

# Scott Curtis Merrill

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Research Assistant Professor. Pronouns: He/Him  
Managing Director of the Social Ecological Gaming and Simulation (SEGS) Laboratory

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## Education

Ph. D., Ecology, Colorado State University, 2007  
B.S., Mathematics, University of Oregon, 1994  
B.S., Psychology, University of Oregon, 1994

## Professional Appointments

2011-present	<b>Research Assistant Professor</b> , Department of Plant and Soil Science, University of Vermont
2014-present	<b>Managing Director</b> , Social Ecological Gaming and Simulation Laboratory, University of Vermont. <a href="http://www.uvm.edu/~segs">http://www.uvm.edu/~segs</a>
2018-present	<b>Gund Fellow</b> , Gund Institute for the Environment, University of Vermont
2017-present	<b>Adjunct Professor</b> , Food Systems Program, University of Vermont
2011-present	<b>Faculty Affiliate</b> , Bioagricultural Sciences and Pest Management. Colorado State University
2015	<b>Acting Policy and Governance Team Leader</b> , Research on Adaptation to Climate Change. VT EPSCoR (Track 1)
2015	<b>Acting Social Dimensions Team Leader</b> , North East Water Resources Network. VT EPSCoR (Track 2)
2007-2011	<b>Post-Doctoral Research Fellow</b> , Department of Bioagricultural Sciences and Pest Management, Colorado State University
2005-2007	<b>Research Associate</b> , Department of Bioagricultural Sciences and Pest Management, Colorado State University
2000-2007	<b>Ph.D. Graduate Student</b> , Graduate Degree Program in Ecology, Colorado State University

### **Professional Interests**

Systems ecology, climate change, data simulation, spatial modeling, landscape ecology, population modeling, conservation science, plant-insect interactions, Integrated Pest Management (IPM), biological control, movement analysis and dispersal, and using games and simulations to teach and provoke social change

### **Grant Proposals and Whitepapers (\*Funded, \*Submitted)**

\*NSF EPSCoR. 2016-2021 Co-PI. Lake Champlain Basin Resilience to Extreme Events. \$20,000,000

\*USDA-NIFA Agriculture and Food Research Initiative. 2015-2021 Co-PI. A human behavioral approach to reducing the impact of livestock pest or disease incursions of socio-economic importance. \$7,400,000

\*USDA-NIFA Agriculture and Food Research Initiative. 2009-2012 Co-PI. Development of outbreak prediction models for the improvement of Russian wheat aphid pest management strategies. \$103,218

\*USDA-CSREES Crops at Risk 2007-2011 Co-PI. Validating a spatially-explicit precision forecasting model for Russian wheat aphid densities on small grain crops. \$151,526

### **Professional and Teaching Activities**

Graduate Faculty, Graduate College, University of Vermont

Adjunct Professor, Food Systems Program, University of Vermont

Courses taught:

- Quantitative Thinking in the Life Sciences (Fall 2012-2019). Teaching a quantitative foundation including probability, statistics, modeling, and data simulation.
- Ecological Gaming (Spring 2013-2015, 2019 and Fall 2013). An examination of the fundamental principles of ecology through the lens of simulation game platforms.
- Experimental Economics: Gaming and Simulation (Fall 2014). Facilitating a team-taught course studying classic experimental economic games and relevant literature

Advising and mentoring:

- Graduate Committees: Luke Trinity M.S. (Advisor), , Andrea Swan, M.S., Jenny Bower Ph.D., Edward Marques Ph.D., Janica Anderzen, Ph.D., Rachel Mason M.S. (Advisor, 2019) Alexandra Neidermeier M.S. (2019), Elisabeth Hodgdon Ph.D. (2019), Eric Clark Ph.D. (2018), Chase Stratton, Ph.D. (2018), Kyle Motley M.S. (2017), Rachel Schattman, Ph.D. (2017), Alison Adams M.S. (2016), Sam Talbot, M.S. (2016) and Jamie Ervin M.S. (2016)
- North East Water Resources Network Intern mentor: Luke Trinity (2016), William Nupp (2016), Nour El-Naboulsi (2015), Arkia Wynn (2015), Sophia Earll (2014) and Roberta Molokandov (2014).
- Honors Thesis: Adam Gellman (Advisor: 2019-2021), Jessica Savage (Advisor: 2018-19) Sam Tuckerman (Committee: 2016) and Ryan Tartre (Committee: 2016)

