. Behnke, and N. T. Hobbs, eds.) Springer Publishing, Dordrecht, The Netherlands. Pages 225-253.
9. **Boone, R.B.**, S.B. BurnSilver, J.S. Worden, K.A. Galvin, and N.T. Hobbs. 2008. Large-scale movements of large herbivores: livestock following seasonal changes in forage supply. *In* Resource Ecology: Spatial and Temporal Dynamics of Foraging (H.H.T. Prins and F. van Langevelde, eds.) Springer-Kluwer Publishing. Pages 187-206.
 8. BurnSilver, S., **R.B. Boone**, and K.A. Galvin. 2003. Linking pastoralists to a heterogeneous landscape: The case of four Maasai group ranches in Kajiado District, Kenya. *In* Linking household and remotely sensed data: Methodological and practical problems (Fox, J., V. Mishra, R. Rindfuss, and S. Walsh, eds.) Kluwer Academic Publishing, Boston. Pages 173-199.
 7. Galvin, K.A., J. Ellis, **R.B. Boone**, A. Magennis, N.M. Smith, S.J. Lynn, and P. Thornton. 2002. Compatibility of pastoralism and conservation? A test case using integrated assessment in the Ngorongoro Conservation Area, Tanzania. *In* Displacement, Forced Settlement and Conservation. (D. Chatty and M. Colester, eds.) Berghahn, Oxford, London, UK. Pages 36-60.
 6. **Boone, R.B.** and W.B. Krohn. 2002. An introduction to 'Modeling tools and accuracy assessment.' *In* Predicting species occurrences: issues of accuracy and scale. (J.M. Scott et al., eds.) Island Press, Washington, DC, USA. Pages 265-270.
 5. Coughenour, M., **R. Boone**, P. Thornton, and R. Howe. 2002. Integrated modeling and assessment of changing pastoral ecosystems – experience in East Africa, and potential for application in Mongolia. *In* Fundamental issues affecting sustainability on the Mongolian steppe (T. Chuluun and D. Ojima, eds.). International Institute for Study of Nomadic Civilization, Ulaanbaatar, Mongolia. Pages 313-326.
 4. Ellis, J., K. Price, **R. Boone**, F. Yu, C. Togtohyn. M. Yu. 2002. Integrated assessment of climate change effects on steppe vegetation in Mongolia and Inner Mongolia. *In* Fundamental issues affecting sustainability on the Mongolian steppe (T. Chuluun and D. Ojima, eds.). International Institute for Study of Nomadic Civilization, Ulaanbaatar, Mongolia. Pages 26-33.
 3. **Boone, R.B.** 1999. Ranges of amphibians and reptiles in northeastern North America. *In* Maine amphibians and reptiles. M.L. Hunter, Jr., J. Albright, and J. Arbuckle (editors), University of Maine Press. Pages 27-28.
 2. Krohn, W.B., W.J. Zielinski, and **R.B. Boone**. 1997. Relations among fishers, snow, and martens in California: results from small-scale spatial comparisons. *In* Martes: taxonomy, ecology, techniques, and management. G. Proulx, H.N. Bryant, and P.M. Woodard (editors). Provincial Museum of Alberta, Edmonton. Pages 211-232.
 1. O'Connor, R.J. and **R.B. Boone**. 1992. A retrospective study of agricultural bird populations in North America. *In* Ecological Indicators. D.H. McKenzie, D.E. Hyatt, and V.J. McDonald (editors). Elsevier Applied Science, New York, New York. Pages 1165-1184.

Recent and Selected Unrefereed

- Wockner, G., **Boone, R.**, Schoenecker, K.A., and Zeigenfuss, L.C.. 2014. Modeling elk and bison carrying capacity for Great Sand Dunes National Park, Baca National Wildlife

