

Volume 87(1) 1–110

February 1997

ISSN 0007–4853

BULLETIN
— *of* —
ENTOMOLOGICAL
RESEARCH



INTERNATIONAL INSTITUTE OF ENTOMOLOGY
An Institute of CAB INTERNATIONAL

Now available on
the World Wide Web
<http://pest.cabweb.org/>

BULLETIN
of
ENTOMOLOGICAL
RESEARCH

Aims and Scope

Bulletin of Entomological Research publishes original research papers, review articles and short communications concerning insects, mites, ticks or other arthropods of economic importance in agriculture, forestry, stored products, biological control, medicine, animal health and natural resource management. The geographical scope of the *Bulletin* is worldwide. Taxonomic papers are accepted if relevant.

The *Bulletin of Entomological Research* is published bimonthly by CAB INTERNATIONAL.

Editor-in-Chief

Dr Mark Tatchell

Entomological Sciences Department, Horticulture Research International, Wellesbourne CV35 9EF, UK

Email: BER@cabi.org

Executive Editor

John Badmin

International Institute of Entomology, 56 Queen's Gate London, SW7 5JR, UK

Tel: +44 (0) 171 584 0067/8 Fax: +44 (0) 171 581 1676 Email: BER@cabi.org

Editorial Board

- | | |
|--|--|
| Professor T.N. Ananthkrishnan, <i>Entomology Research Institute, Loyola College, Madras, India</i> | Dr O. Mochida, <i>National Agricultural Research Centre, Kan'Nondai, Japan</i> |
| Dr R. Blackman, <i>The Natural History Museum, London, UK</i> | Dr B. Napompeth, <i>National Biological Control Centre, Kasetsart University, Bangkok, Thailand</i> |
| Dr V.K. Brown, <i>International Institute of Entomology, London, UK</i> | Dr I.D. Oka, <i>Institute for Food Crops, Bogor, Indonesia</i> |
| Dr A.G. Cook, <i>Natural Resources Institute, Kent, UK</i> | Dr A. Polaszek, <i>International Institute of Entomology, London, UK</i> |
| Professor H. Dingle, <i>University of California, Davis, USA</i> | Professor S.E. Reynolds, <i>University of Bath, Bath, UK</i> |
| Dr R. Gámez, <i>Instituto Nacional de Biodiversidad, Santo Domingo de Heredia, Costa Rica</i> | Dr G.H.L. Rothschild, <i>International Rice Research Institute, Manila, Philippines</i> |
| Dr M.J.R. Hall, <i>The Natural History Museum, London, UK</i> | Professor S. Tanaka, <i>National Institute of Sericultural & Entomological Science, Tsukuba, Japan</i> |
| Professor R. Karban, <i>University of California, Davis, USA</i> | Professor H. Townson, <i>Liverpool School of Tropical Medicine, Liverpool, UK</i> |
| Dr R.P. Lane, <i>The Natural History Museum, London, UK</i> | Dr L.E.M. Vet, <i>Wageningen Agricultural University, Wageningen, The Netherlands</i> |
| Dr S.R. Leather, <i>Imperial College, Ascot, UK</i> | Dr I.P. Woiwod, <i>Rothamsted Experimental Station, Harpenden, UK</i> |
| Dr A.R. McCaffrey, <i>University of Reading, Reading, UK</i> | |
| Dr N.J. Mills, <i>University of California, Albany, USA</i> | |

© CAB INTERNATIONAL 1997. All rights reserved.