## Professional and Teaching Activities - Continued

### Workshop/Symposium Organizer:

- Merrill, S. C., Trinity, L., Schattman, R., Clark, E., Koliba, C., Zia, A., Bucini, G., Faulkner, J. and Smith, J. (2019) *Serious games: Agriculture, Climate Change and Water Quality*. Workshop for the Basin Resilience to Extreme Events High School Students and Teachers Training Week. June 18, 2019. Saint Michael's College, Colchester, VT
- Koliba, C., Merrill, S. C., and Moegenburg, S. (2019) Faculty Activity Network. Social Ecological Games and Simulation Laboratory FAN. May 6<sup>th</sup>, 2019. Office of the Vice President for Research. University of Vermont.
- Merrill, S.C., Bucini, G., Clark, E., and Bass, T. (2018) Webinar. Intersections of Environmental Management and Biosecurity in Animal Agriculture. eXtension.org. December 14, 2018. <https://articles.extension.org/pages/74783/intersections-of-environmental-management-and-biosecurity-in-animal-agriculture>
- Sellnow, D., Merrill, S. C., Sellnow, T., Bucini, G., Clark, E., Smith, J. (2018) Tackling the Risk of Swine Disease - Biosecurity Compliance. Communication Workshop at Holden Farms, Northfield, MN. August 1, 2018
- Koliba, C., Merrill, S. C., Bucini, G., Zia, A., Clark, E., Moegenburg, S. M., and Smith J., (2018) *ADB-CAP Game and Simulation Tuning and Scenario Development Workshop*. University of Central Florida, Orlando, FL. January 10, 2018
- Merrill, S. C., Koliba, C., and Zia, A. (2017) *Addressing Wicked problems: What tools are in the toolbox? Data gathering, data analysis and system simulation*. Symposium. North East Conference on Public Administration. Burlington, VT. November 3<sup>rd</sup>, 2017
- Merrill, S. C., Bucini, G., and Moegenburg, S. (2017) *Data collection and usage for the study of Social Ecological Systems*. Workshop for Methods in Ecological Economics. Burlington, VT. October 10<sup>th</sup>, 2017
- Merrill, S. C., and Kujawa, R. (2017) *Interventions and environmental policy in the Lake Champlain Watershed: Adaptation and Resilience in a complex system*. EPSCoR June 26<sup>th</sup> 2017. Basin Resilience to Extreme Events Intern Professional Development.
- Smith, J., Merrill, S. C., Bucini, G., and Koliba, C., (2017) Presentation and Mediated-Modeling Workshop for USDA stakeholders. *Building towards an Understanding of the Impacts of Human Behavior on Disease in the Swine Industry*. Washington DC, 2017. Part of the USDA supported Animal Disease Biosecurity – CAP grant.
- Koliba, C., Smith, J., Merrill, S. C., Bucini, G., and Moegenburg, S. S., (2016) Mediated-Modeling Workshop. *Building towards an Understanding of the Impacts of Human Behavior on Disease in the Swine Industry*. Mankato, Minnesota 2016. Part of the USDA supported Animal Disease Biosecurity – CAP grant.
- Merrill, S. C., and Kujawa, R. (2016) *Research Outcomes: Experimental Gaming and governance structures*. EPSCoR July 5<sup>th</sup> 2016. Research on Adaptation to Climate Change

and North East Water Resources Intern Professional Development. Co-organizer Richard Kujawa

- Merrill, S. C. Three-Day Writing Challenge. University of Vermont: June 2019, August 2018, January 2017, August 2016 and January 2015
- Merrill, S. C. The Art of the Introduction. Ecology, Evolution, and Environmental Biology seminar series. University of Vermont. February 14, 2018

Reviewer: *Plos One*, *Global Change Biology*, *Pest Management Sciences*, *Journal of Integrative Agriculture*, *Journal of Economic Entomology*, *Elementa*, *Insect Science*, *Environmental Entomology*, *Computers and Electronics in Agriculture*, *Journal of Pest Science*, *Journal of Environmental Management*, *Crop Protection*

External Proposal Reviewer: *Gund Institute Catalyst Awards*, *Vermont Genetics Network*

### **Publications (\*Refereed, +Outreach, \*Book Section)**

Trinity, L., Merrill, S. C., Clark, E., Bucini, G., Koliba, C., Zia, A., and Smith, J. (Submitted) Effects of Risk Framing and Social Cues on Biosecurity Compliance in Livestock Facilities: Evidence from Experimental Simulations. *Frontiers in Veterinary Science*

Merrill, S. C., and Schattman, R. E. (Submitted) Shifts in geographic vulnerability of U.S. corn crops to pests under four climate change scenarios. Journal: *Plos One*

Anderzen, J., Guzmán Luna, A., Gonzalez, D.V.L., Merrill, S.C., Caswell, M., Mendez, E., Jonapá, R.H., and Mier y Terán, M. (Submitted) Effects of on-farm diversification strategies on smallholder coffee farmer food security and income sufficiency in Chiapas, Mexico. *Journal of Rural Studies*

Mason, R., Gorres, J., Niles, M., Faulkner, J., and Merrill, S.C. (Submitted) Calibrating the APEX model: A step-by-step example. *Applied Engineering in Agriculture*

Mason, R., Merrill, S.C., Gorres, J., Faulkner, J., and Niles, M. (Submitted) Agronomic and environmental performance of dairy farms in a warmer, wetter climate. *Journal of Soil and Water Conservation*

Clark, E., Merrill, S. C., Bucini, G., Trinity, L., Koliba, C. J., Zia, A. and Smith, J. M. (Submitted) Using Digital Field Experiments To Elicit Risk Mitigation Behavioral Strategies Across Agricultural Production Networks. *Plos One*. <https://arxiv.org/abs/1909.12905>

Zia, A., Ding, S., Messer, K., Miao, H., Suter, J., Fooks, J., Guilfoos, T., Trandafir, S., Uchida, E., Tsai, Y., Merrill, S., Turnbull, S., Koliba, C., (Submitted) Characterizing Heterogeneous Behavior of Non-Point Source Polluters in a Spatial Game under Alternate Sensing and Incentive Designs. *Journal of Water Resources Planning and Management*.

Wiltshire, S., Logan, K., Merrill, S.C., and Fooks, J. (Submitted) Size matters: How Social Learning Can Improve Economic Decision-Making Surrounding Pro-Environmental Agricultural Innovations. *The American Journal of Agricultural Economics*

## **Publications (\*Refereed, \*Outreach, \*Book Section) - Continued**

\*Merrill, S. C., Koliba, C. J., Moegenburg, S., Zia, A., Parker, J., Sellnow, T., Wiltshire, S., Bucini, G., Danehy, C. and Smith, J. M. (2019) Decision-making in Livestock Biosecurity Practices amidst Environmental and Social Uncertainty: Evidence from an Experimental Game. *Plos One*. 14(4) doi: 10.1371/journal.pone.0214500. <http://arxiv.org/abs/1811.01081>

\*Merrill, S. C., Moegenburg, S. M., Koliba, C. J., Zia, A., Trinity, L., Clark, E., Bucini, G., Wiltshire, S., Sellnow, T., Sellnow, D., and Smith, J. M. (2019) Willingness to comply with biosecurity in livestock facilities: evidence from experimental simulations. *Frontiers in Veterinary Science*. Vol. 6 (156) <https://doi.org/10.3389/fvets.2019.00156>

\*Bucini, G., Merrill, S.C., Clark, E., Moegenburg, S.M., Zia, A., Koliba, C.J., Wiltshire, S., Trinity, L. and Smith J. M. (2019). Risk Attitudes Affect Livestock Biosecurity Decisions With Ramifications for Disease Control in a Simulated Production System. *Frontiers in Veterinary Science* 6(196). doi: 10.3389/fvets.2019.00196.

