Curriculum Vitae – Dr. Christopher Bone

Name: Christopher Bone
Position: Assistant Professor
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Education

Degree	Year	University	Subject
B.A. Honors	2003	University of Toronto	Environmental Studies
M.Sc.	2005	Simon Fraser University	Geography
Ph.D.	2009	Simon Fraser University	Geography

Work Experience

Position held	Date	Organization
Assistant Professor	2011- present	University of Oregon
Postdoctoral Research Scientist	2010-2011	Canadian Forest Service
Postdoctoral Research Scientist	2009-2010	University of Alaska Anchorage

Grants and Awards

"*Policy Barriers to Prescribed Fire: Identifying Opportunities and Mechanisms for Change*" (co-PI with PI Dr. Courtney Schultz). Funded by the Joint Fire-Science Program, $172,524 (2016-2019).

"*Mapping Early Korea in a Globalized Context: Interdisciplinary Approach to Origins of Agriculture and Social Complexity in Prehistoric-Early Historic Korea*" (co-PI with PI Dr. Gyoung-Ah Lee). Funded by Korean Studies Promotion Service, Academy of Korean Studies, Ministry of Education. Approximately US $1,300,000 (2015-2020).

"*Course Development for Advanced GIS*" (PI). Funded by the National Institute for Transportation and Communities, $40,000 (2015).

"*Forest Governance and Climate Change in Driving Native Insect Outbreaks*" (PI). Funded by NSF Dynamics of Coupled Natural and Human Systems Program, $1,360,000 (2014-2018).

"*Crowdsourcing the Collection of Transportation Behavior Data*" (PI). Funded by the National Institute for Transportation and Communities, $132, 935 (2014-2015).

"*An Agent-based Model Simulating Pedestrian Behavior Response to Environmental Structural Changes* (co-PI with PI Dr. Amy Lobben). Funded by the National Institute for Transportation and Communities, $138,194 (2014-2015).

"*Drivers of the Beetle Empire*"(PI). Funded by the University of Oregon's Office of Research, Innovation and Graduate Education, $49,969 (2013-2014).

Earth Systems Research Institute (ESRI) Education Grant, $10, 000 (2012-2013).

Dean of Graduate Studies Convocation Medal for Academic Excellence, Simon Fraser University (2010).

NSERC Doctoral Canadian Graduate Scholarship, $105,000 (2006 – 2009).

Gordon MacNabb Scholarship for Intelligent Systems, awarded by MacDonald, Dettwiler and Associates, $5,000 (2006).

Publications in Refereed Journals

Nelson, M., M. Ciochinna and **C. Bone**. Accepted. Assessing spatiotemporal relationships between wildfire and mountain pine beetle disturbances across multiple time lag. Submitted to *Ecospheres*. Submission no. ECS16-0043.

Bone, C. In press. A complex adaptive theoretical modeling approach for sustainable forestry in China. Submitted to *Technological Forecasting and Environmental Change*. Submission no. TFSC-15-907.

Morris, E. and **C. Bone.** 2016. Identifying Spatial Data Availability and Spatial Data Needs for Chagas Disease Mitigation in South America. *Spatial and Spatio-temporal Epidemiology* 17:45-58.

Bone, C., C. Moseley, K. Vinyeta and R.B. Bixler. 2016. Employing resilience in the United States Forest Service. *Land Use Policy* 52: 430-438.

Kenbeek, S., **C. Bone** and C. Moseley. 2016. A network modeling approach to policy implementation in natural resource management agencies. *Computers, Environment and Urban Systems* 57:155-177.

Nelson, M. and **C. Bone**. 2015. Effectiveness of dynamic quarantines against pathogen spread in models of the horticultural trade network. *Ecological Complexity* 24:14-28.

O'Sullivan, D., T. Evans, S. Manson, S. Metcalf, A. Ligmann-Zielinska, and **C. Bone**. 2015. Strategic directions for agent-based modeling: avoiding the YAAWN syndrome. *Journal of Land Use Science* 11: 1-11.

