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AREAS OF RESEARCH

Social-ecological interactions, agroecology, climate change, savanna ecology

EDUCATION

2010 **Ph.D** Ecology, Colorado State University, Natural Resource Ecology Laboratory, Fort Collins, CO
1999 **Laurea** Physics, Università degli Studi di Milano, College of Physics, Italy

PROFESSIONAL APPOINTMENTS

2020 – present Research associate, Department of Plant and Soil Science, Agroecology and Livelihood Collaborative (ALC), Social Ecological Gaming and Simulation Laboratory (SEGS), University of Vermont, Burlington.
2016 – 2019 Post-doctoral research associate, Department of Plant and Soil Science and Social Ecological Gaming and Simulation Laboratory (SEGS), University of Vermont, Burlington.
2011 – 2016 Post-doctoral research associate, Department of Plant Biology and EPSCoR VT, University of Vermont, Burlington.
2010 – 2011 Post-doctoral researcher, Colorado State University, Fort Collins.
2000 – 2001 Research Assistant, Lab. de Télédétection, Université Catholique de Louvain, Belgium.
1998 – 2000 Student (Internship), Global Vegetation Monitoring, Joint Research Center Ispra, Italy.

TEACHING

Fall 2006 Teaching assistant, Colorado State University
Fundamentals of Ecology (BY320)
Fall 2012, 2014 Co-Teacher, University of Vermont
Complexity, climate change and human systems (HCOL 185)

AWARDS AND GRANTS

- 1st place of oral presentations (post-Doc division). Larner College of Medicine, Celebrating Excellence in Research. Nov. 10th & 13th, 2017.
http://www.med.uvm.edu/pediatrics/news-events/conferences/2017/11/17/research_awards_2017
- Fellowship, Center for Collaborative Conservation, 2010.
<http://www.collaborativeconservation.org/fellows/gabriela-bucini> \$3,000
- US-South Africa Doctoral Dissertation Enhancement Project, National Science Foundation (NSF), 2006 -2008.
https://www.nsf.gov/awardsearch/showAward?AWD_ID=0618056 \$8,954

PEER-REVIEWED PAPERS AND CHAPTERS

- Mason, R., E. Mendez, A. White, J. Anderzen, G. Bucini and S.C. Merrill. (Submitted) The Evolving Landscape of Agroecological Research. *Journal of Sustainable Agriculture*
- Clark, E., S.C. Merrill, G. Bucini, L. Trinity, C.J. Koliba, A. Zia, J.M. Smith. Using Digital Field Experiments To Elicit Risk Mitigation Behavioral Strategies Across Agricultural Production Networks. *Plos One*
- Trinity L., S.C. Merrill, E.M. Clark, C.J. Koliba, A. Zia, **G. Bucini**, J.M. Smith. Effects of Social Cues on Biosecurity Compliance in Livestock Facilities: Evidence from Experimental Simulations Journal. *Frontiers Veterinary Science*, 2020.
- Bucini, G.**, Merrill, S.C., Clark, E., Moegenburg, S.M., Zia, A., Koliba, C.J., et al. 2019. Risk Attitudes Affect Livestock Biosecurity Decisions With Ramifications for Disease Control in a Simulated Production System. *Frontiers in Veterinary Science* 6(196).
- Clemins, P. J., **G. Bucini**, J. M. Winter, B. Beckage, E. Towler, A. Betts, R. Cummings, and H. C. Queiroz. 2019. An Analog Approach for Weather Estimation Using Climate Projections and Reanalysis Data. *Journal of Applied Meteorology and Climatology* 58:1763-1777.
- Merrill, S. C., S. M. Moegenburg, C. J. Koliba, A. Zia, L. Trinity, E. Clark, **G. Bucini**, S. Wiltshire, T. Sellnow, D. Sellnow, and J. M. Smith. 2019. Message delivery method, information certainty and infection risk influence willingness to comply with biosecurity in livestock facilities: evidence from experimental simulations. *Frontiers in Veterinary Science* 6(156).
- Wiltshire, S., Zia, A., Koliba, C., **Bucini, G.**, Clark, E., Merrill, S., et al. 2019. Network MetaMetrics: Using Evolutionary Computation to Identify Effective Indicators of Epidemiological Vulnerability in a Livestock Production System Model. *Journal of Artificial Societies and Social Simulation* 22(2), 8.
- Merrill, S. C., C. J. Koliba, S. M. Moegenburg, A. Zia, J. Parker, T. Sellnow, S. Wiltshire, **G. Bucini**, C. Danehy, and J. M. Smith. 2019. Decision-making in livestock biosecurity practices amidst environmental and social uncertainty: Evidence from an experimental game. *PLOS ONE* 14:e0214500.
- Bucini, G.**, B. Beckage and L. J. Gross. 2017. Climate seasonality, fire and global patterns of tree cover. *Frontiers of Biogeography*, 9(2).