\*Wiltshire, S., Zia, A., Koliba, C., Bucini, G., Clark, E., Merrill, S.C., Moegenburg, S., and Smith, J. (2019) Network Meta-Metrics: Using Evolutionary Computation to Identify Effective Indicators of Epidemiological Vulnerability in a Livestock Production System Model. *Journal of Artificial Societies and Social Simulation*. Vol. 22(2), pages 1-8. <https://ideas.repec.org/a/jas/jasssj/2018-45-2.html>

\*Deutsch, C. A., J. J. Tewksbury, S. C. Merrill, R. B. Huey, D. S. Battisti, and R. L. Naylor. (2018) Model vs. experiment to predict crop losses—Response. *Science* 07 DEC 2018 : 1122-1123

\*Deutsch, C. A., J. J. Tewksbury, M. Tigchelaar, D. S. Battisti, S. C. Merrill, R. B. Huey, and R. L. Naylor. (2018) Insect metabolic and population growth rates predict increasing crop pest pressure under climate warming. *Science*. Vol. 361 (6405) 916-919. DOI: 10.1126/science.aat3466

\*Adams, A., Pontius, J., Galford, G., Merrill, S.C. and Gudex-Cross, D. (2018) Modeling carbon storage across a heterogeneous mixed temperate forest: the influence of forest type specificity on regional-scale carbon storage estimates. *Landscape Ecology*. doi.org/10.1007/s10980-018-0625-0

\*Koliba, C.J., Zia, A., and Merrill, S. C. (2018) Using Agent-Based Models to Study Network and Collaborative Governance. Voets, J., Keast, R., and Koliba, C. J. (editors). *Researching Networks and Collaboration in the Public Sector: A Guide to approaches, methodologies, and analytics* (Routledge)

\*Sellnow, T. L., Parker, J., Sellnow, D. D., Littlefield, R. S., Helsel, E., Getchell, M. C., Smith, J. M. and Merrill, S. C., (2017) Improving Biosecurity through Instructional Crisis Communication: Lessons Learned from the PEDv Outbreak. *Journal of Applied Communications*. Vol. 101 (4)

\*\* Winner of the 2018 Journal of Applied Communications Article of the Year

\*Schattman, R., Mendez, V. E., Merrill, S. C. and Zia, A. (2017) A mixed methods approach to understanding farmer and technical service provider perceptions of climate change and adaptation in Vermont, United States. *Agroecology and Sustainable Food Systems*. DOI: 10.1080/21683565.2017.1357667

### **Publications (\*Refereed, \*Outreach, \*Book Section) - Continued**

\*Scheinert, S., Zia, A., Koliba, C., and Merrill, S. C. (2017) Growing Collaborations: Forecasting Growth in Partnership Networks Using a Bottom-Up Approach. *Journal on Policy & Complex Systems* 3 (1) DOI: 10.18278/jpcs.3.1.1

\*Merrill, S. C. and F. B. Peairs (2017) Temperature variability is a key component to accurately forecast the effects of climate change on pest phenology. *Pest Management Sciences*. 73 (2) 380-388. DOI: 10.1002/ps.4320

\*Merrill, S. C., Schattman, R. E., (2016) Corn Flea Beetle & Stewarts Wilt in Corn: Shifts in Geographic Vulnerability of U.S. Corn Crops under Different Climate Change Scenarios. United States Department of Agriculture. Climate Hubs.

<http://content.govdelivery.com/accounts/USDAOCE/bulletins/155c151>

<http://www.climatehubs.oce.usda.gov/content/corn-flea-beetle-stewarts-wilt-corn-shifts-geographic-vulnerability-u-s-corn-crops-under>

\*Merrill, S. C., T. O. Holtzer, F. B. Peairs, and P. J. Lester (2015) Validating spatiotemporal predictions of an important pest of small grains. *Pest Management Science*. 71 (1): 131–138. DOI 10.1002/ps.3778.

\*Merrill, S. C., F. B. Peairs, T. L. Randolph, G. J. Michels Jr. and C. B. Walker (2014) Examining the competitive advantage of *Diuraphis noxia* (Hemiptera: Aphididae) biotype 2 over biotype 1. *Journal of Economic Entomology*. 107 (4): 1471-1475.

\*Merrill, S. C., Walter, S. M., F. B. Peairs, and E. M. Schleip (2013) The distribution of European corn borer moths in sprinkler irrigated corn. *Journal of Economic Entomology*. 106(5):2084-92

\*Kerzicnik, L.M., F.B. Peairs, P.E. Cushing, M. Draney, and S.C. Merrill (2013) Spider Fauna of Semiarid Eastern Colorado Agroecosystems: Diversity, Abundance, and Effects of Crop Intensification. *Environmental Entomology*. 42(1):131-42

\*Merrill, S. C., and F. B. Peairs (2012) Quantifying Russian wheat aphid pest intensity across the Great Plains. *Environmental Entomology*. 41 (5): 1505-1515

\*Pucherelli, S. F., F. B. Peairs, S. C. Merrill, and T. L. Randolph (2012) Russian Wheat Aphid (Hemiptera: Aphididae) Reproduction and Development on Five Noncultivated Grass Hosts. *Arthropod-Plant Interactions*. 6(1): 67-73

\*Merrill, S. C., Walter, S., F. B. Peairs, and J. A. Hoeting (2011) Spatial variability of Western bean cutworm populations in irrigated corn. *Environmental Entomology*. 40(3):654-660

\*Merrill, S. C., A. Gebre-Amlak, J. S. Armstrong, and F. B. Peairs (2010) Degree day prediction models for Sunflower stem weevil (Curculionidae: Coleoptera) development and adult emergence. Pages 9-11 in A. Gebre-Amlak, D. A. Kaan, and J. Deering, editors. Colorado State University Golden Plains Area 2010 Agricultural Handbook. Cooperative Extension, Colorado State University Fort Collins, CO.