- Refuge, and The Nature Conservancy's Medano Ranch, Colorado: U.S. Geological Survey Open-File Report 2014-1200, 23 p., <http://dx.doi.org/10.3133/ofr20141200>. ISSN 2331-1258
- Dinesh D., Bett B., **Boone R.**, Grace D., Kinyangi J., Lindahl J., Mohan C.V., Ramirez-Villegas J., Robinson R., Rosenstock T., Smith J. and Thornton P. 2015. Impact of climate change on African agriculture: focus on pests and diseases. Copenhagen, Denmark: CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS).
- Boone, R.B.**, R.T. Conant, and T.E. Hilinski. 2011. G-Range: Development and use of a beta global rangeland model. Final report to the International Livestock Research Institute, Nairobi, Kenya
- Boone, R.B.**, J.J. Taylor, D.M. Swift, P.H. Evangelista, and E. Hollowed. 2011. Developing a Resource Management and Monitoring Protocol for a Semiarid Landscape with Extensive Oil and Gas Development Potential. Technical Note 439. U.S. Department of the Interior. Bureau of Land Management, National Operations Center, Denver, Colorado.
- Wockner, G., **R. Boone**, K. Schoenecker, and L. Zeigenfuss. 2010. The Great Sand Dunes Ecosystem elk and bison carrying capacity model: description and scenario results. Final report to the National Park Service, Mosca, Colorado.
- Wockner, G, **R.B. Boone**, N.T. Hobbs, and D. Freddy. 2009. The Habitat Assessment Model: a tool to improve wildlife habitat management. Final report to for the Habitat Partnership Program, Colorado Division of Wildlife, Denver, Colorado.
- Boone, R.B.**, S.B. BurnSilver, and P.K. Thornton. 2006. Optimizing aspects of land use intensification in southern Kajiado District, Kenya. Report to the International Livestock Research Institute, Nairobi, Kenya.
- Bulte, E.H., **R.B. Boone**, R. Stringer, and P.K. Thornton. 2006. Wildlife conservation in Amboseli, Kenya: paying for nonuse values. *In* Roles of Agricultural Project, Environmental Services, Agricultural and Development Economics Division, Food and Agriculture Organization of the United Nations, Rome, Italy.
- Boone, R.B.** and S.B. BurnSilver. 2002. Integrated assessment results to support policy decisions in Ngorongoro Conservation Area, Tanzania. Report from the POLEYC Project to the Global Livestock Collaborative Research Support Program, University of California, Davis, California.
- Galvin, K.A., R.S. Reid, S. BurnSilver, and **R.B. Boone**. 2002. Linking communities and households to climate variability and land cover/land use change at different scales in farming and pastoral systems of East Africa. Paper published by the Workshop on Linking Household and Remotely Sensed Data: Methodological and Practical Problems, Honolulu, Hawaii.
- Boone, R.B.** and Michael B. Coughenour (eds.). 2001. A system for integrated management and assessment of East African pastoral lands: balancing food security, wildlife conservation, and ecosystem integrity. Final report to the Global Livestock Collaborative Research Support Program, University of California, Davis, California.
- Coughenour, M., **R. Boone**, P. Thornton, R. Howe. 2001. Integrated modeling and assessment of changing pastoral ecosystems - experience in East Africa, and potential for application in Mongolia. Proceedings of the Conference on Pastoralism in Mongolia, Ulan Baatar, Mongolia.

- Ellis, J., M. Coughenour and **R. Boone**. 2001. Promoting livestock production and wildlife conservation. *Cattle Guard: Colorado Cattleman's Association* 50:12.
- Boone, R.B.** 2000. Integrated management and assessment system: training manual. Instruction manual created with the support of the Global Livestock Collaborative Research Support Program, US Agency for International Development.
- Hepinstall, J.A., S.A. Sader, W.B. Krohn, **R.B. Boone**, and R.I. Bartlett. 1999. Development and testing of a vegetation and land cover map of Maine. *Maine Agriculture and Forest Experiment Station Technical Bulletin 173*, University of Maine, Orono. 104 pp.
- Krohn, W.B., **R.B. Boone**, S.A. Sader, J.A. Hepinstall, S.M. Schaefer, and S.L. Painton. 1998. *Maine Gap Analysis - a geographic analysis of biodiversity*. Final contract report to USGS Biological Resources Division, Gap Analysis Program, Moscow, Idaho. 123 pp. plus appendices.
- Boone, R.B.**, and W.B. Krohn. 1998a. *Maine gap analysis vertebrate data - Part I: distribution, habitat relations, and status of amphibians, reptiles, and mammals in Maine*. Part of final contract report to U.S. Geological Survey's Biological Resources Division, Gap Analysis Program, Moscow, Idaho.
- Boone, R.B.**, and W.B. Krohn. 1998b. *Maine gap analysis vertebrate data - Part II: distribution, habitat relations, and status of breeding birds in Maine*. Part of final contract report to U.S. Geological Survey's Biological Resources Division, Gap Analysis Program, Moscow, Idaho.
- Boone, R.B.** and W.B. Krohn. 1997. *Species occurrence: what, why, and where?* Gap Analysis Bulletin No. 6.
- Hagan, J.M. and **R.B. Boone**. 1997. *Harvest rate, harvest configuration, and forest fragmentation: A simulation of the 1989 Maine Forest Practices Act*. Manomet Center for Conservation Sciences, Division of Conservation Forestry. Report No. MCD CF-97001.
- O'Connor, R.J., **R.B. Boone**, H. Devaul, M.T. Jones, and T.B. Lauber. 1991. *A retrospective study of bird populations and agriculture: effects of agricultural practices on bird populations*. Contract report to a consortium of six agricultural companies.

