

Dr Adam Bates PhD

Research Fellow

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About

Adam's research focuses on the ecology of beetles, bees, spiders and green roofs in traditionally managed orchard, urban and riparian systems. He is currently employed on a Levehulme project investigating the ecology of Noble Chafer (*Gnorimus nobilis*) and the traditional orchards that act as habitat for this species. He is also investigating the perceptions and management approaches of local stakeholders in the conservation of this species.

Qualifications

- 2005 - PhD "The ecology and conservation of beetles (Coleoptera) living on exposed riverine sediments" - University of Birmingham
- 2001 - MRes Science of the Environment - Lancaster University
- 2000 - BSc (Hons) Environmental Science - University of Wales, Aberystwyth

Research

Research Groups

- **[Water Sciences \(/research/activity/water/index.aspx\)](/research/activity/water/index.aspx)**
- **[Hydroecology \(/research/activity/water/themes/hydroecology/index.aspx\)](/research/activity/water/themes/hydroecology/index.aspx)**
- **[Society, Economy and Environment \(http://www.birmingham.ac.uk/research/activity/see/index.aspx\)](http://www.birmingham.ac.uk/research/activity/see/index.aspx)**

Research Interests

- Traditional orchard agroecology
- Urban Ecology
- Hydroecology
- Biogeography
- Green roofs
- Sustainable water management
- Biodiversity conservation
- Citizen Science

Current / Recent Research

I currently work on a Leverhulme funded project investigating the ecology and conservation of the Noble Chafer (*Gnorimus nobilis*) in collaboration with Prof **[Jon Sadler](http://www.birmingham.ac.uk/staff/profiles/gees/sadler-jon.aspx)** (<http://www.birmingham.ac.uk/staff/profiles/gees/sadler-jon.aspx>) and Dr **[Lloyd Jenkins](http://www.birmingham.ac.uk/schools/gees/people/profile.aspx?Referenceld=9687)** (<http://www.birmingham.ac.uk/schools/gees/people/profile.aspx?Referenceld=9687>). This species particularly favours veteran trees in traditionally managed orchards. Changing agro-economic practices have increasingly meant the loss and decline of such traditional orchards, and the Noble Chafer has declined as a result. The study examines the ecology of this species and how the attitudes and management practices of local stakeholders influence its conservation.

I previously worked on the Big Lottery funded Open Air Laboratories (**[OPAL \(http://www.opalexplornature.org\)](http://www.opalexplornature.org)**) project as a community scientist for the **[OPAL West Midlands \(http://www.opalwestmidlands.org\)](http://www.opalwestmidlands.org)** region. This involved helping local community groups to better understand and appreciate the wildlife in their local green spaces. The principle method used was a citizen science approach whereby I facilitated community participation in scientific projects like the OPAL Soil, Air, Water, Biodiversity, Weather and Bugs Count surveys; or my own research on urban ecology. Ongoing citizen science research includes collaboration with the **[Garden Moth Scheme \(http://gms.staffs-ecology.org.uk/\)](http://gms.staffs-ecology.org.uk/)** to explore the garden and landscape scale controls on garden moth assemblages.

In collaboration with Prof **[Jon Sadler \(/staff/profiles/gees/sadler-jon.aspx\)](/staff/profiles/gees/sadler-jon.aspx)**, **[James Hale \(http://www.birmingham.ac.uk/staff/profiles/gees/hale-james.aspx\)](http://www.birmingham.ac.uk/staff/profiles/gees/hale-james.aspx)**, Dr Richard Greswell and Prof **[Rae Mackay \(http://www.monash.edu.au/research/people/profiles/profile.html?sid=53331&pid=7149\)](http://www.monash.edu.au/research/people/profiles/profile.html?sid=53331&pid=7149)** I am researching the urban ecology of various species and habitats, but in particular, bees and the ecology of green roofs. The global rate of urbanization is accelerating, resulting in the disturbance and fragmentation of habitat across larger and larger areas. Some species are able to flourish, whilst others decline in urban habitats, which in turn influence the community health and consequent provision of ecosystem services. Bees are the most important group of pollinators, so they are critical components of a healthy urban ecosystem. Understanding how they respond to the pressures of urbanization is of key importance. Green roofs are novel habitats in urban areas that can potentially provide replacement habitat lost to development, whilst reducing urban run-off and mitigating the heat island effect. My research focuses on the design of green roofs to mitigate for the loss of brownfield habitat.

My PhD research was on the ecology and conservation of specialist invertebrates of exposed riverine sediments (ERS) and I continue my interest in this field in



Left, bee hotel at UoB. Centre, children investigating how long a water beetle can swim using one bubble of air. Right a leafcutter bee using a bee hotel (photograph Mick Massie).

Plants growing on the UoB green roof research facility plots. On the far left foreground is a cornflower (*Centaurea cyanus*) and on the far right are some flowering long-headed poppies (*Papaver dubium*) (photographs Veronique Durand).