### **Publications (\*Refereed, \*Outreach, \*Book Section) - Continued**

- \*Merrill, S. C., A. Gebre-Amlak, J. S. Armstrong, and F. B. Peairs (2010) Nonlinear Degree-Day Models of the Sunflower Stem Weevil (Coleoptera: Curculionidae). *Journal of Economic Entomology* 103(2): 303-307
- \*Merrill, S. C., T. O. Holtzer, and F. B. Peairs (2010) Examining spatial correlation between fall and spring population densities of the Russian wheat aphid (Hemiptera: Aphididae). *Colorado State Univ. Agric. Exp. Sta. Tech. Rep.* TR10-15
- \*Merrill, S. C. and T. O. Holtzer (2010) Estimating Russian wheat aphid (Homoptera: Aphididae) overwintering success using weather data. *Colorado State Univ. Agric. Exp. Sta. Tech. Rep.* TR10-14
- \*Merrill, S. C., T. O. Holtzer, F. B. Peairs, and P. J. Lester (2009) Modeling Spatial Variation of Russian Wheat Aphid Overwintering Population Densities in Colorado Winter Wheat. *Journal of Economic Entomology* 102(2): 533-541
- \*Merrill, S. C., T. O. Holtzer, and F. B. Peairs (2009) Russian Wheat Aphid, *Diuraphis noxia* (Kurdjumov), Reproduction and Development with a Comparison of Intrinsic Rates of Increase to Other Important Small Grain Aphids: A Meta-analysis. *Environmental Entomology* 38(4): 1061-1068
- \*Merrill, S. C., C. B. Walker, F. B. Peairs, T. L. Randolph, S. D. Haley, and R. W. Hammon (2009) Displacement of Russian wheat aphid, *Diuraphis noxia* (Kurdjumov), Biotype 1 in Colorado by Russian wheat aphid biotypes virulent to the wheat resistance gene *Dn4*. *Colorado State Univ. Agric. Exp. Sta. Tech. Bull.* TB09-01, 19 pp.
- \*Randolph, T. L., S. C. Merrill, and F. B. Peairs (2008) Reproductive Rates of Russian Wheat Aphid (Hemiptera: Aphididae) Biotypes 1 and 2 on a Susceptible and a Resistant Wheat at Three Temperature Regimes. *Journal of Economic Entomology* 101 (3): 955-958.
- \*Merrill, S. C., T. Randolph, C. B. Walker, and F. B. Peairs (2008) 2007 Russian wheat aphid biotype survey results for Colorado. Pp. 43 - 44 in Johnson, J. J., ed. 2008. Making better decisions: 2007 Colorado wheat variety performance trials. *Colorado State Univ. Agric. Exp. Sta. Tech. Rep.* TR08-08, 47 pp.
- \*Merrill, S. C., F. B. Peairs, H. R. Miller, T. L. Randolph, J. B. Rudolph, and E. E. Talmich (2008) Reproduction and Development of Russian Wheat Aphid Biotype 2 on Crested Wheatgrass, Intermediate Wheatgrass, and Susceptible and Resistant Wheats. *Journal of Economic Entomology* 101 (2): 541-545.
- \*Peairs, F. B., J. B. Rudolph, T. L. Randolph, and S. C. Merrill (2008) 2007 Colorado field crop insect management research and demonstration trials. *Colorado State Univ. Agric. Exp. Sta. Tech. Rep.* TR08-06, 34 pp.

### **Publications (\*Refereed, +Outreach, \*Book Section) - Continued**

+Merrill, S. C., T. L. Randolph, C. B. Walker, and F. B. Peairs (2007) 2007 Russian wheat aphid biotype survey results released. *High Plains Journal*. November.

<http://www.hpj.com/archives/2007/nov07/nov26/2007Russianwheataphidbiotyp.cfm>

+Merrill, S. C., T. L. Randolph, C. B. Walker, and F. B. Peairs (2007) 2006 Russian wheat aphid biotype survey results for Colorado. *High Plains Journal*. April.

<http://www.hpj.com/archives/2007/apr07/apr30/2006Russianwheataphidbiotyp.cfm>

\*Randolph, T. L., F. B. Peairs, S. Merrill, M. Koch, and C. B. Walker (2007) Yield Response to Russian Wheat Aphid (Homoptera: Aphididae) in Mixtures of Resistant and Susceptible Winter Wheats. *Southwestern Entomologist*. March. 32 (1): 7-15.

### **Manuscripts in Revision or Preparation**

Merrill, S. C., Koliba, C. J., Moegenburg, S., Zia, A., Clark, E., Bucini, G., Wiltshire, S and Smith, J. M. (In Preparation) Decision making under uncertainty: determining strategy heuristics in the domain of animal biosecurity. *Journal of Behavioral Decision Making*

Shrum T., Merrill, S. C., Clark, E., Trinity, L., Bucini, G., Koliba, C., Zia, A., and Smith, J. (In Preparation) Effects of personality and risk attitude on compliance with livestock biosecurity protocols.

Mason, Rachel, Scott C. Merrill, Josef Gorres, Meredith Niles and Joshua Faulkner. Using the APEX model: Crop Yields and Nutrient Losses on Dairy Farms in a Warmer, Wetter Vermont.

Koliba, C. J, Zia, A., Merrill, S. C., Wiltshire, S., Bucini, G., Moegenburg, S., Smith, J. M., Utilization of computer simulation and serious games to inform livestock biosecurity policy and governance.

Randolph, T.L., Merrill, S. C., Walker C. B., Kerzicnik, L.M., F.B. Peairs, Koch M., & Ode, P. J. (In Preparation) Effects of the Native Natural Enemy Complex on Russian Wheat Aphid. *Target Journal: Biological Control*

### **Oral Presentations**

Clark, E., S. C. Merrill, S. Moegenburg , L. Trinity, G. Bucini, C. Koliba, A. Zia, and J. M. Smith. Simulating Outbreak Scenarios For Distinguishing Risk Mitigation Behavioral Strategies Across Agricultural Production Networks. The International Society for Economics and Social Sciences of Animal Health (ISESSAH). Atlanta, Georgia, USA. July 2019.