RECENT AND SELECTED PRESENTATIONS

- Boone, R.B.** 2016. Using coupled ecosystem and household simulation models to link pastoral decision making and ecosystem services. Ecological Society of America, Fort Lauderdale, Florida.
- Boone, R.B.**, J. Stabach, and C. Lesorogol. 2015. *Effects of fragmentation on large herbivores under variable climates*. Ecological Society of America, Baltimore, Maryland.
- Moore, J., **R.B. Boone**, and P. de Ruiter. 2015. *Complexity and stability in trophic networks*. Ecological Society of America, Baltimore, Maryland.
- Stabach, J.A., **R.B. Boone**, J.S. Worden, and G. Florant. 2015. *Habitat disturbance effects on the physiological stress response in resident white-bearded wildebeest*. Ecological Society of America, Baltimore, Maryland.
- Boone, R.B.** 2015. *Effects of fragmentation on rangelands*. Workshop on Rangeland Management, Qinghai Province, China

- Boone, R.B.** and M. Richmond. 2015. Gnu views on experiences and learning. NREL Spring Seminar Series.
- Blecha, K. and **R.B. Boone**. 2014. Wildlife camera trapping: variables influencing encounter rates in occupancy, relative abundance indices, and habitat selection. Colorado Chapter of the Wildlife Society Annual Winter Meeting, Fort Collins
- Sircely, J., R. Conant, and **R. Boone**. 2014. Site and regional validation of G-Range - a new global ecosystem model for rangelands (J. Sircely, R. Conant, and R. Boone). Solution-based Approaches to Sustainability and Development Symposium, Fort Collins
- Boone, R.**, J. Stabach, R. Lilieholm, M. Johnson, S. Meyer, J. Worden, R. Reid, M. Said, S. Kifugo, and S. Sader. 2014. Modeling effects of fragmentation and drought frequency on wildebeest populations. Solution-based Approaches to Sustainability and Development Symposium, Fort Collins
- Blecha, K.A., **R.B. Boone**, and M.W. Aldridge. 2014. Improvements on GPS location cluster analysis techniques for predicting feeding activities. Eleventh Mountain Lion Workshop, Cedar City, Utah
- Ernakovich, J.G., **R.B. Boone**, C. Boot, K. Deneff, J. M. Lavalley, J. C. Moore, and M.D. Wallenstein. 2014. The SUPER Program: a research-based undergraduate experience. American Geophysical Union, San Francisco, California
- Stabach, J., **R.B. Boone**, G. Wittemyer, and J.G. Hopcraft. 2014. Mixed movement strategies in Kenyan white-bearded wildebeest (*Connochaetes taurinus*). Graybill/ENVR Conference, Fort Collins.
- Boone, R.B.** 2011. Agent-based modeling in ecological and conservation applications. Faculty-Graduate Student Seminar Series, Department of Fish, Wildlife, and Conservation Biology, Colorado State University, Fort Collins, Colorado, November 11.
- Boone, R.B.** 2011. Exploring rangeland futures using coupled natural and human simulation models. Colorado Conference on Earth System Governance, Colorado State University, Fort Collins, Colorado, May 18. (Invited presentation)
- Boone, R.B.** 2010. Spatial analysis to support ecological and social simulation. Presentation at the Innovations in Geographic Information Science (GIS) Retreat, sponsored by the Information Science & Technology Center (ISTeC), Colorado State University, Fort Collins, Colorado, February 8. (Invited presentation)
- Boone, R.B.** 2009. Integrative models of households, environment, and climate in East Africa. Workshop, Climate Change and Livelihoods in Sub-Saharan Africa. Center for African Studies, Ohio State University, May 15. (Invited presentation)
- Boone, R.B.** 2009. Linking pastoral household decision making to ecosystem services using simulated scenarios. US International Association of Landscape Ecologists Annual Symposium, Snowbird, Utah, April 15.
- Boone, R.B.** 2009. African pastoral decision making under changing climates. One of four presentations organized by J. Baron entitled "Looking for answers: ecosystem research at CSU," in the workshop "What can we do about climate change?" Colorado State University, Fort Collins, Colorado, February 5. (Invited presentation)
- Boone, R.B.**, K.A. Galvin, S.B. BurnSilver, and P.K. Thornton. 2008. Humans and wildlife as ecosystem components in integrated assessments. Presentation at the Conference on Pathways to Success: Integrating Human Dimensions into Fisheries and Wildlife Management, Estes Park, Colorado, September 29.