- Beckage B., **G. Bucini**, L.J. Gross, W.J. Platt, S.I. Higgins, N.L. Fowler, M.G. Slocum and C. Farrior. Water limitations, fire, and savanna persistence: A conceptual model. Peer reviewed chapter in: *Savanna Woody Plants and Large Herbivores*. Ed. by P.F. Scogings, M. Sankaran & C. Skarpe. Wiley.
- Morris, K. S., and **G. Bucini**. 2016. California's drought as opportunity: Redesigning US agriculture for a changing climate. *Elem Sci Anth* **4**.
- Winter, J. M., B. Beckage, **G. Bucini**, R. M. Horton, and P. J. Clemins. 2016. Development and evaluation of high-resolution climate simulations over the Mountainous Northeastern United States. *Journal of Hydrometeorology* **17**:881-896.
- Zia, A., A. Bomblies, A.W. Schroth, C. Koliba, P.D.F. Isles, Y. Tsai, I.N. Mohammed, **G. Bucini**, P.J. Clemins, S. Turnbull, M. Rodgers, A.A. Hamed, B. Beckage, J. M Winter, E.C. Adair, G.L. Galford, D.M. Rizzo, J. Van Houten. 2016. Coupled impacts of climate and land use change across a river-lake continuum: insights from an integrated assessment model of Lake Champlain's Missisquoi Basin, 2000-2040. *Environmental Research Letters*, 11(11):114026.
- Hanan, N. P., A. T. Tredennick, L. Prihodko, **G. Bucini**, and J. Dohn. 2015. Analysis of stable states in global savannas—a response to Staver and Hansen. *Global Ecology and Biogeography* **24**:988-989.
- Tsai Y., A. Zia, C. Koliba, **G. Bucini**, J. Guibert and B. Beckage. 2015. An interactive land use transition agent-based model (ILUTABM): Endogenizing human-environment interactions in the Western Missisquoi Watershed. *Land Use Policy* **49**: 161-176
- Tsai Y., A. Zia, C. Koliba, J. Guibert, **G. Bucini** and B. Beckage. 2013. Impacts of Land Managers' Decisions on Landuse Transition within Missisquoi Watershed Vermont: An Application of Agent-based Modeling System. *IEEE International Systems Conference*, Orlando, Florida. Pages: 824-829.
- de Knegt, H. J., F. van Langevelde, A. K. Skidmore, A. Delsink, R. Slotow, S. Henley, **G. Bucini** et al. 2011. The spatial scaling of habitat selection by African elephants. *Journal of Animal Ecology* **80**(1): 270-281.
- Arthur, M. d. F. S. R., S. Zahran and **G. Bucini**. 2010. On the adoption of electricity as a domestic source by Mozambican households. *Energy Policy* **38**(11): 7235-7249.
- Bucini, G.**, N. P. Hanan, R. B. Boone, S. Saatchi, I.P.J. Smit and M.A. Lefsky. 2010. Woody fractional cover in Kruger National Park, South Africa: remote-sensing-based maps and ecological insights. In *Ecosystem Function in Global Savannas: Measurement and Modeling at Landscape to Global Scales – edited by M.J. Hill and N.P. Hanan and published by CRC/Taylor and Francis*.
- Sutton, A. E., J. Dohn, K. Loyd, A. Tredennick, **G. Bucini**, A. Solorzano, L. Prihodko and N. P. Hanan. 2010. Does warming increase the risk of civil war in Africa?, *Proceedings of the National Academy of Sciences of the United States of America*. **107**(25): E102-E102.
- Bucini, G.**, S. Saatchi, N. Hanan, R. B. Boone and Smit I., 2009. Woody cover and heterogeneity in the savannas of the Kruger National Park, South Africa. *2009 IEEE International Geoscience and Remote Sensing Symposium (IGARSS 2009)*: IV-334-337.
- Bucini, G.** and N. P. Hanan. 2007. A continental-scale analysis of tree cover in African savannas, *Global Ecology and Biogeography* **16**(5), 593–605.