Bucini, G., E. Clark, S.C. Merrill, A. Zia, C.J. Koliba, S. Wiltshire, S.M. Moegenburg, G. Tonsor, L.L. Schulz, L. Trinity and J.M. Smith. Risk messages, biosecure behaviors and economic effects: connecting livestock disease to human decision-making. The International Society for Economics and Social Sciences of Animal Health (ISESSAH). Atlanta, Georgia, USA. 21 July, 2019.



### Oral Presentations – Continued

Merrill, S. C., L. Trinity, C. J. Koliba, S. M. Moegenburg, T. Sellnow, E. M. Clark, A. Zia, G. Bucini, S. Wiltshire, and J. M. Smith (2019) Serious Games and Decision Making. *Symposium: Animal Disease Biosecurity Coordinated Agricultural Project*. Washington D.C., May 15<sup>th</sup>, 2019

Merrill, S. C., E. Clark, O. Langle, C. J. Koliba, S. M. Moegenburg, A. Zia, N. Cheney, T. Sellnow, S. Wiltshire, G. Bucini, L. Trinity, and J. M. Smith (2019) Willingness to Invest in Livestock Biosecurity. Evidence from Digital Field Experiments. *Symposium: Animal Disease Biosecurity Coordinated Agricultural Project*. Washington D.C., May 15<sup>th</sup>, 2019

Bucini, G., E. Clark, O. Langle, S. C. Merrill, A. Zia, C.J. Koliba, S. Wiltshire, S.M. Moegenburg, G. Tonsor, L.L. Schulz, L. Trinity, N. Cheney and J.M. Smith (2019) A Simulated Production System for Strategic Decisions on Disease Control. *Symposium: Animal Disease Biosecurity Coordinated Agricultural Project*. Washington D.C., May 15<sup>th</sup>, 2019

Trinity, L., S. C. Merrill, G. Bucini, E. Clark, C. Koliba, A. Zia, S. Wiltshire, S. Moegenburg, T. Sellnow, D. Sellnow and J. M. Smith. (2019) Effects of Message Delivery Method on Biosecurity Compliance: Evidence from an Experimental Game. International Crisis and Risk Communication Conference, Orlando, FL. March 2019

Merrill, S.C. and Hall, R. (2018) How to prepare for growing crops and food security when the climate is changing. Compression Institute. Invited conversation. December 18, 2018 Pre-talk recording: [https://zoom.us/recording/play/XV48Bl6wcOxFODtonS\\_pojb3lc9ZSy1gwLINA\\_Z1aF-uvDTKWQaq5oXlf7UIhvju?continueMode=true](https://zoom.us/recording/play/XV48Bl6wcOxFODtonS_pojb3lc9ZSy1gwLINA_Z1aF-uvDTKWQaq5oXlf7UIhvju?continueMode=true)

Bucini G., E. Clark, S. C. Merrill, C. J. Koliba, A. Zia, S. Wiltshire, L. Trinity, S. M. Moegenburg, and J. M. Smith. (2018) The role of human behavior in biosecurity adoption: interactive tools for intervention strategies. Oral presentation. PIC Health Assurance Annual Fall Meeting, 28-29 Nov. 2018, Cerdanyola del Vallés, Spain.

Merrill, S. C. (2018) Climate change will affect insect metabolism, population growth rates and spatial distributions with direct consequences for plant hosts. Marvin Seminar Series. Plant Biology. University of Vermont. September 6, 2018 Burlington, VT

Koliba, C. J., Merrill, S. C., Zia, A. (2018) *Influence of risk communication on livestock biosecurity protocol adoption across two gaming platforms: Implications for tactical and operational decision making*. XXII International Research Society for Public Management Conference. Edinburgh, Scotland

Koliba, C. J., Zia, A., Merrill, S. C. (2018) *Using Agent-Based Models to Prototype Governance and Policy Designs*. XXII International Research Society for Public Management Conference. Edinburgh, Scotland

Bucini G., E. Clark, S. C. Merrill, S. M. Moegenburg, S. Wiltshire, A. Zia, C. J. Koliba, and J. M. Smith. (2018) 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. Lemans Swine Conference, Saint Paul, MN. September 15-18.

### **Oral Presentations – Continued**

Moegenburg, S. M., Merrill, S. C., Koliba, C. J., Zia, A., Trinity, L., Clark, E., Bucini, G., Wiltshire, and Smith, J. M. (2018) Effects of disease risk, information certainty, and messaging on biosecurity practices on livestock facilities: evidence from experimental simulations. Oral presentation. ISESSAH-InnovSur 2018 Conference, Montpellier, France. May 14- 18.

Bucini G., S. Wiltshire, E. Clark, S. C. Merrill, C. Koliba, A. Zia, L. Trinity, S. Moegenburg, and J. M. Smith. (2018) Inter-active model-based tools for animal disease simulation and intervention strategies. Oral presentation. ISESSAH-InnovSur 2018 Conference, Montpellier, France. May 14-18.

Bucini G., E. Clark, J. M. Smith, S. C. Merrill, A. Zia, C. Koliba, S. Moegenburg, S. Wiltshire, L. Trinity, and E. Reilly. (2018) Interactive tools for simulation of biosecurity adoption and animal disease control. Seminar. Animal and Veterinary Science Dept., University of Vermont, Burlington, VT. February 16.

Merrill, S. C., Koliba, C., Moegenburg, S., Clark, E., Bucini, G., Zia, A. and Smith, J. M. (2017) *Serious Games: Data gathering, complex systems analysis and nudging*. North East Conference on Public Administration. Burlington, VT. November 3.

Koliba, C. J., Zia, A., and Merrill, S. C. (2017) Utilization of Computer Simulation and Serious Games to Inform Livestock Biosecurity Policy and Governance. Conference on Complex Systems. September.

