

# James D. A. Millington

*PhD · MSC · BSC (HONS)*

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## EDUCATION

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### **Doctor of Philosophy, Geography**

Department of Geography, King's College London, July 2007

*Thesis: Modelling Land Use/Cover Change and Wildfire Regimes in a Mediterranean Landscape*

### **Master of Science with Distinction, Environmental Modelling, Monitoring and Management**

Department of Geography, King's College London, September 2003

*Thesis: Wildfire Frequency-Area Statistics and their Ecological and Anthropogenic Drivers*

### **Bachelor of Science with First Class Honours, Geography**

Department of Geography, King's College London, July 2002

*Thesis: Modelling the Effects of Climate Change on Wildfire Risk in Southeast Spain*

## PROFESSIONAL EXPERIENCE

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### **Visiting Research Associate**

Center for Systems Integration & Sustainability, Michigan State University, May 2007 – Present

### **Adjunct Instructor**

Department of Fisheries and Wildlife, Michigan State University, Aug. 2008 – Dec. 2008

### **Undergraduate Personal Tutor**

Department of Geography, King's College London, Sept. 2005 – June 2006

### **Teaching Assistant**

Department of Geography, King's College London, Sept. 2003 – June 2006

### **Fieldwork Instructor**

Department of Geography, King's College London, Dec. 2003

### **Exam Invigilator**

King's College London, Jan. 2003 – July 2004

## GRANTS AND AWARDS

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*Leverhulme Early Career Fellowship*

2010 – Three years' salary and research expenses

*University of London Central Research Fund*

2006 – Fieldwork grant; £500

*ESRC Overseas Institutional Visit Grant*

2005 – University of Auckland, New Zealand; £1,800

*ESRC / NERC Interdisciplinary Research Studentship*

2003 – Three years' student fees and maintenance

*Head of Department Prize*

2002 – Department of Geography, King's College London

## PUBLICATIONS

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### Peer-Review Journal Articles

Wainwright, J. and MILLINGTON, J.D.A. (2010) Mind, the Gap in Landscape-Evolution Modelling *Earth Surface Processes and Landforms* **35(7)** 842-855

MILLINGTON, J.D.A., Walters, M.B., Matonis, M.S. and Liu, J. (2010) Effects of local and regional landscape characteristics on wildlife distribution across managed forests *Forest Ecology and Management* **259** 1102-1110

Romero-Calcerrada, R., Barrio-Parra, F., MILLINGTON, J.D.A and Novillo, C.J. (2010) Spatial modelling of socioeconomic data to understand patterns of human-caused wildfire ignition risk in the SW of Madrid (central Spain) *Ecological Modelling* **221(1)** 34-45

MILLINGTON, J.D.A., Wainwright, J., Perry, G.L.W., Romero-Calcerrada, R. and Malamud, B.D. (2009) Modelling Mediterranean landscape succession-disturbance dynamics: A landscape fire-succession model *Environmental Modelling and Software* **24** 1196-1208

MILLINGTON, J.D.A., Romero-Calcerrada, R., Wainwright, J. and Perry, G.L.W. (2008) An agent-based model of Mediterranean agricultural land-use/cover change for examining wildfire risk *Journal of Artificial Societies and Social Simulation* **11(4)**  
<http://jasss.soc.surrey.ac.uk/11/4/4.html>

Romero-Calcerrada, R., Camacho, C.J., MILLINGTON, J.D.A. and Gomez-Jimenez, I. (2008) GIS analysis of spatial patterns of human-caused wildfire ignition risk in the SW of Madrid (Central Spain) *Landscape Ecology* **23** 341-354

Perry, G.L.W. and MILLINGTON, J.D.A. (2008) Spatial modelling of succession-disturbance dynamics in terrestrial ecological systems *Perspectives in Plant Ecology, Evolution and Systematics* **9(3-4)** 191-210

MILLINGTON, J.D.A., Perry, G.L.W. and Romero-Calcerrada, R. (2007) Regression techniques for examining land use/cover change: A case study of a Mediterranean landscape *Ecosystems* **10(4)** 562 – 578

Malamud, B.D., MILLINGTON, J.D.A. and Perry, G.L.W. (2005) Characterizing wildfire regimes in the USA *Proceedings of the National Academy of Science* **102(13)** 4694 – 4699

MILLINGTON, J.D.A. (2005) Wildfire risk mapping: considering environmental change in space and time *Journal of Mediterranean Ecology* **6(1)** 33 – 42