- Sankaran M., N. P. Hanan, R. J. Scholes, J. Ratnam, D. J. Augustine, B. S. Cade, J. Gignoux, S. I. Higgins, X. Le Roux, F. Ludwig, J. Ardo, F. Banyikwa, A. Bronn, **G. Bucini** et al. 2005. Determinants of woody cover in African savannas, *Nature* 438(7069), 846-849.
- Bucini, G.** and E. F. Lambin. 2002. Fire impacts on vegetation in central Africa: A remote sensing-based statistical analysis, *Applied geography* 22.1: 27-48.
- Gobron, N., F. Melin, B. Pinty, M. M. Verstraete, J.-L. Widlowski, and **G. Bucini**. 2001. A Global Vegetation Index for SeaWiFS: Design and Applications, in *Satellite Remote Sensing Data and Climate Model Simulations: Synergies and Limitations*, Edited by M. Beniston and M. M. Verstraete, Kluwer Academic Publishers, Dordrecht, 5-21.

CONFERENCES AND WORKSHOPS

- Bucini G.,** E. Clark, S. C. Merrill, A. Zia, C. J. Koliba, L. Trinity, N. Cheney, O. Langle, T. Shrum, R. Schattman, R. Beattie, J. Urbani, S. Wiltshire, and J. M. Smith. Digital tools for risk mitigation: the intriguing side of human behavior. Plant and Soil Science Raymond Seminar, 31 January, 2020, Burlington, VT.
- Bucini G.,** E. Clark, S. C. Merrill, S. M. Moegenburg, S. Wiltshire, C. J. Koliba, A. Zia, G. Tonsor, L. L. Schulz, D. Sellnow, T. Sellnow, L. Trinity, and J. M. Smith. Risk messages, biosecure behaviors and economic effects: connecting livestock disease to human decision-making. Oral presentation. ISESSAH 2019 Conference, 20 June 2019, Atlanta, GA.
- Bucini G.,** E. Clark and O. Langle. A Simulated Production System for Strategic Decisions on Disease Control. The Animal Disease Biosecurity Coordinated Agricultural Project (ADBCAP) Symposium, May 15 2019, College Park, Maryland.
- Merrill S. C., **G. Bucini**, E. Clark, D. Sellnow and T. Sellnow. Intersections of Environmental Management and Biosecurity in Animal Agriculture. The Livestock and Poultry Environmental Learning Community (LPELC) Webinar, 14 Dec. 2018.
- Bucini G.,** E. Clark, S. C. Merrill, C. J. Koliba, A. Zia, S. Wiltshire, L. Trinity, S. M. Moegenburg and J. M. Smith. The Role of Human Behavior in Biosecurity Adoption: Interactive Tools for Intervention Strategies. Oral presentation. PIC Health Assurance Annual Fall Meeting, 28–29 Nov. 201, Cerdanyola del Vallés, Spain.
- Bucini G.,** E. Clark, S. C. Merrill, S. M. Moegenburg, S. Wiltshire, A. Zia, C. J. Koliba and J. M. Smith. Perceptions and risk attitudes affect biosecurity investment and compliance decisions with ramifications for disease control and economics at the hog production supply chain level. Oral presentation. Allen D. Leman Swine Conference, 15–18 Sep. 2018, Saint Paul, MN.
- Bucini G.,** S. Wiltshire, E. Clark, S.C. Merrill, C. Koliba, A. Zia, L. Trinity, S. Moegenburg and J. M. Smith. Interactive model-based tools for animal disease simulation and intervention strategies. Oral presentation. ISESSAH-InnovSur 2018 Conference, 14-18 May 2018, Montpellier, France.
- Bucini G.,** E. Clark, J. M. Smith, S.C. Merrill, A. Zia, C. Koliba, S. Moegenburg, S. Wiltshire, L. Trinity, and E. Reily. Interactive tools for simulation of biosecurity adoption and animal disease control. Seminar. Animal and Veterinary Science Dept., University of Vermont, 16 Feb. 2018, Burlington, VT.

