

## Dr Mary J. Thornbush DPhil

Honorary Research Fellow

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### About

Dr Thornbush is a physical geographer (geomorphologist) with interests in applied and cross-disciplinary research.

### Qualifications

Hon BSc (University of Toronto, Canada), 1998  
MSc (University of Toronto, Canada), 2001  
DPhil (University of Oxford, UK), 2006

### Biography

Dr Thornbush has been Honorary Research Fellow at the University of Birmingham since March 2011, when she joined the Cluster for Research on Energy, People and the Environment (CREPE), now ESPRU (Energy, Society and Place Research Unit). She was Fellow of the Royal Geographical Society in 2011 and Visiting Research Fellow at the Initiative for Heritage Conservancy in Greece in 2010-2011. Previous to this, she held a limited term appointment at the Orillia Campus of Lakehead University in Ontario, Canada, where she began as Lecturer in 2008 and became Assistant Professor in Geography and Interdisciplinary Studies that same year. In this capacity, Dr Thornbush taught undergraduate courses in geomorphology, environmental issues, climatology, and inquiry and offered a field school summer course in 2009 on the landscapes of Simcoe County, southern Ontario, Canada. She was Senior Research Associate of the Oxford University Centre of the Environment in 2007-2008. Her postdoctoral research at the University of Oxford, UK was funded by English Heritage, addressing the Ivy on Walls project in 2006-2007.

### Teaching

Dr Thornbush has teaching experience at various schools in Oxford (UK), including Cherwell College, Oxford Tutorial College, Greene's Tutorial College, and Carfax Tutorial Establishment as well as at universities, such as the University of Toronto (Canada), University of Oxford (UK), University of Georgia (US), and Lakehead University (Canada). Her preference in teaching is based on active learning in a field-based pedagogy and a research-led (student-centred) approach.

### Postgraduate supervision

Dr Thornbush is currently advising a doctoral candidate at the University of Edinburgh, UK.

*Those students interested in gaining her supervision should contact the GEES Head of School (Professor Ian Fairchild: [i.j.fairchild@bham.ac.uk](mailto:i.j.fairchild@bham.ac.uk) (<mailto:i.j.fairchild@bham.ac.uk>)) in the first instance.*

### Doctoral research

**PhD title** *Traffic pollution and urban limestone weathering: central Oxford, England*

### Research

Dr Thornbush is interested in geomorphological research, including weathering studies and landscape and environmental change. In addition, she is interested in examining: air pollution, urban climate, and microclimate as well as climate change, low carbon cities, and urban sustainability, with an emphasis on applied and cross-disciplinary research.

Some of her research projects have addressed:

- Holocene floodplain development and prehistoric human occupation: lower Nottawasaga River, southern Ontario, Canada (1999-2001)
- Traffic pollution and urban limestone weathering: central Oxford, England, UK (2002-2005)
- Soft wall capping and climbing plants on historical buildings and stonewalls in England, UK (2006-2007)
- Weathering of headstones in British churchyards, UK (2007-2015)
- Climate change and the monuments, Greece (2010-2011)
- Low carbon urbanism, UK (2011-2015)
- The contribution of climbing plants to the weathering of walls, UK (2012-2014)

She is currently investigating urban greening strategies for energy conservation in low carbon cities. Most recently, Dr Thornbush is working with the University of Oxford Botanic Garden to investigate the biodeterioration of climbing plants on old limestone walls.

### Other activities

Dr Thornbush currently belongs to a few editorial boards:

- *Journal of Cultural Heritage*
- *International Journal of Heritage and Sustainable Development*
- *Journal of Geology and Geosciences*
- *Journal of Geological Sciences*

She has reviewed papers submitted to these and other journals:

- *Environmental Geology*
- *Geography Compass*
- *International Journal of Architectural Heritage*
- *Science of the Total Environment*
- *Color Research and Application*
- *Environmental Earth Sciences*
- *Studies in Higher Education*
- *International Journal of Physical Sciences*
- *Geosciences*
- *Applied Geography*
- *Journal of Biodiversity Management and Forestry*
- *Bulletin of Engineering Geology and the Environment*
- *Mitigation and Adaptation Strategies for Global Change*
- *Journal of Geoscience Education*
- *International Journal of Geosciences*
- *International Journal of Advancement in Earth and Environmental Sciences*
- *Geoarchaeology*
- *International Journal of Environmental Research and Public Health*
- *Journal of Earth, Ocean and Atmospheric Sciences*

Additionally, she has contributed to the review/ editorial process of various books, including some textbooks:

- *The Human Impact on the Natural Environment* (6th edition)
- *World Regions in Global Context: Peoples, Places, and Environments* (3rd edition)
- *Aspiring Academics: A Resource Book for Graduate Students and Early Career Faculty*
- *Our Environment: A Canadian Perspective* (4th edition)
- *Meteorology: An Introduction to Weather, Climate, and the Environment* (1st Canadian edition)

Dr Thornbush has published papers in various books, including:

- *Air Pollution and Cultural Heritage*
- *Proceedings of the International Conference on Heritage, Weathering and Conservation*
- *Building Stone Decay: From Diagnosis to Conservation*
- *Oxford Companion to Global Change*
- *Geomorphology and Plate Tectonics*
- *Limestone in the Built Environment: Present-Day Challenges for the Preservation of the Past*
- *Geoarchaeology, Climate Change, and Sustainability*
- *Encyclopedia of Natural Hazards*
- *Encyclopedia of Earth Science Research*
- *Horizons in Earth Science Research*
- *New Developments in Global Warming Research*

Dr Thornbush is the primary author of an eBook entitled *Photographs Across Time* (also in preparation for 2014, Bentham Science Publishers); an edited volume, part of the Developments in Earth Surface Processes series, that addresses *Geomorphological Fieldwork* (in preparation for 2014, Elsevier); and a monograph on *Acid Rain and Acid Deposition: Causes, Sources, and Environmental Effects* (in preparation for 2016, Nova Science Publishers). She was recently a guest editor of *Applied Geography* for the special issue on Geomorphology, Culture, and Place; is also a guest editor of a special issue in the *International Journal of Environmental Research and Public Health* that addresses Gender and Geoethics in the Geosciences; and is Associate Editor of *Area's* special issue on Geography, Urban Geomorphology and Sustainability. She is still working towards a new interdisciplinary journal and other book and special issue initiatives.

She has participated in several knowledge transfer activities and (international) conferences and workshops in Europe and North America since 2000.

## Publications

### Papers in academic journals:

'Integrated digital photography and image processing for the quantification of colouration on soiled surfaces in Oxford, England', *Journal of Cultural Heritage* 5 (2004), 285-90.

'The changing façade of Magdalen College, Oxford: Reconstructing long-term soiling patterns from archival photographs and traffic records', *Journal of Architectural Conservation* 11 (2005), 40-57.

'Changing patterns of soiling and microbial growth on building stone in Oxford, England after implementation of a major traffic scheme', *Science of the Total Environment*

'Simulation of the dissolution of weathered versus unweathered limestone in carbonic acid solutions of varying strength', *Earth Surface Processes and Landforms* 32 (2007), 841-52.

'Grayscale calibration of outdoor photographic surveys of historical stone walls in Oxford, England', *Color Research and Application* 33 (2008), 61-7.

'Postcards used to track environmental history', *Environmental History* 13 (2008), 360-5.

'Photographic monitoring of soiling and decay of roadside walls in Oxford, England', *Environmental Geology* 56 (2008), 777-87.

'Photographic surveys of building exteriors in central Oxford, UK', *International Journal of Architectural Heritage* 4 (2010), 351-69.

'Palaeoenvironmental reconstruction at an oxbow lake situated at the lower Nottawasaga River, southern Ontario, Canada', *Environmental Archaeology* 16 (2011), 1-15.

'Archaeogeomorphology as an application in physical geography', *Applied Geography* 34 (2012), 325-30.

'Tracking the use of climbing plants in the urban landscape through the photoarchives of two Oxford colleges, 1861-1964', *Landscape Research* 38 (2012), 312-28.

'A site-specific index based on weathering forms visible in central Oxford, UK', *Geosciences* 2 (2012), 277-97.

'Studies of Oxford stone as a contribution to environmental geomorphology', *Journal of Environmental Geography* 6 (2013), 9-19.

'Digital photography used to quantify the greening of north-facing walls along Broad Street in central Oxford, UK/ L'utilisation de la photographie numérique pour quantifier le verdissement de la façade septentrionale longeant Broad Street dans le centre d'Oxford, Royaume-Uni', *Géomorphologie: Relief, Processus, Environnement* 2 (2013), 111-8.

'Sustainable cities: Combined mitigation-adaptation efforts for future-proofing', *Sustainable Cities and Society* 9 (2013), 1-9.

'Introduction: Archaeogeomorphology', *Applied Geography* 42 (2013), 155-6, special issue on Geomorphology, Culture, and Place (ed.).

'The application of a limestone weathering index at churchyards in central Oxford, UK', *Applied Geography* 42 (2013), 157-64.

'Photogeomorphological studies of Oxford stone - A review', *Landform Analysis* 22 (2013), 111-6.

'A photo-based environmental history of the use of climbing plants in central Oxford, UK', *International Journal of Geosciences* 4 (2013), 1083-94.

*International Journal of Environmental Research and Public Health*, special issue on Gender and Geoethics in the Geosciences (ed., proposal accepted, 2013).

*Area*, special issue on Geography, Urban Geomorphology and Sustainability (ed., proposal accepted, 2014).

'Measuring surface roughness through the use of digital photography and image processing', *International Journal of Geosciences* 5 (2014), 540-54.

'A soiling index based on quantitative photography at Balliol College in central Oxford, UK', *Journal of Earth, Ocean and Atmospheric Sciences* 1 (2014), 1-15.

'Orientational effects on soiling measurements at the Sheldonian Theatre in central Oxford, UK', *Journal of Buildings Research* (in press).

