

## Dr Jed A. Long

Lecturer

Centre for GeoInformatics

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### Education

#### University of Victoria

*PhD, Geography*

Dissertation: Developing Quantitative Methods for Movement Data

Victoria, BC

2013

#### University of Victoria

*MSc, Geography*

Thesis: Quantifying Change in the Spatial Pattern of Forests: Assessing Impacts of Mountain Pine Beetle Infestation and Harvest

Victoria, BC

2009

#### Centre of Geographic Sciences

*Advanced Diploma, Geographic Information Systems (GIS)*

Lawrencetown, NS

2007

#### University of Guelph

*BSc, Physical Science*

Minor: GIS and Environmental Analysis

Guelph, ON

2006

### Publications

#### *Accepted or In Press*

**Long, J.A.**, Nelson, T.A., Webb, S.L., Gee, K.L. A Critical examination of indices of dynamic interaction for wildlife telemetry studies. *Journal of Animal Ecology*. Accepted: January 6, 2014.

#### **Refereed Journals**

**Long, J.A.**, Nelson, T.A., Nathoo, F.S. (2014) Toward a kinetic-based probabilistic time geography. *International Journal of Geographical Information Science*. 28(5): 855-874.

Robertson, C., **Long, J.A.**, Nathoo, F.S., Nelson, T.A., Plouffe, C.C.F. (2014) Assessing quality of spatial models using the structural similarity index and posterior predictive checks. *Geographical Analysis*. 46(1): 53-74.

**Long, J.A.**, Nelson, T.A. (2013) A review of quantitative methods for movement data. *International Journal of Geographical Information Science*. 27(2): 292-318.

**Long, J.A.**, Nelson, T.A. (2013) Measuring dynamic interaction in movement data. *Transactions in GIS*. 17(1): 62-77.

**Long, J.A.**, Robertson, C., Nathoo, F.S., Nelson, T.A. (2012) A Bayesian space-time model for discrete spread processes on a lattice. *Spatial and Spatio-Temporal Epidemiology*. 3: 151-162.

- Long, J.A.**, Nelson, T.A. (2012) Time geography and wildlife home range delineation. *Journal of Wildlife Management*. 76(2): 407-413.
- Long, J.A.**, Hazlitt, S.L., Nelson, T.A., Laberee, K. (2011) Estimating 30-year change in coastal old-growth habitat for a forest nesting seabird in British Columbia, Canada. *Endangered Species Research*. 14(1): 49-59.
- Long, J.**, Nelson, T., Wulder, M. (2010) Regionalization of landscape pattern indices using multivariate cluster analysis. *Environmental Management*. 46(1): 134-142.
- Long, J.A.**, Nelson, T.A., Wulder, M.A. (2010) Characterizing forest fragmentation: Distinguishing change in composition from configuration. *Applied Geography*. 30(3):426-435.
- Long, J.A.**, Nelson, T.A., Wulder, M.A. (2010) Local indicators for categorical data (LICD): impacts of scaling decisions. *The Canadian Geographer*. 54(1):15-28.

## Reports

- Nelson, T.A., **Long, J.A.**, Laberee, K. (2009) Change in Available Marbled Murrelet Nesting Habitat from 1978 to 2008 in British Columbia, Canada. Victoria, BC: *Report for the Ministry of Environment, Species at Risk Coordination Office (SaRCO)*, working document 1. 26p.
- Long, J.A.**, Nelson, T.A., Wulder, M.A. (2009) Preliminary analysis on the regionalization of landscape pattern indices using multivariate cluster analysis - MPBI working paper. Victoria, BC: *Mountain Pine Beetle Program Project #7.32*, working document 1. 31p.
- Long, J.A.**, Nelson, T.A., Wulder, M.A. (2008) Preliminary analysis on the impacts of mountain pine beetle management on the spatial pattern of forests - MPBI working paper. Victoria, BC: *Mountain Pine Beetle Program Project #7.32*, working document 1. 30p.