### **Book Chapters**

MILLINGTON, J.D.A., Wainwright, J. and Mulligan, M. (2010) Representing human activity in environmental modelling *In: Wainwright, J. and Mulligan, M. (Eds.) Environmental Modelling: Finding Simplicity in Complexity* (2nd Edition)

O'Sullivan, D., MILLINGTON, J.D.A., Perry, G.L.W. and Wainwright, J. (2010) Agent-based models – because they're worth it? *In: Batty, M., Crooks, A. and Heppenstall, A. (Eds.) Spatial Agent-based Models: Principles, Concepts and Applications*

MILLINGTON, J.D.A., Perry, G.L.W. and Malamud, B.D. (2006) Models, data and mechanisms: quantifying wildfire regimes *In: Cello, G., Malamud B. D., & Davey, P. (Eds.) Fractal Analysis for Natural Hazards*. Geological Society, London

### **Book Reviews**

New models for ecosystem dynamics and restoration. Hobbs, R.J. and Suding, K.N. (Eds.) *Landscape Ecology* **24(9)** 1269-1270

A companion to environmental geography. Castree, N., Demeritt, D., Liverman, D. and Rhoads, B. (Eds.) *Progress in Physical Geography* **33(3)** 445-447

Engaging the future: forecasts, scenarios, plans, and projects. Hopkins, L.D. and Zapata, M.A. (Eds.) *Environment and Planning A* **39** 2797-2798

## **PUBLICATIONS IN PROGRESS**

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### **In Review**

MILLINGTON, J.D.A., Demeritt, D. and Romero-Calcerrada, R. Participatory evaluation of agent-based land use models *Journal of Land Use Science*

Demeritt, D., Dyer, S. and MILLINGTON, J.D.A. PEST or Panacea? Science, democracy and the promise of public participation *Trans. of the Inst. of British Geographers*

### **In Preparation**

MILLINGTON, J.D.A. and Perry, G.L.W. Model selection and Bayesian statistics in Biogeography; invited review for *Geography Compass*

MILLINGTON, J.D.A., Walters, M.B., Laurent, E.J. and Liu, J. Combined effects of timber management and variable tree regeneration on songbird habitat; research manuscript for submission to *Ecological Applications*

McConnell, W. MILLINGTON, J.D.A., Reo, N. and Liu, J. Research on coupled human and natural systems (CHANS): Approach, challenges and solutions; Forum manuscript for submission to *BioScience*

MILLINGTON, J.D.A. Breaking the ‘hierarchical relationship’ between physical and social causes of land degradation; invited book chapter section for ‘*Patterns of land degradation in drylands. Understanding self-organized ecogeomorphic systems*’

MILLINGTON, J.D.A. Definitions: when is a pattern a pattern?; invited book chapter section for ‘*Patterns of land degradation in drylands. Understanding self-organized ecogeomorphic systems*’

## CONFERENCES

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### Organisation

Co-convenor, *Spatial and temporal patterns of wildfires: models, theory, and reality*, European Geophysics Union General Assembly 2005, 2006, 2008, 2009

Session Chair, *Landscape Change*, US-IALE Symposium 2008

### Conference Presentations

MILLINGTON, J.D.A., Walters, M.B., Matonis, M.S. and Liu, J. *Ecological-economic modelling for sustainable forest management* Presented at: US-IALE Symposium, Athens, Georgia, April 2010

MILLINGTON, J.D.A., Walters, M.B., Matonis, M.S. and Liu, J. *Local winter white-tailed deer density: Effects of forest cover pattern, stand structure, and snow in a managed forest landscape* Presented at: Ecological Society of America, Albuquerque, New Mexico, August 2009

\*Matonis, M.S., Walters, M.B., MILLINGTON, J.D.A. and Liu, J. *Gap-, stand-, and landscape-scale factors affecting tree regeneration in harvest gaps* Presented at: Ecological Society of America, Albuquerque, New Mexico, August 2009

MILLINGTON, J.D.A., Walters, M.B., Matonis, M.S., Lupi, F., Chen, S., Hall, K.R., Laurent, E.J. and Liu, J. *Modeling Interactions of Human and Natural Disturbances in a Managed Forest Landscape* Presented at: US-IALE Symposium, Snowbird, Utah, April 2009

MILLINGTON, J.D.A., Wainwright, J., Romero-Calcerrada, R., Perry, G.L.W. and Demeritt, D. *Investigating the Interaction of Land Use/Cover Change and Wildfire Using Agent-Based Modelling* Presented at: US-IALE Symposium, Snowbird, Utah, April 2009

\*Demeritt, D. and MILLINGTON, J.D.A. *Beyond Prediction: Participation, Learning and the Future of LUCC Modelling* Presented at: Helsinki University Environmental Research Centre Spring Seminar, Helsinki, Finland, April 2008

