

biology letters

Editor-in-Chief

Professor Rick Battarbee

Handling Editors

Professor Nigel Bennett

Dr Mark Briffa

Professor Rodney Honeycutt

Professor Paul Sniegowski

Publishing Editor

Charlotte Wray

Editorial Board

Rick Battarbee, Editor-in-Chief

Environmental Change Research Centre, University College London

Nigel Bennett, Handling Editor

Department of Zoology & Entomology, University of Pretoria

Mark Briffa, Handling Editor

Marine Biology & Ecology Research Centre, Plymouth University

Rodney Honeycutt, Handling Editor

Natural Science Division, Pepperdine University

Paul Sniegowski, Handling Editor

Department of Biology, University of Pennsylvania

Leticia Avilés

Department of Zoology, University of British Columbia

Paul Barrett

Department of Palaeontology, The Natural History Museum, London

Thomas Bataillon

Bioinformatics Research Center, University of Aarhus

Georgii Bazykin

Department of Bioengineering and Bioinformatics, Lomonosov Moscow State University

David Bickford

Department of Biological Sciences, National University of Singapore

Barry Brook

School of Earth and Environmental Sciences, University of Adelaide

Angus Buckling

Biosciences, University of Exeter

Jérôme Casas

Institut de Recherche sur la Biologie de l'Insecte, Université de Tours

Jennifer Clack

University Museum of Zoology, University of Cambridge

Molly Cummings

Section of Integrative Biology, University of Texas

Nick Davies

Department of Zoology, University of Cambridge

Robin Dunbar

Department of Experimental Psychology, University of Oxford

Robert Elwood

Biological Sciences - Medical Biology Centre, Queen's University Belfast

Christophe Fraser

Division of Epidemiology, Public Health and Primary Care, Imperial College London