Published by CAB INTERNATIONAL, Wallingford, UK: New York, USA

Bulletin of Entomological Research

Editorial.....	1
Anderson, D.M. & Cox, M.L. <i>Smicronyx</i> species (Coleoptera: Curculionidae), economically important seed predators of witchweeds (<i>Striga</i> spp.) (Scrophulariaceae) in sub-Saharan Africa	3
Charalambous, M., Lowry, C.A., Lowell, S. & Shelley, A.J. The value of the larval head pattern for differentiating <i>Simulium exiguum</i> s.l. and <i>S. gonzalezi</i> (Diptera: Simuliidae) in the onchocerciasis focus of Ecuador.....	19
Cook, M. Revision of the genus <i>Maliarpha</i> (Lepidoptera: Pyralidae), based on adult morphology with description of three new species	25
Gover, J. & Strong, L. Mating combinations of control and ivermectin-fed dung flies <i>Neomyia cornicina</i> (Diptera: Muscidae): effects on mating behaviour, oviposition and ovarian development.....	37
Grilli, M.P. & Gorla, D.E. The spatio-temporal pattern of <i>Delphacodes kuscheli</i> (Homoptera: Delphacidae) abundance in central Argentina	45
Guglielmone, A.A., Anziani, O.S., Mangold, A.J., Giorgi, R.E., Volpogni, M.M. & Flores, S.G. Seasonal variation of <i>Haematobia irritans</i> (Diptera: Muscidae) in a recently infested region of central Argentina	55
Kimani-Njogu, S.W., Overholt, W.A., Woolley, J. & Walker, A. Biosystematics of the <i>Cotesia flavipes</i> species complex (Hymenoptera: Braconidae): morphometrics of selected allopatric populations	61
Krafsur, E.S., Griffiths, N., Brockhouse, C.L. & Brady, J. Breeding structure of <i>Glossina pallidipes</i> (Diptera: Glossinidae) populations in East and southern Africa.....	67
Leather, S.R., Fellowes, M.D.E., Hayman, G.R.F. & Maxen, J.S. The influence of lodgepole pine (<i>Pinus contorta</i>) provenance on the development and survival of larvae of the pine beauty moth <i>Panolis flammea</i> (Lepidoptera: Noctuidae).....	75
Trewhella, K.E., Leather, S.R. & Day, K.R. The effect of constitutive resistance in lodgepole pine (<i>Pinus contorta</i>) and Scots pine (<i>P. sylvestris</i>) on oviposition by three pine feeding herbivores	81
van den Berg, J., van Rensburg, G.D.J. & van der Westhuizen, M.C. Economic threshold levels for <i>Chilo partellus</i> (Lepidoptera: Pyralidae) control on resistant and susceptible sorghum plants.....	89
Wainhouse, D. & Jukes, M.R. Geographic variation within populations of <i>Panolis flammea</i> (Lepidoptera: Noctuidae) in Britain	95
Short Communications	
Harbach, R.E. & Howard, T.M. Metathoracic sensilla in mosquitoes (Culicidae) and related Diptera, and their potential importance in taxonomy and behavioural physiology.....	101
Kooyman, C. & Godonou, I. Infection of <i>Schistocerca gregaria</i> (Orthoptera: Acrididae) hoppers by <i>Metarhizium flavoviride</i> (Deuteromycotina: Hyphomycetes) conidia in an oil formulation applied under desert conditions.....	105
Book Reviews	109

© CAB INTERNATIONAL, 1997

All rights reserved. No part of this publication may be reproduced, in any form or by any means, electronically, mechanically, by photocopying, recording or otherwise, without prior permission of the copyright owner.

Bulletin of Entomological Research

Volume 87 1997

ISSN: 0007-4853

Publishing, Production, Marketing, and Subscription Sales Office:

CAB INTERNATIONAL
Wallingford
Oxon OX10 8DE
UK

Tel: +44(0)1491 832111
Fax: +44 (0)1491 826090
Email: cabi@cabi.org
Telex: 847964 (COMAGG G)

For Customers in North America:

CAB INTERNATIONAL
198 Madison Avenue
New York
NY 10016
USA

Tel: 212 726 6490 or 212 726 6491
[Toll-free: 1800 528 4841]
Fax: 212 686 7993
Email: cabi-nao@cabi.org

CAB INTERNATIONAL also has regional offices in
Malaysia, Trinidad & Tobago, and Kenya.

Publisher: Philip Edge

Publishing Editor: David Nicholson

Product Manager (Marketing): Lorraine Rogers

The *Bulletin of Entomological Research* is an international journal published bimonthly by CAB INTERNATIONAL in February, April, June, August, October and December.

Special sales and supplements:

This journal accepts advertising and inserts. We also provide bulk reprints of suitable papers to meet teaching or promotional requirements. The journal also publishes abstracts and proceedings on behalf of academic and corporate sponsors. Please contact David Nicholson at the Wallingford address for further details.

Subscription information:

The subscription rates for Volume 87, 1997 (6 issues) are:

Non-member country:	£245.00
Member Country*:	£196.00
US Dollars (Americas and Japan only):	\$430.00

(* Member Countries include UK, Canada, India, China, Australia, New Zealand. For a full list please apply to CAB INTERNATIONAL)

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 CAB INTERNATIONAL 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.

Despatch: deliveries outside the UK are by ASP Printflow Airsaver unless other arrangements are made. Customers requiring airmail delivery should indicate clearly their requirements and add an additional 10% to the relevant subscription price.

US POSTMASTERS: please send address corrections to CAB INTERNATIONAL at the Wallingford address.

Information for Authors

Three copies of the manuscript and artwork should be sent to:

John Badmin
International Institute of Entomology
56 Queen's Gate
London SW7 5JR
UK

Notes for Authors are available from this address if not printed in this issue of the journal.

Offprints: The author (or main author) of an accepted paper will receive 50 free offprints and a copy of the journal issue in which their paper is published. Additional offprints are available for a fee and should be ordered at proof stage. No page charges are levied by this journal.

Copyright: CAB INTERNATIONAL, 1997. All rights reserved: permission for reproduction of any part of the journal (text, figures, tables or other matter) in any form (on paper, microfiche or electronically) should be sought directly from the Publisher, or a licence permitting restricted copying obtained from the Copyright Licensing Agency, Tottenham Court Road, London W1P 9HE, UK, or in the USA by the Central Clearance Center, 27 Congress Street, Salem MA01970.

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.

CAB INTERNATIONAL does not accept responsibility for any trade advertisement included in this publication.

This journal is printed on acid-free paper from renewable sources
Printed at the University Press, Cambridge.