- \*Wainwright, J. and MILLINGTON, J.D.A. *Modelling Human Impacts on Geomorphic Processes* Presented at: Annual Conference of the British Society for Geomorphology, Birmingham UK, July 2007
- MILLINGTON, J.D.A. *A Simulation Model of Vegetation Dynamics and Wildfire for a Mediterranean Landscape* Presented at: The Royal Geographical Society Annual Meeting, London UK, September 2006
- MILLINGTON, J.D.A. *Modelling Land Use Decision-Making and Ecological Processes in a Mediterranean Landscape* Presented at: The Royal Geographical Society Annual Meeting, London UK, September 2006
- MILLINGTON, J.D.A, Malamud, B.D. and Perry, G.L.W. *The use of power-law statistics to characterise and compare wildfire regimes* Presented at: British Geophysical Association Conference ‘Scale-invariance and scale dependence in earth structure and dynamics’ London, UK, March 2006
- MILLINGTON, J.D.A. *An inside job? ‘Validation’ of Integrated Landscape Simulation Models* Presented at: The Royal Geographical Society Annual Meeting, London UK, September 2005
- O’Sullivan, D., Perry, G.L.W. and MILLINGTON, J.D.A. *Science Fictions: Narrative as tool for model-based research* Presented at: The Royal Geographical Society Annual Meeting, London UK, September 2005
- MILLINGTON, J.D.A., Perry, G.L.W. and Romero-Calcerrada, R. *Modelling Land Cover Change in a Mediterranean Landscape: Integrating Biophysical and Socio-Economic Data* Presented at: European IALE Congress, Faro, Portugal, 2005
- \*Romero-Calcerrada, R., Perry, G.L.W. and MILLINGTON, J.D.A. *The socio-economic trends as major driving force of Mediterranean landscape changes* Presented at: European IALE Congress, Faro, Portugal, 2005
- \*Perry, G.L.W., Romero-Calcerrada, R. and MILLINGTON, J.D.A. *Analysis and Implications of landscape change in the EU Special Protection Area (SPA) number 56, Encinares del río Alberche y Cofio, 1984-1999* Presented at: European IALE Congress, Faro, Portugal, 2005
- MILLINGTON, J.D.A., Perry, G.L.W. and Romero-Calcerrada, R. *Modelling Land Cover Change in a Mediterranean Landscape: Integrating Biophysical and Socio-Economic Data* Presented at: LUCC Workshop, Amsterdam, The Netherlands, October 2004
- MILLINGTON, J.D.A, Malamud, B.D. and Perry, G.L.W. *Characterizing wildfire regimes in the USA* Presented at: European Geophysics Union 1st General Assembly, Nice, France, April 2004
- \*Malamud B.D., MILLINGTON J.D.A. and Perry G.L.W. *Characterizing wildfire regimes in the USA* Presented at: American Geophysics Union Fall Meeting, San Francisco, CA, December 2004
- \*Presented by co-author

## **Discussion Panel**

Primary Observations Session, British Geophysical Association Conference, *Scale-invariance and scale dependence in earth structure and dynamics*, London, UK, March 2006

## **Invited Seminar Presentations**

*Ecological-Economic Modeling for Sustainable Forest Management*, Hanover Forest Science Seminar Series, Michigan State University, February 2010

*Modelling Coupled Human-Natural Systems: Possibilities and Risks*, Pharmaceuticals in the Environment: Current Trends and Research Priorities, Michigan State University, November 2007

*Modelling Disturbance in Forested Landscapes*, Graduate Student Organisation Seminar Series, Department of Fisheries and Wildlife, Michigan State University, November 2007

*Modelling Land Use/Cover Change in a Mediterranean Landscape*, Research Seminar Series, School of Geography and Environmental Science, University of Auckland, May 2005

## **Invited Workshops**

European Science Foundation (ESF) – *Self-organised Ecogeomorphic Systems: Confronting Models with Data for Land-Degradation in Drylands*, Potsdam, Germany, June 2010

Emerging Theories and Methods in Sustainability Research (THEMES) – Barcelona 2006 – *Analysing Complexity*, The Autonomous University of Barcelona, Spain, June 2006

General Integration of the Applications of Complexity in Science (GIACS) – Poland 2006 – *Applications of Complex Systems to Social Sciences*, Kazimierz Dolny, Poland, September 2006

## **Posters**

MILLINGTON J.D.A., Matonis M.S., Laurent E.J., Walters M.B., Lupi F., Hall K.R., and Liu J. *Anticipating Threats to Northern Hardwood Forest Biodiversity with an Ecological-Economic Model* Presented at: 9th National Conference on Science, Policy and the Environment, Washington D.C., December 2008