- Bucini G.,** E. Clark, S. Wiltshire, S.C. Merrill, C. Koliba, A. Zia, L. Trinity, S. Moegenburg and J. M. Smith. Hog production chain biosecurity model. Oral presentation. Animal Disease Biosecurity Coordinated Agricultural Project (ADB CAP) Team meeting, 10 -12 Jan. 2018, Orlando, FL.
- Bucini G.,** S. Wiltshire, S.C. Merrill, E. Clark, L. Trinity, C. Koliba, A. Zia, S. Moegenburg and J. M. Smith. Protecting herd health: Interactive agent-based modeling used to reduce the impact of disease in livestock industries. Oral presentation. Celebrating Excellence in Research, Larner College of Medicine, The University of Vermont, 10 Nov. 2017, Burlington, VT.
- Bucini G.,** E. Clark, S. Wiltshire, S.C. Merrill, A. Zia, C.J. Koliba, L. Trinity, S. Moegenburg, J. M. Smith. Hog Production Chain Biosecurity Model. Oral presentation at pre-conference workshop: Addressing Wicked problems: What tools are in the toolbox? Data gathering, data analysis and system simulation. Northeast Conference on Public Administration, 3-5 Nov. 2017, Burlington, VT.
- Bucini G.,** S. Wiltshire, S.C. Merrill, A. Zia, C.J. Koliba, E. Clark, L. Trinity, S. Moegenburg, J. M. Smith. Regional U.S. Hog Production Chain Biosecurity Model. Oral presentation. Animal Disease Biosecurity Coordinated Agricultural Project (ADB CAP) Annual meeting, 12– 14 Jun. 2017, Mankato, MN.
- Bucini G.,** S. Wiltshire, S.C. Merrill, A. Zia, C.J. Koliba, E. Clark, L. Trinity, S. Moegenburg, J. M. Smith. Regional U.S. Hog Production Chain Biosecurity Model. Invited oral presentation. Agent-Based Modeling (ABM) 17 Symposium, 19-21 April 2017, San Diego, CA.
- Bucini G.,** S. Wiltshire, S.C. Merrill, C.J. Koliba, A. Zia, S. Moegenburg, E. Clark, J. M. Smith. Agent-based modeling of coupled human behavior and disease spread in the regional U.S. swine production system. Poster presentation. Agent-Based Modeling (ABM) 17 Symposium, 19-21 April 2017, San Diego, CA.
- Bucini G.,** S. Wiltshire, S. Merrill, J.M. Smith, C. Koliba, A. Zia, S. Moegenburg, E. Clark. Regional U.S. Hog Production Chain Biosecurity Model. Oral presentation. Animal Disease Biosecurity Coordinated Agricultural Project (ADB CAP) Annual meeting, 29 November – 1 December, 2016, Mankato, Minnesota.
- Bucini G.,** B. Beckage, P. J. Clemins, J.M. Winter, J. Klavens and J. Page. Daily Weather Estimator for Climate Projections Based on Nearest Neighbor Resampling. Poster presentation, 14th Annual Climate Prediction Applications Science Workshop (CPASW), 22-24 March, 2016, Burlington, Vermont.
- Winter, J., **G. Bucini,** P. J. Clemins, and B. Beckage. Spatially and Physically Consistent Weather Estimation using Bias-Corrected Climate Simulations and Reanalysis Analogs. AGU Fall Meeting, 12-16 Dec., 2016, San Francisco, CA.
- Hamed, A. A., I. N. Mohammed, P. Isles, M. Rynge, **G. Bucini,** Y. Tsai, and A. Zia. Measuring the climate change impact on water quality using a weather generator Pegasus workflow, paper presented at IAGLR's 58th Annual Conference on Great Lakes Research, 25-29 May, 2015, Burlington, Vermont.