Bone, C. and M. Altaweel. 2014. Modeling micro-scale ecological processes and emergent patterns of mountain pine beetle epidemics. *Ecological Modeling*, 289: 45-58.

Bone, C., A. Ager, K. Buzel and L. Tierney. 2014a. A geospatial search engine for discovering multi-format geospatial data across the web. *International Journal of Digital Earth*. DOI:10.1080/17538947.2014.966164.

Bone, C., B. Johnson, M. Nielsen-Pincus, E. Sproles, and J. Bolte. 2014b. A temporal variant-invariant validation approach for agent-based models of landscape dynamics. *Transactions in GIS,* 18: 161-182.

Bone, C., J. White, M. Wulder, C. Robertson, and T. Nelson. 2013a. The impact of forest pattern on host selection by mountain pine beetle at different beetle population densities. *Forests,* 4(2) 279-295.

Bone, C., M. Wulder, J. White, C. Robertson, and T. Nelson. 2013b. A GIS-based risk rating of forest insect outbreaks using aerial overview surveys and the local Moran's I statistic. *Applied Geography,* 40: 161-170.

Altaweel, M. and **C. Bone**. 2012. Applying content analysis for investigating the reporting of water issues. *Computers, Environment and Urban Systems*, 8: 733-761.

Bone, C., S. Dragićević and R. White. 2011. Modeling-in-the-middle: bridging the gap between agent-based modeling and multi-objective decision making for land use change. *International Journal of Geographical Information Science*, 25:717-737.

Bone, C., L. Alessa, A. Kliskey and M. Altaweel. 2011. Assessing the impacts of local knowledge and technology on climate change vulnerability in remote communities. *International Journal of Environmental Research and Public Health*, 8: 733-761.

Alessa, L, M. Altaweel, A. Kliskey, **C. Bone**, W. Schnabel, and K. Stevenson. 2011. Alaska's freshwater resources: issues affecting local and international interests. *Journal of the American Water Resource Association* 47: 143-157.

Bone, C., L. Alessa, M. Altaweel and A. Kliskey. 2010. The influence of statistical methods and reference dates for estimating temperature trends in Alaska. *Journal of Geophysical Research* 115 : doi : doi:10.1029/2010JD014289.

Bone, C. and S. Dragićević. 2010a. Incorporating spatio-temporal knowledge in an intelligent agent model for natural resource management. *Landscape and Urban Planning* 96: 123-133.

Bone, C. and S. Dragićević. 2010b. Simulation and validation of a reinforcement learning agent-based model for multi-stakeholder forest management.*Computers, Environment and Urban Systems*, 34: 162-174.

Altaweel, M., Alessa, L., Kliskey, A. and **C. Bone.** 2010a. Monitoring land use: capturing change through an information fusion approach. *Sustainability*, 2(5): 1182-1203.

Altaweel, M., L. Alessa, A. Kliskey, and **C. Bone.** 2010b. A framework to structure agent-based modeling data for social-ecological systems. *Structure and Dynamics: eJournal of Anthropological and Related Sciences,* 4(1).

Bone, C. and S. Dragićević. 2009a. GIS and intelligent agents for natural resource allocation: A reinforcement learning approach. *Transactions in GIS*, 13: 253-272.

Bone, C. and S. Dragićević. 2009b. Evaluating spatio-temporal complexities of forest management: An integrated agent-based modeling and GIS approach. *Environmental Modeling and Assessment,* 14: 481-496.

Bone, C. and S. Dragićević. 2009c. Defining transition rules with reinforcement learning for modeling land cover change. *Simulation*, 85(5): 291-305.

Bone, C., Dragićević, S., & Roberts, A. 2007. Evaluating forest management practices using a GIS-based cellular automata modeling approach with multispectral imagery. *Environmental Modeling & Assessment*, 12(2): 105-118.

