

---

Online submission at: [www.editorialmanager.com/ber](http://www.editorialmanager.com/ber)

---

**Volume 104**  
**Issue 3**  
**June 2014**

**Bulletin of**  
*Entomological*  
*Research*



**CAMBRIDGE**  
UNIVERSITY PRESS

**ISSN 0007-4853**

# Bulletin of *Entomological Research*

journals.cambridge.org/ber

## Aims and Scope

Established in 1910, the internationally recognised *Bulletin of Entomological Research* aims to further global knowledge of entomology through the generalisation of research findings rather than providing more entomological exceptions. The *Bulletin* publishes high quality and original research papers, 'critiques' and review articles concerning insects or other arthropods of economic importance in agriculture, forestry, stored products, biological control, medicine, animal health and natural resource management. The scope of papers addresses the biology, ecology, behaviour, physiology and systematics of individuals and populations, with a particular emphasis upon the major current and emerging pests of agriculture, horticulture and forestry, and vectors of human and animal diseases. This includes the interactions between species (plants, hosts for parasites, natural enemies and whole communities), novel methodological developments, including molecular biology, in an applied context. The *Bulletin* does not publish the results of pesticide testing or traditional taxonomic revisions.

*Bulletin of Entomological Research* is published bimonthly by  
Cambridge University Press

### Editor-in-Chief

Professor Bill Symondson

School of Biosciences, Cardiff University, Cardiff CF10 3TL, UK  
Email: entomology@cambridge.org

### Subject Editors

Dr N. Agusti, *IRTA, Spain*  
Dr T. Backeljau, *Royal Belgian Institute of Natural Sciences, Belgium*  
Dr D.A. Bohan, *Rothamsted Research, Hertfordshire, UK*  
Dr C. Borgemeister, *International Centre of Insect Physiology and Ecology (ICIPE), Kenya*  
Dr L. Boykin, *University of Western Australia, Australia*  
Dr Chen Xue-Xin, *Zhejiang University, China*  
Dr P.J. De Barro, *CSIRO Ecosystem Sciences, Brisbane, Australia*  
Dr R. Garrick, *University of Mississippi, USA*  
Dr D. Gillespie, *Agriculture and Agri-Food Canada, Agassiz, B.C., Canada*  
Dr M. Greenstone, *Invasive Insect Biocontrol & Behavior Laboratory, Beltsville, USA*  
Professor G. Gurr, *Charles Sturt University, NSW, Australia*  
Dr N.P. Havill, *USDA Forest Service, Northern Research Station, Hamden, USA*  
Dr S. Hayward, *University of Birmingham, UK*  
Dr B. Hoffmann, *CSIRO, Ecosystem Sciences, Australia*

Dr T.H. Jones, *Cardiff University, UK*  
Dr J. Krzywinski, *Liverpool School of Tropical Medicine, UK*  
Dr O. Kwon, *Kyungpook National University, Korea*  
Dr B. Lavandero, *Universidad de Talca, Talca, Chile*  
Dr C. Lavigne, *INRA-Unité PSH, France*  
Dr S. Morin, *The Robert H. Smith Faculty of Agriculture, Food and Environment Rehovot, Israel*  
Dr C. Phillips, *AGResearch, New Zealand*  
Dr Liu Shu-Sheng, *Zhejiang University, China*  
Professor P. Stevenson, *Royal Botanic Gardens, Kew, UK*  
Dr S.J. Torr, *Liverpool School of Tropical Medicine, UK*  
Professor H. Townson, *Liverpool School of Tropical Medicine, UK*  
Dr M. Traugott, *University of Innsbruck, Austria*  
Professor Dr Trematerra, *University of Molise, Italy*  
Dr M. Virant-Doberlet, *National Institute of Biology, Ljubljana, Slovenia*  
Dr J. Vontas, *University of Crete, Greece*  
Dr A. Wilby, *Lancaster University, UK*  
Professor L. Winder, *UNITEC, Auckland, New Zealand*  
Dr B.A. Woodcock, *University of Reading, UK*

© Cambridge University Press 2014.

This journal issue has been printed on FSC-certified paper and cover board. FSC is an independent, non-governmental, not-for-profit organization established to promote the responsible management of the world's forests. Please see [www.fsc.org](http://www.fsc.org) for information.

Cover image: *Lobesia botrana* is a tortricid moth which is the major pest of grape bunches in Europe and which recently invaded South and North America. This moth accomplish 2–4 generations a year from spring to autumn and females (here a female staying on a grape leaf) lay their eggs on flower buds or berries.

Photograph taken by D. Thiéry and P. Goetgeluck.

Review Paper

- Jun-Bo Luan, Xiao-Wei Wang, John Colvin and Shu-Sheng Liu**  
Plant-mediated whitefly–begomovirus interactions: research progress and future prospects 267