Bucini, G, S Wiltshire, E Clark, S Merrill, A Zia, C Koliba, S Moegenburg, L Trinity, J Smith. (2017) Protecting herd health: Interactive agent-based modeling used to reduce the impact of disease. Larner College of Medicine 2017 Celebration of Excellence in Research. Burlington, Vermont. November.

Koliba, C, A Zia, S Merrill, S Wiltshire, G Bucini, S Moegenburg, J Smith. (2017) Gamification of decision support tools. Conference on Complex Systems, Cancun, Quintana Roo, Mexico. September.

Bucini, G., S. Wiltshire, S. Merrill, A Zia, C. Koliba, E. Clark, L. Trinity, S. Moegenburg, J. Smith. (2017) Regional U.S. Hog Production Chain Biosecurity Model. Agent-based Modeling - ABM17- A Symposium that advances the science of ABMs. San Diego, California. April

Bucini, G., S. Wiltshire, S. Merrill, A. Zia, C. Koliba, E. Clark, L. Trinity, S. Moegenburg, J. Smith. (2017) "Where will the Infection Spread? Effects of Movement Networks and Human Risk Attitude on Spread of Swine Disease." Agent-based Modeling - ABM17- A Symposium that advances the science of ABMs. San Diego, California. April

Zia, A., Merrill, S. C., Koliba, C. J., Moegenburg, S., Wiltshire, S., Clark, E., Bucini, G. and Smith, J. M. (2017) Are Human Agents Myopic or Far-Sighted Under Differential Conditions of Risk and Ambiguity? A Bayesian Network Model of Biosecurity State Transitions in a Sequential Decision Experiment. Conference on Complex Systems. September 2017

Koliba, C, A. Zia, S. Merrill, S. Wiltshire, J. Smith, G. Buccini, S. Moegenburg. (2017) Utilization of computer simulation and serious games to inform livestock biosecurity policy and governance. Public Management Research Conference, Washington, DC. June 8-10, 2017.

### **Oral Presentations – Continued**

Bucini, G., S. Merrill, C. Koliba, A. Zia, S. Wiltshire, E. Clark, L. Trinity, S. Moegenburg, and J. Smith. (2017) Hog production chain biosecurity model. Northeast Conference on Public Administration. November 3, 2017, Burlington, Vermont.

Koliba, C., A. Zia, S. Merrill, G. Bucini, E. Clark, S. Moegenburg, and J. Smith. (2017) Addressing wicked problems: What tools are in the toolbox? Serious gaming and system simulation. Northeast Conference on Public Administration. November 3, 2017, Burlington, Vermont.

Zia, A, C Koliba, S Merrill, E Clark, G Bucini, J Smith, S Moegenburg. (2017) Using Agent-based Models to address wicked problems. North East Conference on Public Administration. Burlington, Vermont. November

Merrill, S.C., Zia, A., Koliba, Wiltshire, S., Smith, J., and Moegenburg, S. (2016) Innovation in ABM calibration: Using experimental gaming data to inform agent rule sets. Swarmfest 2016. Agent-based Modeling. Burlington, Vt

Turnbull, S., Tsai, Y., Zia, A., and Merrill, S.C (2016) A Method for Defining Drainage Basins and Water Sensors within a Water Quality Modeling ABM. Swarmfest 2016. Agent-based Modeling. Burlington, Vt

Merrill, S. C. (2016) Experimental Gaming Research, gathering data to understand Social-Ecological Systems. Plant and Soil Science Departmental Seminar. Burlington, VT

Merrill, S. C. (2016) Experimental gaming research: the next step in data gathering and complex systems analysis. Research on Adaptation to Climate Change Retreat. Burlington, VT.  
[http://epscor.w3.uvm.edu/2/node/2202?URL=http://www.uvm.edu/~epscor/jwplayer.php?video=video/2\\_6\\_2016\\_21\\_Scott%20Merrill-19.mp4](http://epscor.w3.uvm.edu/2/node/2202?URL=http://www.uvm.edu/~epscor/jwplayer.php?video=video/2_6_2016_21_Scott%20Merrill-19.mp4)

Zia, A., S. Merrill, C. Koliba, S. Moegenburg, S. Wiltshire, E. Clark, G. Bucini, J. Parker, and J. Smith. Machine Learning. (2016) The Effects of Biosecurity State Transitions in a Sequential Decision Game. Annual BayesiaLab Conference and Advanced BayesiaLab Course, Nashville, TN. September 2016.

Wiltshire, S., Logan, K., Merrill, S. C., Fooks, J. Koliba, C. J. (2015) Policy Implications from a Social Learning Economics Experiment Addressing Dairy Farm Rotational Grazing. American Society for Public Administration, March 6-10, 2015 Chicago IL

Merrill, S. C., (2014) The value of simulations: *Bt* Corn and the European corn borer. Ecology, Evolution, and Environmental Biology Talk. University of Vermont

Merrill, S. C., Tewksbury, J.J., Deustch, C. A., Battisti, D. S., Naylor, R. L. (2012) Using relationships between temperature, metabolism and consumption to predict the effects of climate change on pest pressure. Invited symposium. Entomological Society of America Annual Meeting. November. Knoxville, TN

Merrill, S. C., Tewksbury, J.J., Deustch, C. A., Battisti, D. S., Naylor, R. L. (2012) Using relationships between temperature, metabolism, and consumption to predict damage from pests in our changing climate. Plant and Soil Science Weekly Seminar Series

### **Oral Presentations – Continued**

Merrill, S. C. (2012) Predicting the effects of climate change on agricultural pest incidence: How secure is our food supply? Invited seminar for the Interdisciplinary Climate Change Seminar series. University of Idaho. March 2012. Moscow, ID

Battisti, D. S., Tewksbury, J. J. Deutsch, C. A., Merrill, S. C., and Naylor, R. L. (2012) Heat and Insect Pest Pressures on Global Food Production due to Global Warming. Planet Under Pressure conference. March 2012. London, UK