- Wockner, G., **R.B. Boone**, and P. Tucker. 2008. Colorado Wildlife Habitat Assessment project. Presentation at the Conference on Pathways to Success: Integrating Human Dimensions into Fisheries and Wildlife Management, Estes Park, Colorado, September 30.
- Boone, R.B.**, K.A. Galvin, S.B. BurnSilver, P.K. Thornton, D.S. Ojima, and J.R. Jawson. 2008. Linking Maasai decision making to ecosystem services including data sources and scaling issues. Workshop on Data and Model Integration for Coupled Models of Land Use Change, Global Land Project Nodal Office on Integration and Modelling, Aberdeen, UK, July 17. (Invited presentation)
- Boone, R.B.** 2008. On the pathway from individual-based modeling to agent-based integrated assessment. Presentation at a workshop entitled “Agent-based Modeling in Social and Ecological Systems” sponsored by The Institute for Society, Landscape, and Ecosystem Change (ISLEC), Colorado State University, Fort Collins, Colorado, April 17. (Invited presentation)
- Boone, R.B.**, K.A. Galvin, S.B. BurnSilver, P.K. Thornton, D.S. Ojima, and J.R. Jawson. 2008. Linking Maasai decision making to ecosystem services using the agent-based model DECUMA. Second World Congress on Social Simulation, George Mason University, Fairfax, Virginia, July 14.
- Boone, R.B.** 2006. Balancing land uses in East African pastoral areas. Natural Resource Ecology Laboratory Fall Seminar Series, Colorado State University, Fort Collins, Colorado, September 2. (Invited presentation)
- Boone, R.B.** 2006. Wild and domestic animals across space and time. Department of Fish, Wildlife and Conservation Biology, Colorado State University, Fort Collins, October 13. (Invited presentation)
- Galvin, K.A., **R.B. Boone**, D.S. Ojima, P.K. Thornton and J.R. Jawson. 2006. Decision-making in Rangeland systems: an integrated Ecosystem-Agent-based Modeling Approach to Resilience and change (DREAMER). Poster presented at the NSF Human and Social Dynamics PI meeting, Washington, DC, September 14-15.
- Boone, R.B.** 2005. Quantifying effects of patch isolation on large herbivores. Natural Resource Ecology Laboratory Fall Seminar Series, Colorado State University, Fort Collins, Colorado, October 8.
- Boone, R.B.** 2005. Quantifying the loss of African large herbivore productivity under landscape patch isolation. US International Association of Landscape Ecologists Annual Symposium, Las Vegas, Nevada, April 2.
- Thornton, P., **R. Boone**, K. Galvin, S. BurnSilver, M. Waithaka, J. Kuyiah, E. Gonzalez-Estrada, and M. Herrero. 2005. Risk impacts on households in agropastoral and mixed systems in East and Southern Africa. Paper presented at the Open Meeting of the Human Dimensions of Global Change, Bonn, Germany, October 9-13.
- Galvin, K.A., C. Kerven, **R.B. Boone** and A. Smailov. 2005. Production strategies of livestock herders in the grasslands of Kazakhstan: implications for the marketing of fibers. Poster presented at the International Grasslands Congress, Dublin, June 26-July 1.
- Boone, R.B.** and K.A. Galvin. 2005. Factors related to marketing success for fiber products in middle Asia. Poster presented at the International Grasslands Congress, Dublin, June 26-July 1.
- Stringer, R., **R.B. Boone**, R. Damania, and E. Bulte. 2005. Paying for elephant conservation in Amboseli, Kenya. Presentation to the Food and Agriculture Organization of the United Nations, Rome, Italy. (Invited presentation)

