

Professor Jeff Bale

Professor of Environmental Biology
Pro-Vice-Chancellor for Education

[School of Biosciences \(/schools/biosciences/index.aspx\)](/schools/biosciences/index.aspx)

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About

Professor Jeff Bale is one of the world's leading experts in the field of invertebrate thermal biology. His work covers both fundamental aspects such as strategies for survival in polar environments as well as the applications of thermal tolerance including the establishment potential of non-native biological control agents. Jeff has over 200 publications and supervised 50 doctoral researchers.

Qualifications

BSc, PhD

Biography

Professor Jeff Bale was born in Devon and studied at Newcastle University where he gained a first in Agricultural Zoology and his PhD in insect physiology and behaviour. He was the Social Secretary and then President of the Student's Union. Jeff was a lecturer and senior lecturer at Leeds University and appointed to the Chair of Environmental Biology at Birmingham in 1992.

Teaching

Jeff's current teaching includes lectures and practicals for the first year module in 'Plant and Environmental Biology' and the second year 'Ecology' module. He is leader of the final year module on 'Insect Biology and Pest Management'. He also supervises final year projects on a range of topics including biological control, GM crops and global warming.

Postgraduate supervision

For a list of possible PhD projects offered by Prof Bale see www.findaphd.com/search/customlink.asp?inst=birm-Biol&supersurname=Bale (<http://www.findaphd.com/search/customlink.asp?inst=birm-Biol&supersurname=Bale>)

Research

Research Theme within School of Biosciences: Organisms and Environment

Lab website address: www.biosciences-labs.bham.ac.uk/bale/ (<http://www.biosciences-labs.bham.ac.uk/bale/>)

Thermal biology of invertebrate organisms

Arthropod Ecophysiology

The main aim of studies in my laboratory is to understand the various ways in which insects and related arthropods interact with their biotic and abiotic environments through the behavioural, physiological and biochemical strategies employed to achieve survival and success. Studies are conducted in the field and laboratory, spanning different levels of organisation from the molecular to the ecosystem.

Current areas of interest include:

1. The mechanisms by which insects increase their cold hardiness by seasonal and rapid acclimation processes to survive at low and sub-zero temperatures. Projects in this area are conducted in collaboration with British Antarctic Survey and may include opportunities for field studies in Antarctica.
2. The impacts of climate warming on tropical insects, some of which already exist at temperatures close to their upper thermal threshold.
3. The development of risk assessment protocols to assess the potential for alien insects to establish in the UK, particularly those that are introduced as biological control agents.
4. Collaborative studies with [Jeremy Pritchard \(/staff/profiles/biosciences/pritchard-jeremy.aspx\)](/staff/profiles/biosciences/pritchard-jeremy.aspx) (School of Biosciences) are using knockout mutants of the model species *Arabidopsis* to identify novel approaches for the management of sap-feeding pest insects such as aphids, whiteflies and plant hoppers.

Other activities

I am a Deputy Pro-Vice-Chancellor (Education) of the University with responsibility for quality assurance. I am a QAA 'Institutional Auditor (Reviewer)', a member of the 'Advisory Committee on Releases to the Environment' (ACRE) and of the Council of the British Ecological Society.

Publications

Bale, J.S. and Hayward, S.A. Insect overwintering in a changing climate. *Journal of Experimental Biology* 213, 980-994.

Bale, J.S. (2010). Implications of cold tolerance for pest management. In 'Low temperature biology of insects', p. 342 – 373, eds. D.L. Denlinger and R.E. Lee. Cambridge University Press.

Bale, J.S., van Lenteren, J.C. and Bigler, F. (2008) Biological Control. In 'Sustainable Agriculture', special issue of *Philosophical Transactions of the Royal Society* 363, 761-776.

Hazell, S.P., Groutides, C., Neve, B.P., Blackburn, T.M. and Bale, J.S. (2010) A comparison of low temperature tolerance traits between closely related aphids from the tropics, temperate zone, and Arctic. *Journal of Insect Physiology* 56, 115-122.

Hazell, S.P., Groutides, C., Douglas, A.E., Blackburn, T.M. and Bale, J.S. (2010) Hyperthermic aphids: insights into behaviour and mortality. *Journal of Insect Physiology* 56, 123-131.

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