Bone, C., S. Dragićević and A. Roberts. 2006. A fuzzy-constrained cellular automata model of forest insect infestations. *Ecological Modelling*, 192(1-2): 107-125.

Bone, C., Dragićević, S., and Roberts, A. 2005. Integrating high resolution RS, GIS and fuzzy set theory for identifying susceptibility areas of forest insect infestations. *International Journal of Remote Sensing*, 26(10): 4809-4828.

Extended Abstracts in Conference Proceedings

Bone, C. and Dragićević, S. 2008. RELAM: A spatio-temporal GIS agent model for optimizing forest resource allocation. Extended abstract in proceedings of *GIScience 2008*, Park City, Utah, September 23-26.

Bone, C. and Dragićević, S. 2005. Sensitivity of a fuzzy-constrained cellular automata model of forest insect infestation. Extended abstract in proceedings of *GeoComputation 2005*, Ann Arbor, Michigan, August 1-3.

Conference Presentations

Bone, C. 2015. A complex adaptive theoretical modeling approach for sustainable forestry in China. Presented at *Sustainable Asia Conference 2015*, Lanzhou, China, September 19-20.

Bone, C. and C. Moseley. 2015. The unintended consequences of forest policies on disturbance regimes. Presented at the *International Association of Landscape Ecology*, Portland, OR, July 5-10.

Bone, C. and L. Jaseney. 2015. A Evaluating the Utility of Simulation Modeling in Planning. Presented at the *Association of American Geographers Annual General Meeting*, Chicago, IL, April 21-25

Bone, C. 2013. A spatiotemporal analytical framework for agent-based modeling. Presented at the *Association of American Geographers Annual General Meeting*, Los Angeles, CA, April 9-13.

Bone, C. 2012. ArcGIS Online: New pathways to teaching GIS. Presented at the Esri Education Conference, San Diego, CA. July 21-23.

Bone, C., Johnson, B., Bolte, B. and others. 2012. Integrating multi-objective decision making theory and agent- based modeling for enhancing spatial decision support systems. Presented at the *Association of American Geographers Annual General Meeting*, New York, N.Y, February 25-28.

Bone, C. Alessa, L., Kliskey, A., Altaweel, M. and Lammers, R. 2010. Simulating community resilience to freshwater dynamics with social agents. Presented at the *Association of American Geographers Annual General Meeting*, Washington, D.C, April 13-18.

Bone, C. 2009. Agents, cells, bugs and trees: Understanding forests from the bottom-up. Presented at the *Environment and Natural Resource Institute Seminar Series*, University of Alaska Anchorage, November 13.

Bone, C. and Dragićević, S. 2009. From heuristics to complexity: Integrating artificial intelligence and agent-based modeling for simulating patterns and processes of forest cover change. Presented at *The Modelling of Complex Social Systems Colloquium Series*, Simon Fraser University, June 10.

Bone, C. and Dragićević, S. 2009. GIS and spatial modeling algorithms for multi-objective forest management. Presented at <u>*GeoTec 2009*</u>, Vancouver, British Columbia, June 1-4.

Bone, C. and Dragićević, S. 2009. An intelligent agent model for multi-objective urban growth. Presented at the *Association of American Geographers Annual General Meeting*, Las Vegas, Nevada, March 22-27.

Bone, C. and Dragićević, S. 2008. Machine learning and agent-based modeling for spatial decision support systems. Presented at the *Association of American Geographers Annual General Meeting*, Boston, Massachusetts, April 15-19.

Bone, C. 2006. Forest management in BC: Gaining knowledge through GIS modeling and remote sensing. Presented at *MacDonald Dettwiler and Associates' Weekly Seminar Series*, Richmond, British Columbia, July 25.