- CHobbs, N.T., **R.B. Boone**, and G. Wang. 2005. Spatial and temporal variability exert opposing effects on density dependence in populations of large herbivores. International Mammalogical Congress, Sapporo, Japan, August 1. (Invited presentation)
- Boone, R.B.** 2005. Balancing land uses in East African pastoral areas. NREL Fall Seminar Series, Colorado State University, Fort Collins, September 2. (Invited presentation)
- Boone, R.B.** 2004. Approaches to understanding animal mobility using remotely sensed images. Presentation at the Monitoring Science and Technology Symposium, Denver, Colorado, September 22. (Invited presentation)
- Boone, R.B.** 2004. Quantifying the loss in African large herbivore productivity under landscape patch isolation. Presentation at the US International Association of Landscape Ecology meeting, Las Vegas, Nevada, April 2.
- Boone, R.B.** 2004. Quantifying the effects of patch isolation on large herbivores. NREL Fall Seminar Series, Colorado State University, Fort Collins, October 8. (Invited presentation)
- Boone, R.B.** and N.T. Hobbs. 2003. Lines around fragments: Effects of fencing on large herbivores. International Rangeland Congress, Durban, South Africa, July. (Invited presentation)
- Boone, R.B.**, C.M. Johnson, and L. Johnson. 2002. Modeling the effects of forest fragmentation upon amphibian metapopulations in Minnesota. US IALE Landscape Ecology Symposium, Lincoln, Nebraska.
- Boone, R.B.** 2002. Assessing herbivore stocking, cultivation, and disease control in Ngorongoro Conservation Area, Tanzania. A component of presentations at Kenya Wildlife Service, Nairobi, Ngorongoro Conservation Area, Tarangire National Park, and in Kajiado District, Kenya, January 16-27.
- Boone, R.B.** 2001. Adding value to climate forecasts using the Savanna modeling system. Presentation to workshop participants in Vryburg, South Africa, May 30.
- Boone, R.B.**, M.B. Coughenour, K.A. Galvin, and J.E. Ellis. 2000. Addressing management questions for Ngorongoro Conservation Area, Tanzania, using the Savanna modeling system. Natural Resources Research Institute, University of Minnesota, Duluth, Minnesota, October 31. (Invited presentation)
- Boone, R.B.**, M.B. Coughenour, J.E. Ellis, and K.A. Galvin. 1999. Addressing management question for Ngorongoro Conservation Area using the Savanna Modeling System. Kenya Wildlife Service, Nairobi, Kenya, July 21. (Invited presentation)
- Boone, R.B.** and K.A. Galvin 1999. Using hierarchical greenness patterns to quantify the effects of El Niño on the Maasai of the Serengeti Ecosystem. Poster presented at the 5th World Congress, International Association of Landscape Ecology, Snowmass, CO, July-August.
- Galvin, K.A., **R.B. Boone**, N.M. Smith and S.J. Lynn 1999. Impacts of climate variability on East African pastoralists: Linking Social Science and Remote Sensing. Invited paper presented in the session on Social Science Dimensions and Policy Contributions to Climate Change Research: African Perspectives at the Society of Applied Anthropology meetings, Tucson, April.
- Boone, R.B.** and W.B. Krohn. 1998. Issues in predicting vertebrate species occurrences. Presentation at the U.S. Chapter of the International Landscape Ecology meeting, East Lansing, Michigan, March 17-21.