Research Papers

- D. Thiéry, K. Monceau and J. Moreau**  
Different emergence phenology of European grapevine moth (*Lobesia botrana*, Lepidoptera: Tortricidae) on six varieties of grapes 277
- K. Geurts, M.W. Mwatawala and M. De Meyer**  
Dominance of an invasive fruit fly species, *Bactrocera invadens*, along an altitudinal transect in Morogoro, Eastern Central Tanzania 288
- M.E. Barrantes and M.K. Castelo**  
Host specificity in the host-seeking larva of the dipteran parasitoid *Mallopbora ruficauda* and the influence of age on parasitism decisions 295
- Y. Tsutsui, K. Maeto, K. Hamaguchi, Y. Isaki, Y. Takami, T. Naito and K. Miura**  
Apomictic parthenogenesis in a parasitoid wasp *Meteorus pulchricornis*, uncommon in the haplodiploid order Hymenoptera 307
- C.M. Meier, D. Bonte, A. Kaitala and O. Ovaskainen**  
Invasion rate of deer ked depends on spatiotemporal variation in host density 314
- D. Otali, R.J. Novak, W. Wan, S. Bu, D.R. Moellering and M. De Luca**  
Increased production of mitochondrial reactive oxygen species and reduced adult life span in an insecticide-resistant strain of *Anopheles gambiae* 323
- Di-Bing Sun, Jie Li, Yin-Quan Liu, David W. Crowder and Shu-Sheng Liu**  
Effects of reproductive interference on the competitive displacement between two invasive whiteflies 334
- R.C. Melo Machado, J. Sant'Ana, M.C. Blassioli-Moraes, R.A. Laumann and M. Borges**  
Herbivory-induced plant volatiles from *Oryza sativa* and their influence on chemotaxis behaviour of *Tibraca limbativentris* stal. (Hemiptera: Pentatomidae) and egg parasitoids 347
- M. Prijović, M. Škaljac, T. Drobñaković, K. Žanić, P. Perić, D. Marčić and J. Puizina**  
Genetic variation of the greenhouse whitefly, *Trialeurodes vaporariorum* (Hemiptera: Aleyrodidae), among populations from Serbia and neighbouring countries, as inferred from *COI* sequence variability 357
- C. Tavares, H. Jactel, I. van Halder, Z. Mendel and M. Branco**  
A case of ecological specialization in ladybirds: *Iberorhynchobius rondensis* (Coleoptera: Coccinellidae), potential biocontrol agent of *Matsucoccus feytaudi* (Hemiptera: Matsucoccidae) 367
- S. Abraham, J. Rull, M. Mendoza, M.C. Liendo, F. Devescovi, A.K. Roriz, A. Kovalski, D.F. Segura and M.T. Vera**  
Differences in sperm storage and remating propensity between adult females of two morphotypes of the *Anastrepha fraterculus* (Diptera: Tephritidae) cryptic species complex 376

<b>H.J. Liao, Q. Qian and X.D. Liu</b> Heat shock suppresses mating and sperm transfer in the rice leaf folder <i>Cnaphalocrocis medinalis</i>	383
<b>S. Sugumar, S.K. Clarke, M.J. Nirmala, B.K. Tyagi, A. Mukherjee and N. Chandrasekaran</b> Nanoemulsion of eucalyptus oil and its larvicidal activity against <i>Culex quinquefasciatus</i>	393
<b>Corrigendum</b>	403

**Subscribing organisations are encouraged to copy and distribute this  
table of contents for non-commercial purposes**

# Bulletin of *Entomological Research*

Volume 104 2014

ISSN: 0007-4853

[journals.cambridge.org/ber](http://journals.cambridge.org/ber)

**Publishing, Production, Marketing, and  
Subscription Sales Office:**  
Cambridge University Press  
The Edinburgh Building  
Shaftesbury Road  
Cambridge CB2 8RU  
UK

**For Customers in North America:**  
Cambridge University Press  
Journals Fulfillment Dept  
100 Brook Hill Drive  
West Nyack  
New York 10994-2133  
USA

**Publisher:** Katy Christomanou

*Bulletin of Entomological Research* is an international journal published bimonthly by Cambridge University Press in February, April, June, August, October and December.

**Subscription information:**

The subscription rates for Volume 104, 2014 (6 issues):  
Print and electronic access: £1263 (UK), (USA, Canada and Mexico US \$2148)  
Electronic-only price: £936 (UK), (USA, Canada and Mexico US \$1594)  
Print only: £1185 (UK), (USA, Canada and Mexico US \$1897)  
The online edition is available at [www.journals.cambridge.org/ber](http://www.journals.cambridge.org/ber) with free table of contents alert (upon registration).

Any **supplements** to this journal published in the course of the annual volume are normally supplied to subscribers at no extra charge.

**Back Volumes** are available. Please contact Cambridge University Press for further information.

**Claims** for non-receipt of journal issues will be considered on their merit and only if the claim is received within six months of publication. Replacement copies supplied after this date will be chargeable.

**US Postmasters:** please send address corrections to Bulletin of Entomological Research  
Cambridge University Press  
100 Brook Hill Drive  
West Nyack  
New York 10994-2133  
USA

**Information for Authors**

Manuscripts should be submitted online at <http://www.editorialmanager.com/ber>. New users should register before submitting a manuscript. Further information about submission is available from the publisher at the given address and is printed on the inside back cover.

**Offprints:** The author (or main author) of an accepted paper will receive a free PDF of their paper. Paper offprints are available for a fee and should be ordered at proof stage. No page charges are levied by this journal.

**Copying:** This journal is registered with the Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923, USA. Organisations in the USA who are registered with the CCC may therefore copy material (beyond the limits permitted by sections 107 and 108 of USA copyright law) subject to payment to the CCC of the per copy fee of \$16.00. This consent does not extend to multiple copying for promotional or commercial purposes. Code 0007-4853/2014/\$16.00. Organisations authorised by the Copyright Licensing Agency may also copy material subject to the usual conditions. *For all other use*, permission must be sought from Cambridge or the American Branch of Cambridge University Press.

**Disclaimer:** The information contained herein, including any expression of opinion and any projection or forecast, has been obtained from or is based upon sources believed by us to be reliable, but is not guaranteed as to accuracy or completeness. The information is supplied without obligation and on the understanding that any person who acts upon it or otherwise changes his/her position in reliance thereon does so entirely at his/her own risk.

Cambridge University Press does not accept responsibility for any trade advertisement included in this publication.

Typeset by SR Nova Pvt Ltd., Bangalore, India, and printed by Latimer Trend, Plymouth, UK.