The microspatial distribution of ERS specialist beetles

Publications

Key Publications since 2001

Journal Articles

Bates AJ, Sadler JP, Grundy D, Lowe N, Davis G, Baker D, Bridge M, Freestone R, Gardner D, Gibson C, Hemming R, Howarth S, Orridge S, Shaw M, Tams T, Young H. 2014. Garden and landscape-scale correlates of moths of differing conservation status: significant effects of urbanization and habitat diversity. *Plos One* **9**: e86925. doi:10.1371/journal.pone.0086925

Bates AJ, Sadler JP, Mackay R. 2013. Vegetation development over four years on two green roofs in the UK. *Urban Forestry & Urban Greening* **12**: 98-108

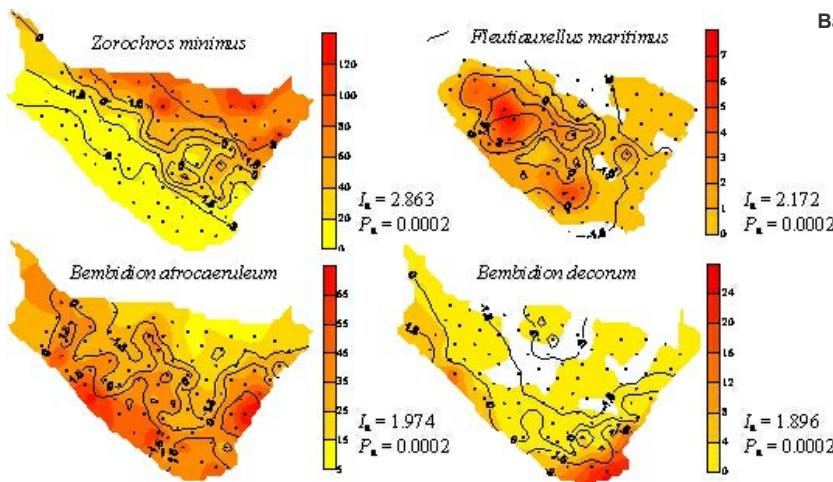
Bates AJ, Sadler JP, Everett E, Grundy D, Lowe N, Davis G, Baker D, Bridge M, Clifton J, Freestone R, Gardner D, Gibson C, Hemming R, Howarth S, Orridge S, Shaw M, Tams T, Young H. 2013. Assessing the value of the Garden Moth Scheme citizen science dataset: how does light trap type affect catch? *Entomologia Experimentalis et Applicata* **146**: 386-397

Olly LM, **Bates AJ**, Sadler JP, Mackay R. 2011. An initial experimental assessment of the influence of substrate depth on floral assemblage for extensive green roofs. *Urban Forestry & Urban Greening* **10**: 311-316.

Bates AJ, Sadler JP, Fairbrass AJ, Falk SJ, Hale JD, Matthews TJ. 2011. Changing bee and hoverfly pollinator assemblages along an urban-rural gradient. *PLoS ONE* **6**: e23459 doi:10.1371/journal.pone.0023459

Henshall SE, Sadler JP, Hannah DM, **Bates AJ**. 2011. The role of microhabitat and food availability in determining riparian invertebrate distributions on gravel bars: a habitat manipulation experiment. *Ecology* **92**: 512-519

Bates AJ, Mackay R, Greswell RB, Sadler JP. 2009. SWITCH in Birmingham, UK: experimental investigation of the ecological and hydrological performance of extensive green roofs. *Reviews in Environmental Science and Biotechnology* **8**: 295-300.



Bates AJ, Sadler JP, Henshall SE, Hannah DM. 2009. Ecology and conservation of arthropods of exposed riverine sediments. *Terrestrial Arthropod Reviews* **2**: 77-98.

Bates AJ, Sadler JP, Perry JN, Fowles AP. 2007. Microspatial distribution of beetles (Coleoptera) within spatially delimited patches of exposed riverine sediments. *European Journal of Entomology* **104**: 497-487. (free pdf available at: http://www.eje.cz/pdfarticles/1257/eje_104_3_479_Bates.pdf)

Bates AJ, Sadler JP, Fowles AP. 2007. Livestock trampling reduces the conservation value of beetle communities on high quality exposed riverine sediments. *Biodiversity & Conservation*, **16**: 1491-1509.

Bates AJ, Sadler JP, Fowles AP. 2006. Condition-dependent dispersal of a patchily distributed riparian ground beetle in response to disturbance. *Oecologia* **150**: 50-60.

Bates AJ, Sadler JP, Fowles AP, Butcher CR. 2005. Spatial dynamics of beetles living on exposed riverine sediments in the Upper River Severn: Method development and preliminary results. *Aquatic Conservation: Marine and Freshwater Ecosystems* **15**: 159-174.

Book Chapters

Sadler J, **Bates A**, Donovan R, Bodnar S. 2011. Building for biodiversity: accommodating people and wildlife in cities. 286-297 in Niemelä J, Breuste JH, Guntenpergen G, McIntyre NE, Elmqvist T, James P (eds.). *Urban Ecology. Patterns, Processes and Applications*. Oxford University Press, 392pp.

Sadler J, **Bates A**, Hale J, James P. 2010. Bringing cities alive: the importance of urban green spaces for people and biodiversity 230-260 in Gaston KJ (ed.). *Urban Ecology*. Cambridge University Press, 318pp.

Sadler JP, **Bates AJ**. 2007. The ecohydrology of invertebrates associated with exposed riverine sediments. 37-56 in Wood PJ, Hannah DM, Sadler JP (Eds.) *Hydroecology and Ecohydrology: Past, Present and Future*. Wiley, 460pp.