## Conference Presentations

- Long, J.A.**, Nelson, T.A., Webb, S.L., Gee, K.L. (2014) Mapping interactive behaviour in wildlife tracking data: a time geographic approach. *Annual meeting of the Association of American Geographers (AAG)*. Apr. 8-12; Tampa, FL.
- Long, J.A.**, Nelson, T.A., Nathoo, F.S. (2013) A kinetic-based probabilistic space-time prism. *Annual meeting of the Association of American Geographers (AAG)*. Apr. 9-13; Los Angeles, CA.
- Long, J.A.**, Nelson, T.A. (2012) Measuring dynamic interaction patterns in in movement data. *Annual meeting of the Canadian Association of Geographers (CAG)*. May 28-Jun. 2; Waterloo, ON.  
*CAG GIScience Study Group Award for Best Student Presentation*.
- Long, J.A.**, Nelson, T.A., Nathoo, F.S. (2012) Towards a momentum-based probabilistic time geography. *Annual meeting of the Association of American Geographers (AAG)*. Feb. 24-28; New York, NY.
- Long, J.A.**, Robertson, C., Nathoo, F.S., Nelson, T.A. (2011) Application of a Bayesian space-time spread model to the mountain pine beetle outbreak in Western Canada. *GEOMED*. Oct. 20-22; Victoria, BC. (Poster)

- Long, J.A.**, Nelson, T.A. (2011) A new interaction statistic for movement data. *GEOIDE Annual Scientific Conference*. May 16-17; Toronto, ON. (Poster)
- Long, J.A.**, Nelson, T.A. (2011) Advances in wildlife telemetry data: An opportunity for space-time geography. *Annual meeting of the Association of American Geographers (AAG)*. Apr. 12-17; Seattle, WA.
- Long, J.A.**, Nelson, T.A. (2011) Sports, time geography, and mobility data. *Spatial Knowledge and Information (SKI) Canada*. Mar. 4-6; Fernie, BC. *SKI Canada Student Presentation Award*.
- Long, J.A.**, Robertson, C., Nelson, T.A., Nathoo, F. (2010) Modeling spread of mountain pine beetle in Western Canada. *Geomatics Canada Conference/GEOIDE Annual Scientific Conference*. Jun. 15-18; Calgary, AB.
- Long, J.A.**, Nelson, T.A. (2010) Time geography and animal home ranges. *Geomatics Canada Conference/GEOIDE Annual Scientific Conference*. Jun. 15-18; Calgary, AB. (Poster)
- Long, J.A.**, Robertson, C., Nathoo, F., Nelson, T.A. (2010) Bayesian forecasting of ecological range expansion: The case of the mountain pine beetle. *NICDS Workshop on Statistical Methods for Geographic and Spatial Data in the Management of Natural Resources*. Mar. 3-5; Montreal, QC.
- Long, J.A.**, Nelson, T.A., Wulder, M.A. (2009) Quantifying forest composition and configuration following insect infestation and mitigation. *Annual meeting of the Association of American Geographers (AAG)*. Mar. 22-27; Las Vegas, NV.
- Long, J.A.**, Nelson, T.A., Wulder, M.A. (2009) A decision framework for local indicators for categorical data. *Spatial Knowledge and Information (SKI) Canada*. Feb. 19-21; Fernie, BC.
- Long, J.A.**, Nelson, T.A., Wulder, M.A. (2008) Living on the edge: Spatial pattern implications of the current mountain pine beetle epidemic. *Spatial Knowledge and Information (SKI) Canada*. Feb. 15-17; Fernie, BC.

## Other Research Experience

### Research Assistant

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| Space-time modeling of ecological range expansion<br><i>Department of Mathematics &amp; Statistics, University of Victoria</i>   | 2009-2010 |
| <ul style="list-style-type: none"> <li>– Developed Bayesian model for environmental spread</li> <li>– Applied model to mountain pine beetle infestations in western Canada</li> <li>– Presented research at conferences and published peer-reviewed article</li> </ul> |           |
| Provincial mapping of marbled murrelet nesting habitat<br><i>Department of Geography, University of Victoria</i>   | 2009      |
| <ul style="list-style-type: none"> <li>– Managed all GIS analysis for project</li> <li>– Quantified 30-year change in murrelet nesting habitat in B.C.</li> <li>– Produced reports and maps/spatial data, and published peer-reviewed article</li> </ul>               |           |

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| Spatial analysis of dendrochronology data<br><i>Department of Geography, University of Victoria</i><br>– Examined spatial autocorrelation in historical tree-ring records in B.C.   | 2008 |
| Local indicators for categorical data<br><i>Department of Geography, University of Victoria</i><br>– Research effect of spatial scale on indicator use<br>– Presented research at conferences and published peer-reviewed article | 2008 |