- Winter, J., B. Beckage, and **G. Bucini**. Very High Resolution Climate Change Projections for Hydrologic Impacts Assessments over the Lake Champlain Basin in Vermont. AGU Fall Meeting, 15-19 Dec., 2014, San Francisco, CA.
- Bucini, G.**, B. Beckage, J. Winter and J. Guilbert. Downscaling climate simulation to 1 km spatial resolution. Oral presentation, Vermont EPSCoR Annual State Meeting, 16 May 2013. Burlington, Vermont.
- Hanan, N. P., A. Tredennick, L. Prihodko, **G. Bucini**, and J. Dohn. Detecting bifurcations and alternate stable states in vegetation with remote sensing: when hypotheses and errors align. Oral Presentation. 98th ESA Annual Convention 4-9 August, 2013, Minneapolis, MN.
- Bucini, G.**, S. Saatchi, N. P. Hanan, R. Boone and I. Smit. Woody cover and heterogeneity in the savannas of the Kruger National Park, South Africa. Poster presentation, Ethiopian Collaborative Planning Workshop, 18-21 December 2009, Addis Ababa, Ethiopia.
- Bucini, G.**, S. Saatchi, N. P. Hanan, R. Boone and I. Smit. Woody cover and heterogeneity in the savannas of the Kruger National Park, South Africa. Poster presentation, IEEE International Geoscience & Remote Sensing Symposium, 12-17 July 2009, Cape Town, South Africa.
- Bucini, G.**, N.P. Hanan, R. Boone and M. Lefsky. Woody-cover mapping and modelling in the savanna of Kruger National Park, South African. Oral presentation, Annual Front Range Ecology Symposium, CSU, February 26-27, 2008.
- Bucini, G.** and N.P. Hanan. Continental- to Landscape-Scale Analyses of Tree Cover in African Savannas. Oral presentation, Mellon Network Meeting 13-17 March 2006, Kruger National Park, South Africa.
- Bucini, G.** and N.P. Hanan. A Continental-Scale Analysis of Tree Cover in African Savannas. Oral presentation, American Geophysical Union Fall Meeting, 5–9 December 2005, San Francisco, CA, USA
- Bucini, G.** and N.P. Hanan. A Spatial Statistical Analysis of Tree-cover and its Influencing Factors in African Savannas. Presentation, Front Range Ecology Symposium, CSU, 2004.
- Bucini, G.**, N.P. Hanan and M. Sankaran. A continental-scale Analysis of Tree-cover on African Savannas. Poster presentation, African Savanna Complexity Workshop: Differing Perceptions, Common Ground, Luiperskloof Game Reserve, South Africa, 23-25 January, 2003.
- Bucini, G.**, W. Sea. and N.P. Hanan. The Influence of Rainfall and Fire on Tree Demographics in Kruger National Park, South Africa. Presentation, Front Range Ecology Symposium, CSU, 2003.
- Bucini, G.**, F. Stolle and E. F. Lambin. Landscape analysis of fire land use and land-use change in Central Africa and in South-east Asia. Poster presentation, Global Change Open Science Conference, 10-13 July 2001, Amsterdam, The Netherlands.
- Bucini, G.** and E.F. Lambin. Fire impacts on vegetation in Central Africa: A remote sensing-based statistical analysis. Oral presentation, Conference of Irish geographers, 3-5 May 2001, University College Cork, Ireland.
- Gobron, N., B. Pinty, M. M. Verstraete, F. Melin, J.-L. Widlowski and **G. Bucini**. An approach to develop global vegetation indices decontaminated from geometrical effects: Applications

on the series of Up-Coming instruments. Poster presentation, 2nd International Workshop on Multi-angular Measurements and Models. 15-17 September 1999, Ispra (VA), Italy.