Merrill, S. C. (2011) A Series of Surprises: Modelling the Pest Agroecosystem Landscape. Commonwealth Scientific and Industrial Research Organization (CSIRO) Brisbane. June 2011. Brisbane, Australia

Merrill, S. C. (2011) Revisiting our assumptions about the pest agroecosystem landscape. NCEAS (National Center for Ecological Analysis and Synthesis) Ecolunch Seminar Series. June 2011. Santa Barbara, CA

Merrill, S. C. (2011) Could Organic Farming Threaten Our Food Supply? Host: Ranganathan, J. on Curiouser and Curiouser. Miller-McCune. Podcast. <http://www.miller-mccune.com/curiouser/could-organic-farming-threaten-our-food-supply-34734/>

Merrill, S. C. (2010) Understanding the link between Precision Agriculture and Landscape Ecology. NCEAS (National Center for Ecological Analysis and Synthesis) Ecolunch Seminar Series. April 2010. Santa Barbara, CA

Merrill, S. C. (2006) Modeling the Spatial and Temporal Variation of Russian Wheat Aphid, *Diuraphis Noxia* (Homoptera: Aphididae) Overwintering Densities in a Colorado Cropping System. Proceedings of the Entomological Society of America. Entomological Society of America Meeting. December 2006. Cincinnati, OH

Merrill, S. C. (2005) Modeling overwintering densities of Russian wheat aphids. Department of Bioagricultural Sciences and Pest Management Seminar series. Colorado State University. November. Fort Collins, CO

Merrill, S. C. (2005) Modeling overwintering Russian wheat aphid densities in a cropping system in Colorado. Proceedings of the International Association of Landscape Ecologists. IALE Meeting March 2005. Syracuse, NY

Merrill, S. C., T. O. Holtzer, F. B. Peairs, and J. E. Cipra (2004) Modeling spatial and temporal densities of the Russian wheat aphid. Proceedings of the Ecological Society of America. Ecological Society of America Meeting 2004. Portland, OR

## Poster Presentations

Smith, J.M., Bass, T., Bucini, G., Dritz, S., Kerr, S., Koliba, C., Littlefield, R., McDonald, J., Merrill, S. C., Parker, J., Rankin, J., Schulz, L., Sellnow, D., Sellnow, T., Sero, R., Tonsor, G., and Zia, A., (2017) A human behavioral approach to reducing the impact of livestock pest or disease incursions of socio-economic importance. United States Department of Agriculture, National Institute of Food and Agriculture Project Directors Meeting, Washington D.C.

Mason, R., J. Gorres, and Merrill, S. C. (2017) Resilience & viability of dairy farms in a warmer, wetter Vermont. No-Till & Cover Crops symposium. February 2017. Burlington, VT.

Trinity, L., S. C. Merrill, N. El-Naboulsi, and W. Nupp (2016) A Social-Ecological Experimental Game Examining Farmers' Willingness to Install Vegetative Buffer Strips. North East Water Resources Network Student Symposium. Kingston, RI

Wynn, A., W. Nupp, E. Uchida, S. C. Merrill, H. Miao and L. Trinity (2016) How Farmer's Decisions Change in Response to Weather and Price Uncertainty. North East Water Resources Network Student Symposium. Kingston, RI

El-Naboulsi, N., Merrill, S. C., Wynn, A., Koliba, C. J., Zia, A. (2016) Decision-Making Processes in Relation to Fertilizer Use, Revenue, and Vegetative Buffer Installation. Vermont EPSCoR Student Symposium, Burlington, VT

Wynn, A. and Merrill, S.C. (2015) An experimental game to test the effect of weather forecast uncertainty and sell price uncertainty on manure storage management decision. North East Water Resources Network Student Symposium. Burlington, VT

Scheinert, S., Koliba, C., Zia, A., Tsai, Y., Merrill, S. C., and Coleman, S. (2015) Bridging the Meso and Micro level scales of social complexity with a Socio-Ecological System. NSF EPSCoR National Conference, Portsmouth, NH. November 1-3, 2015. Poster Presentation.

Merrill, S. C. and F. B. Peairs (2011) The perils of linear thinking: modeling the effects of climate change on insect pest dynamics. Entomological Society of America Annual Meeting. November. Reno, NV

Randolph, T. L., C. Walker, S. C. Merrill, M. Koch and F. B. Peairs (2011) Regulation of Russian wheat aphid (*Diuraphis noxia*) populations with natural enemies present in the wheat system. Entomological Society of America Annual Meeting. November. Reno, NV

Merrill, S. C. and F. B. Peairs (2010) How will climate change affect the risk of crop infestation by the Russian wheat aphid. USDA-Agriculture & Food Research Initiative. Arthropods & Nematodes Biology & Management Programs Awardee Workshop. December. San Diego, CA

Merrill, S. C. and F. B. Peairs (2010) How will climate change affect the risk of crop infestation by the Russian wheat aphid. Entomological Society of America Annual Meeting. December. San Diego, CA

## Poster Presentations - Continued

Merrill, S. C. and F. B. Peairs (2010) Developing Outbreak Prediction Models to Improve Russian Wheat Aphid Pest Management Strategy. USDA-Agriculture & Food Research Initiative. Arthropods & Nematodes Biology & Management Programs Awardee Workshop. March. Washington, DC

Merrill, S. C. (2006) Developing Site-Specific Insect Management Zones, Loss Factors, and Economic Injury Levels for Economically Important Pests of Corn in Colorado. Proceedings of the Eighth International Conference on Precision Agriculture and Other Precision Resources Management. Eighth International Conference on Precision Agriculture and Other Precision Resources Management. July. Minneapolis, MN

Merrill, S. C., P. J. Lester, T. O. Holtzer, J. E. Cipra, F. B. Peairs and J. Norman (2003) Modeling overwintering success of the Russian wheat aphid. Proceedings of the International Association of Landscape Ecologists. IALE Meeting April 2003. Banff, Canada