Bone, C. 2006. Integrating spatial technologies for modeling complexities of forest processes and management. Presented at *Science Speaker Series*, *University of British Columbia Okanagan*. Kelowna, British Columbia, November 9.

Dragićević, S. and **Bone, C**. 2005. Modeling land-use transitions with fuzzy controlled cellular automata. *GeoInformatics'05*, Toronto, Ontario, August 17-19.

Bone, C., Dragićević, S. and Roberts, A. 2005. Modelling forest infestation by integrating

fuzzy sets, RS and GIS. Presented at the *Canadian Association of Geographers Annual General Meeting*, London, Ontario, May 31 – June 4.

Invited Talks

Modeling Coupled Human and Natural Systems. Presented at the College of Earth, Ocean and Atmospheric Sciences, Oregon State University. May 20, 2016.

Complex Adaptive Systems Modeling for Coupled Human and Natural Systems Research. Presented at the School of the Environment's Seminar Series, Portland State University. March 5, 2014.

Where to From Here: Frontiers of GIScience Reearch. Presented at GIS Day, Washington University in St. Louis. November 20, 2013.

ArcGIS Online: New pathways to teaching GIS. Presented at the Esri Education Conference, San Diego, CA. July 21-23, 2013.

Teaching

Number	Title	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016
Geog 181	Our Digital Earth		✓	✓	✓	✓
Geog 199	Mapping Without Borders			✓	✓	✓
Geog 410/510	Spatial Analysis	✓				✓
Geog 490/590	Spatial Modeling			✓		
Geog 482/582	GIScience II	✓	✓			✓
Geog 491/591	Advanced GIS	✓	✓	✓	✓	
Geog 607	Graduate Seminar		✓		✓	

Graduate Student Supervision

PhD Advising

- Dongmei Chen, UO Geography, 2015-present

Master's Advising

- Christine Grummon, UO Geography, 2014-present
- Joe Bard, UO Geography, 2014-present
- Emily Morris, UO Geography, 2013-2015. *Identifying Spatial Data Needs for Chagas Disease Mitigation"*
- Seth Kenbeek, UO Geography, 2013-2015. *Understanding the Roles of Network Structure and Distance in the Process of Natural Resource Policy Implementation.*
- Lauren Tierney, UO Geography, 2013-2015. *An Agent-Based Model of Wildlife Migratory Patterns in Human-Disturbed Landscapes.*
- Nathan Mosurinjohn, UO Geography, 2012-2014. *Evaluating the Influence of Policy and Technology in Driving Aquaculture Land Use Patterns in Thailand, 1990-2013.*

PhD Committee Member

- Nick Perdue, UO Geography, 2012-present
- Daniel Thomas, UO Biology, 2012-present
- Sacha Gelfer, UO Economics, 2011-present
- James Dietrich, UO Geography, 2009-2014. *Applications of Structure-from-Motion Photogrammetry to Fluvial Geomorphology.*

Master's Committee Member

- Rudi Omri, UO Geography, 2014-present
- Jonathan Gaudreau, McGill University, Geography, 2014-present
- Alanna Young, UO Geography, 2011-2014. *Analysis of Spatiotemporal Variations in Human- and Lightning-caused Wildfires from the Western United States, 1992-2011*
- Ben Metcalf, UO Geography, 2010-2012. *The Influence of Cognitive Style on Navigational Map Reading.*

Professional Services

- Scientific Review Committee Member, Socio-Environmental Synthesis Center (2013 – present)
- Reviewer for National Science Foundation Programs Geography and Spatial Sciences Program and Division of Environmental Biology Program
- AAG Special Session Organizer, Complex Systems Modeling (2012, 2013, 2015)
- Reviewer for *International Journal of Geographic Information Science; Computers, Environment and Urban Systems; Landscape and Urban Planning; Environmental Modeling and Software; Ecological Modelling; Urban Geography; Environment and Planning B; International Journal of Remote Sensing; Applied Geography; Progress in Human Geography.*