MILLINGTON J.D.A., Wainwright J., Perry G.L.W., Romero-Calcerrada R. and Malamud B.D. *An Integrated Socio-Ecological Simulation Model of Succession-Disturbance Dynamics in a Mediterranean Landscape* Presented at: European Geophysics Union General Assembly 2008, Vienna, Austria, April 2008

Romero-Calcerrada, R., Barrio-Parra F., MILLINGTON J.D.A. and Novillo C.J. *Spatial modelling of the influence of human activity on wildfire ignition risk in a Mediterranean landscape* Presented at: European Geophysics Union General Assembly 2008, Vienna, Austria, April 2008

MILLINGTON J.D.A., LeBouton J.P., Walters M.B., Hall K.R., Matonis M.S., Laurent E.J., Lupi F., Chen S. and Liu J. *An Ecological-Economic Model for Sustainable Forest Management: Modeling Deer Distributions from Local & Landscape Characteristics* US-IALE Symposium, Madison, Wisconsin, April 2008

- Romero-Calcerrada, R. and MILLINGTON, J.D.A. *Spatial analysis of patterns and causes of fire ignition probabilities using Logistic Regression and Weights-of-Evidence based GIS modelling* Presented at: European Geophysics Union 4th General Assembly, Vienna, Austria, April 2007
- Malamud B.D., MILLINGTON J.D.A. and Perry G.L.W. *Risk, ecosystems & robust power-law scaling of wildfires*. Coupling in Earth Systems: Solids, Fluids, Life. Presented at: 26th IUGG conference on Mathematical Geophysics, Sea of Galilee, Israel, June 2006
- Malamud B.D., MILLINGTON J.D.A. and Perry G.L.W. *Risk, ecosystems & robust power-law scaling of wildfires* Presented at: European Geophysics Union 3rd General Assembly, Vienna, Austria, April 2006
- Malamud B.D., MILLINGTON J.D.A. and Perry G.L.W. *Characterizing wildfire regimes in the USA* Presented at: European Geophysics Union 2nd General Assembly, Vienna, Austria, April 2005
- MILLINGTON, J.D.A., Perry, G.L.W. and Romero-Calcerrada, R. *Implications of Landscape Change for Wildfire Incidence and Risk in the SPA 56 'Encinares del Río Alberche y Cofio', Central Spain* Presented at: European Geophysics Union 1st General Assembly, Nice, France, April 2004

## TEACHING

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### Post-Graduate Courses

*Systems Modeling and Simulation*,  
Primary Instructor, 2008, Michigan State University

*Environmental GIS*,  
Teaching Assistant, 2004 – 2005, King's College London

### Undergraduate Courses

*Critical Readings in Development Geography*  
Junior Instructor, 2005 – 2006, King's College London

*Fieldwork in Physical Geography*  
Junior Instructor, 2003-2004, King's College London  
Teaching Assistant, 2004-2006, King's College London

*Data Analysis in Physical Geography*  
Teaching Assistant, 2005 – 2006, King's College London

*People and Processes in the Mediterranean Landscape*  
Teaching Assistant, 2005, King's College London

### Guest Lecture

*Analysis and Modelling of Environmental Processes*  
July 2008, University of Auckland, New Zealand

## **TECHNICAL**

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### **Programming Languages**

Proficient: C++, R, SQL, HTML

Basic: Python, VisualBasic, JavaScript, XML

### **Modelling and GIS**

Proficient: ArcGIS, R, NetLogo, STELLA, Fragstats

Basic: GRASS, SIMILIE, ENVI, IDRISI, Google Earth, Google Maps API, Garmin GPS

### **Other Software**

Proficient: Word, Excel, PowerPoint, Access, Visual Studio, EndNote

Basic: SPSS, Inkscape, TheGIMP, Linux OS

### **Statistics**

Various frequentist and Bayesian methods for data analysis, hypothesis testing, forecasting and inference (primarily via use of *R* software platform)

## **SERVICE**

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### **Journal Reviewer**

Advances in Complex Systems; American Naturalist; Area; Ecological Complexity; Ecological Modelling; Ecosystems; Environment and Planning A; Environmental Conservation; International Journal of Wildland Fire; Journal of Environmental Policy and Planning; Journal of Geographical Systems; Landscape Ecology; Mammal Review; Natural Hazards

### **Grant Reviewer**

US National Science Foundation – Collaboration in Mathematical Geosciences  
UK Economic & Social Research Council