## Media

Associated with the Social Ecological Gaming and Simulation lab

- Across the Fence WCAX. [https://www.youtube.com/watch?v=N-TeBfKe7j8&feature=youtu.be&list=PLJoQQE\\_ygD\\_uUv7toBtYG8O1V1O25c6mo](https://www.youtube.com/watch?v=N-TeBfKe7j8&feature=youtu.be&list=PLJoQQE_ygD_uUv7toBtYG8O1V1O25c6mo)

Associated with Deutsch et al 2018 “Insect metabolic and population growth rates predict increasing crop pest pressure under climate warming”. *Science*:

- EurekAlert! Global warming: More insects, eating more crops [https://eurekalert.org/pub\\_releases/2018-08/uov-wcw082718.php](https://eurekalert.org/pub_releases/2018-08/uov-wcw082718.php)
- <https://www.mynbc5.com/article/study-says-climate-change-brings-more-insects-hungrier-for-crops/23060736> . Reporter: Pascale, Jackie
- <https://www.nytimes.com/aponline/2018/08/30/science/ap-us-sci-warming-hungry-bugs.html>
- <https://apnews.com/90f113cd1c6a40cba71930d77e0148c7/Global-warming-could-spur-more-and-hungrier-crop-eating-bugs>
- <https://www.reuters.com/article/us-global-climatechange-crops/hotter-climate-means-hungrier-insects-will-munch-millions-more-tons-of-crops-idUSKCN1LF2BU>
- <https://www.theguardian.com/environment/2018/aug/30/crop-losses-to-pests-will-soar-as-climate-warms-study-warns>
- <https://www.nbcnews.com/health/health-news/global-warming-may-cause-insects-gobble-more-crops-study-finds-n905186>
- <https://www.yahoo.com/news/global-warming-insects-hungrier-eating-key-crops-study-182427531.html>
- <https://www.cbc.ca/news/technology/insects-climate-change-1.4805183>
- <https://www.bbc.co.uk/news/science-environment-45358643>
- [https://www.lemonde.fr/climat/article/2018/08/30/le-rechauffement-favorise-le-ravage-des-recoltes-par-les-insectes-nuisibles\\_5348257\\_1652612.html](https://www.lemonde.fr/climat/article/2018/08/30/le-rechauffement-favorise-le-ravage-des-recoltes-par-les-insectes-nuisibles_5348257_1652612.html)

## Media - Continued

- Seed Today (2018) Q4. Crop Research: More Insects, Eating More Crops. Pgs 114-115  
<http://edition.pagesuite.com/launch.aspx?pbid=5e77f606-60e2-4fd9-9f38-92a132864061>

Climate change: Farmers and foresters confront new pests, fear the 'next thing'. Vermont Digger. 2019.

- <https://vtdigger.org/2019/09/19/climate-change-farmers-and-foresters-confront-new-pests-fear-the-next-thing/>

Regarding Basin Resilience to Extreme Events project:

- Emmy award winning PBS special "Saving our waters"  
<https://www.vermontpbs.org/water/> . Episode 3. 2017

Regarding Climate Change UN Special Report 2018 1.5C:

- Neliana Ferraro (2018) WCAX Climate Change. How will 1.5C impact us?  
<https://www.wcax.com/content/news/Researchers-Climate-change-predictions-will-have-local-impact-495973541.html>

Regarding Animal Disease publications from Spring/summer 2019

- Seven Days - <https://www.sevendaysvt.com/vermont/uvm-researchers-use-video-games-to-help-pigs-from-getting-sick/Content?oid=28218583>
- WCAX, "You Can Quote Me", Cat Viglienzoni reporting:  
<https://www.wcax.com/content/news/YCQM-July-14-2019-512704071.html>
- WCAX, Cat Viglienzoni reporting: <https://www.wcax.com/content/news/How-video-games-could-help-protect-the-agriculture-industry-512271911.html>
- USDA NIFA website:  
<https://content.govdelivery.com/accounts/USDANIFA/bulletins/24f4150>
- University of Vermont - [https://www.uvm.edu/cals/news/video-games-offer-clues-help-curb-animal-disease-outbreaks?utm\\_source=CALS&utm\\_medium=email&utm\\_campaign=SEGS](https://www.uvm.edu/cals/news/video-games-offer-clues-help-curb-animal-disease-outbreaks?utm_source=CALS&utm_medium=email&utm_campaign=SEGS)
- Voice of America - <https://www.voanews.com/silicon-valley-technology/video-game-helps-farmers-fight-disease>. -- syndicated to several online news sites as well (ex: Hawaii Telegraph, AsiaPacificNews.net, Newsgram.com).
- Labroots - <https://www.labroots.com/trending/technology/15090/video-game-reduce-animal-disease-outbreaks>.
- Science Daily - <https://www.sciencedaily.com/releases/2019/06/190625102430.htm>
- ScienMag: Science Magazine (scienmag.org): <https://scienmag.com/video-games-offer-clues-to-help-curb-animal-disease-outbreaks/>
- Feedstuffs.com - <https://www.feedstuffs.com/news/video-games-offer-clues-help-curb-animal-disease-outbreaks>
- Serious Games: Investigating Behavioral Approaches to Biosecurity.  
<https://agbiosecurityproject.org/serious-games-biosecurity/>

## Media - Continued

- Phys.org - <https://www.longroom.com/discussion/1536611/video-games-offer-clues-to-help-curb-animal-disease-outbreaks>
- Science Codex - <https://www.sciencecodex.com/video-games-offer-clues-help-curb-animal-disease-outbreaks-628234>
- Newsgroove.co.uk - <https://www.newsgroove.co.uk/video-games-offer-clues-to-help-curb-animal-disease-outbreaks-tri-state-livestock-news/>
- Newscaf - [http://www.newscaf.com/technology/video-games-offer-clues-to-help-curb-animal-disease\\_1137659.html](http://www.newscaf.com/technology/video-games-offer-clues-to-help-curb-animal-disease_1137659.html)
- Health Medicine Network - <http://healthmedicinet.com/i/video-games-offer-clues-to-help-curb-animal-disease-outbreaks/>