SYNERGISTIC ACTIVITIES

Koliba, C. (Organizer and Presenter), Merrill, S. C. (Organizer and Presenter): Bucini, G. (Presenter), Clark, E. (Presenter), Trinity, L. (Presenter), and Beattie, R. (Presenter) (2019) Faculty Activity Network. Social Ecological Games and Simulation Laboratory FAN. May 6th, 2019. Office of the Vice President for Research. University of Vermont.

Co-organiser of the “Effective Messaging and Communication of Disease Risk Improving Biosecurity Compliance. Lessons learned from PEDv”, August 1st 2018, Northfield (MN).

Co-organiser with Dr. Izak Smit from of the Kruger National Park Scientific Services, South Africa, of the “Remote Sensing Woody Cover Mapping and Monitoring Workshop in Kruger National Park”, 27-29 July 2009, Skukuza, South Africa.

Reviewer for the project on development of active learning modules for General Ecology, Colorado State University – 2007-2008 (<http://learning.colostate.edu/courses/ecology/>)

OTHER PROFESSIONAL EXPERIENCE

Reviewer for: Journal of Global Change Biology, Theoretical Ecology, PLOS ONE, Ecological Applications, Biotropica, PeerJ, Landscape Ecology, Oikos, Forest Ecology and Management, Applied Remote Sensing (SPIE) and Koedoe.

Assisted director in the GLP Scientific Steering Committee Meeting, 12-14 Feb. 2006, Rome, Italy.

WORKSHOPS ATTENDED

FBI/USDA Special animal and plant health investigation workshop, Vermont Army National Guard, 22-23 August, 2019.

Agent-Based and Hybrid Modeling Bootcamp & Incubator for Health Researchers, University of Saskatchewan, Aug. 21-26, 2017 (<https://www.cs.usask.ca/abmbootcamps/>)

Workshop on NCAR Command Language (NCL), University of Yale, U.S.A., Sept. 4-7, 2012.

Alan Alda Communications Workshop, Burlington, Vermont, Feb. 3, 2015 (<http://epscor.w3.uvm.edu/2/node/2586>).

PRESS

Scientia. Dec 17, 2019. ADBCAP: A Human Approach to Improving Biosecurity. Scientia, Bristol, UK. <https://doi.org/10.33548/SCIENTIA453>; <https://www.scipod.global/adbcap-a-human-approach-to-improving-biosecurity/>

Grayson, M. Aug. 14, 2019. UVM Researchers Use Video Games to Prevent Pigs From Getting Sick. Seven Days. Burlington, VT.
<https://www.sevendaysvt.com/vermont/uvm-researchers-use-video-games-to-help-pigsfrom-getting-sick/Content?oid=28218583>

Hess, A. 2019. Playing the biosecurity game. Producers unveil their risk behavior in digital field experiments. National Hog Farmer. Informa Markets, Irving, TX.
<https://www.nationalhogfarmer.com/animal-health/playing-biosecurity-game>

Shike J. and Alumbaugh J. 2018. Learning from Leman. Leman Conference explores cutting-edge pig health research. Farm Journal's Pork. Issue October 2018.
http://digitaledition.qwinc.com/publication/?i=531563&ver=html5&p=26#{%22issue_id%22:531563,%22page%22:%2226%22}

Leslie R. 2019. Video Games Offer Clues to Help Curb Animal Disease Outbreaks. - The University of Vermont. https://www.uvm.edu/cals/news/video-games-offer-clues-helpcurb-animal-disease-outbreaks?utm_source=CALS&utm_medium=email&utm_campaign=SEGS

The University of Vermont. 2019. Video games offer clues to help curb animal disease outbreaks. Published by Phys.org 2003 - 2019 powered by [Science X Network](#).
<https://phys.org/news/2019-06-video-games-clues-curb-animal.html>

TECHNICAL EXPERTISE

Agent-based modeling (AnyLogic); Geographical Information Systems (ArcGIS); Statistical analysis (R, Excel); Programming (R, IDL); Image processing (ENVI, ERDAS Imagine, Definiens, PCI).

LANGUAGES

Italian (native speaker), fluent in English and French, good knowledge of Spanish, and basic knowledge of German and Portuguese.