### Research Interests

Time geography, movement analysis, wildlife tracking, spatial ecology, spatial analysis in sports, map comparison, spatial applications of Bayesian statistics, spatial model assessment

## Teaching

### Geography & Sustainable Development, University of St Andrews

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| <i>Lecturer in GeoInformatics</i><br><br>Spatial Data Analysis<br><i>Level: 1<sup>st</sup> year UG</i><br><i>Class size: ~ 140 students</i><br>– Introduction to spatial data & analysis<br>– Fundamentals of GPS<br><br>Multivariate Data Analysis<br><i>Level: 3<sup>rd</sup> year UG</i><br><i>Class size: ~ 40 students</i><br>– Principles of multivariate data analysis<br>– PCA and factor analysis | 2013- <i>Present</i><br><br><br><br><br><br><br><br><br><br><br>2014 |
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### Geography, University of Victoria

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| <i>Sessional Instructor</i><br><br>Advanced Spatial Analysis & Geostatistics<br><i>Level: 4<sup>th</sup> year UG and PG</i><br><i>Class size: ~ 20 students</i><br>– Spatial point patterns, spatial autocorrelation<br>– geostatistics, spatial models<br><br>Special Topics in Geography: Geocaching<br><i>Level: 3<sup>rd</sup> year UG</i><br><i>Class size: ~ 55 students</i><br>– Fundamentals of GPS<br>– Geocaching | 2010-2013<br><br><br>2012, 2013<br><br><br><br><br><br>2010-2012 |
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### Invited Talks/Lectures

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| Mountain pine beetle<br><i>3<sup>rd</sup> year undergraduate level course</i> | Biology, University of Victoria<br>2009, 2010, 2011 |
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Spatial analysis of categorical data  
*4<sup>th</sup> year undergraduate and graduate level course*

Geography, University of Victoria  
*2010, 2011*

Bayesian model of mountain pine beetle spread  
*Math & Stats Seminar Series*

Math & Statistics, University of Victoria  
*2010*

### Teaching Interests

Courses in GIScience, GIS programming, advanced spatial analysis, spatial modeling, spatial ecology, GIS & sports, cartography

### Awards and Scholarships

Howard E. Petch Research Scholarship . . . . .	2012
M.A. & D.E. Breckenridge Graduate Award . . . . .	2012
Melva J. Hanson Graduate Scholarship . . . . .	2012
W.R. Derrick Sewell Scholarship . . . . .	2012
Student Presentation Award (GISci. Study Group) - CAG Conference . . . . .	2012
Student Presentation Award - SKI Conference . . . . .	2011
University of Victoria President's Research Scholarship . . . . .	2010-2012
NSERC PGS-D Fellowship . . . . .	2010-2012
Graphic Office Interiors Scholarship . . . . .	2009
Pacific Century Scholarship . . . . .	2009
Pacific Forestry Centre Graduate Award . . . . .	2008, 2009
University of Victoria Graduate Award . . . . .	2007
James F. Doig Award . . . . .	2007
Geomatics Canada Scholarship . . . . .	2007
Guy Lavoie Memorial Scholarship . . . . .	2007
Queen Elizabeth Aiming for the Top Scholarship . . . . .	2002-2005
University of Guelph Entrance Scholarship . . . . .	2002
Algonquin Forestry Authority Scholarship . . . . .	2002
North Bay/Mattawa Conservation Authority Scholarship . . . . .	2002

## Memberships

Royal Geographical Society, Institute of British Geographers

Canadian Association of Geographers

Association of American Geographers

## Service

Chair & Organizing Committee <i>Geography Graduate Symposium</i>	2012 <i>Victoria, BC</i>
Session Chair, GIScience II <i>CAG Conference</i>	2012 <i>Waterloo, ON</i>
Session Chair, Health Geography and Spatial Data <i>GEOMED Conference</i>	2011 <i>Victoria, BC</i>
GPS demo for elementary students <i>Let's Talk Science</i>	2008 <i>Victoria, BC</i>

Manuscript Reviewer:

- *Applied Geography*
- *Environmental & Ecological Statistics*
- *International Journal of Geographical Information Science*
- *Landscape Ecology*
- *Landscape Research*
- *Methods in Ecology & Evolution*
- *Spatial and Spatio-Temporal Epidemiology*
- *The Condor*

Other Reviewing:

- CartoCon2014, Conference
- National Science Foundation (NSF) proposals