Megan Frederickson

Department of Ecology and Evolutionary Biology, University of Toronto

Lee Fuiman

Marine Science Institute, University of Texas

Nicolas Galtier

Institut des Sciences de l'Evolution, Université Montpellier II

Song Ge

Institute of Botany, Chinese Academy of Sciences

Fritz Geiser

Centre for Behavioural and Physiological Ecology, University of New England

Mike Gravenor

Institute of Life Science, Swansea University

Astrid Groot

Department of Entomology, Max Planck Institute for Chemical Ecology

Daniel Haun

Department of Developmental Psychology, Universität Jena

Mark Haussman

Department of Biology, Bucknell University

Russell Hill

Faculty of Social Sciences and Health, Durham University

Simon Ho

School of Biological Sciences, University of Sydney

Pär Ingvarsson

Ecology and Environmental Sciences, Umeå universitet

Francis Jiggins

Department of Genetics, University of Cambridge

Niclas Jonzén

Department of Theoretical Ecology, Lund University

Paul Joyce

Department of Mathematics, The University of Idaho

Alex Kacelnik

Department of Zoology, Oxford University

Laurent Keller

Department of Ecology and Evolution, University of Lausanne

Robert Laird

Department of Biological Sciences, University of Lethbridge

Manuel Lerdau

Department of Environmental Sciences, University of Virginia

Tom Little

Institute of Evolutionary Biology, University of Edinburgh

Martine Maan

Behavioural Biology, University of Groningen

Daniel Mennill

Department of Biological Sciences, University of Windsor

Arcadi Navarro

Department of Experimental and Health Sciences, Universitat Pompeu Fabra

Daven Presgraves

Department of Biology, University of Rochester

Anna Qvarnström

Evolutionary Biology Centre, Uppsala University

Andrew Rambaut

Institute of Evolutionary Biology, University of Edinburgh

Eduardo Rocha

Microbial Evolutionary Genomics, Institut Pasteur

Inaki Ruiz-Trillo

Institut de Biologia Evolutiva

Graeme Ruxton

School of Biology, University of St Andrews

Michael Ryan

Section of Integrative Biology, University of Texas

Sanjay Sane

National Centre for Biological Sciences, Tata Institute of Fundamental Research

Frank Schurr

Landscape Ecology and Vegetation Science, University of Hohenheim

David Sherry

Department of Psychology, Western University

Kristen Smith

Abt. Paläoanthropologie und Messelforschung, Senckenberg Museum

John Speakman

Institute of Biological and Environmental Sciences, University of Aberdeen

Karen Spencer

School of Psychology, University of St Andrews

Claire Spottiswoode

Department of Zoology, University of Cambridge

Mark Sutton

Department of Earth Science & Engineering, Imperial College London

Naoyuki Takahata

The Graduate University for Advanced Studies, Hayama

Toomas Tammaru

Institute of Ecology and Earth Sciences, University of Tartu

Yi Tao

Institute of Zoology, Chinese Academy of Sciences

Laura Roxana Torres Avilés

Instituto de Ecología, Universidad Nacional Autónoma de México

Kazuki Tsuji

Faculty of Agriculture, University of the Ryukyus

Tom Webb

Department of Animal and Plant Sciences, The University of Sheffield

Nina Wedell

Centre for Ecology and Conservation, University of Exeter

Stephen Weller

Department of Ecology and Evolutionary Biology, University of California, Irvine

Alan Wilson

Structure and Motion Lab, The Royal Veterinary College

Alex Zerbini

National Marine Mammal Laboratory, Alaska Fisheries Science Center/NOAA

Zhi-bin Zhang

Institute of Zoology, Chinese Academy of Sciences

Marlene Zuk

Department of Ecology, Evolution and Behavior, University of Minnesota

Publishing Editor: Charlotte Wray

(tel: +44 (0)20 7451 2654; fax: +44 (0)20 7976 1837;

charlotte.wray@royalsociety.org)

Editorial Coordinator: Raminder Shergill

(tel: +44 (0)20 7451 2694; biologyletters@royalsociety.org)

Production Editor: Tom Lowen

**6–9 Carlton House Terrace, London SW1Y 5AG, UK
publishing.royalsociety.org**

AIMS AND SCOPE

Launched as an independent journal in 2005 *Biology Letters* is a primarily online, peer-reviewed journal that publishes short, high-quality articles from across the biological sciences. The scope of *Biology Letters* is vast: publishing high-quality research articles and opinion pieces in any area of the biological sciences. However, we have particular strengths in the biology, evolution and ecology of whole organisms. We also publish in other areas of biology, such as molecular biology and neurobiology, where these bear on organismal, population and evolutionary biology. Articles submitted to *Biology Letters* benefit from its broad scope and readership, dedicated media promotion and an average turnaround time of 4 weeks to first decision. The journal is particularly suited to research that requires high visibility due to its cross-disciplinary nature or novel findings.

Copyright © 2014 The Royal Society

Except as otherwise permitted under the Copyright, Designs and Patents Act, 1988, this publication may only be reproduced, stored or transmitted, in any form or by any other means, with the prior permission in writing of the publisher, or in the case of reprographic reproduction, in accordance with the terms of a licence issued by the Copyright Licensing Agency. In particular, the Society permits the making of a single photocopy of an article from this issue (under Sections 29 and 38 of this Act) for an individual for the purposes of research or private study.

SUBSCRIPTIONS

In 2014 *Biology Letters* (ISSN 1744-9561) will be published monthly, with 12 issues a year. Full details of subscriptions may be obtained either by contacting our journal fulfilment agent, Portland Commerce Services, Commerce Way, Colchester CO2 8HP; tel: +44 (0)1206 796351; fax: +44 (0)1206 799331; email: sales@portland-services.com or by visiting our website at royalsocietypublishing.org/info/subscriptions. The Royal Society is Registered Charity No 207043

Subscription prices 2014 <i>Biology Letters</i>	UK, Europe and RoW	Europe	USA, Canada and RoW
Online only	£1080	€1404	\$2023
Combined online with print	£1512	€1965	\$2832

Typeset in India by Techset Composition Limited, Salisbury, UK. Printed by Latimer Trend, Plymouth.

This paper meets the requirements of ISO 9706:1994(E) and ANSI/NISO Z39.48-1992 (Permanence of Paper) effective with volume 1, issue 1, 2005.

Biology Letters (ISSN No: 1744-9561) is published 12 times a year for US\$2832 per year by the Royal Society, and is distributed in the USA by agent named Air Business, C/O Worldnet Shipping USA Inc., 149-35 177th Street, Jamaica, New York, NY 11434, USA. US Postmaster: Send address changes to *Biology Letters* C/O Air Business Ltd, C/O Worldnet Shipping USA Inc., 149-35 177th Street, Jamaica, New York, NY 11414.