

# symposium

AT THE ZOOLOGICAL SOCIETY OF LONDON



15 and 16 October 2009 ALL DAY | [www.zsl.org/science/scientific-meetings](http://www.zsl.org/science/scientific-meetings) | all tickets in advance

## IMPACTS OF ENVIRONMENTAL CHANGE ON REPRODUCTION AND DEVELOPMENT IN WILDLIFE

organised by William V. Holt, Stuart R. Milligan and Rhiannon E. Lloyd

Species adapt to the environment over millennia, and reproduction is therefore highly controlled by environment, but what happens when the environment changes more quickly than expected? Will reproduction go wrong or is it sufficiently robust to cope?

The symposium will examine the ways in which environmental change, such as global warming, increased radiation and exposure to endocrine disrupting chemicals, influence not only short-term reproductive success and development, but also long-term survival and fitness. We will focus on the following questions:

- Will environmental change lead to mismatches between food supplies, optimal physical environments and reproductive demands?
- How will these changes interact at the population level to cause the collapse or alteration of food web structures?
- What are the direct effects of environmental stresses (e.g. temperature, drought, environmental pollutants) on the reproductive success of individuals and populations?
- To what extent do environmental stresses during early life affect adult health through developmental programming mechanisms?

In this symposium, experts in ecology, nutrition, reproductive physiology, developmental biology and molecular biology share their insights into these questions.

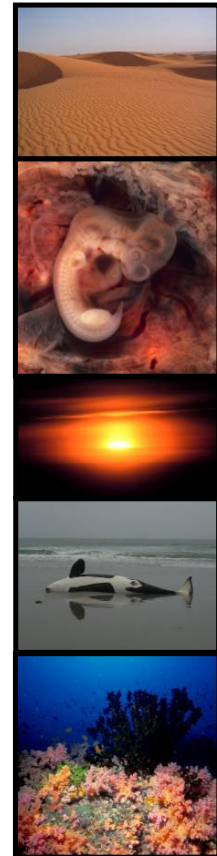


Image credits (from top): Ji-Elle; Ed Uthman, MD; Commander John Bortniak, NOAA Corps; Kaley Kevaci; Alex D. Rogers

### List of Contributors

Karina **Acevedo-Whitehouse**  
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Stewart M. **Rhind**  
Nils C. **Stenseth**  
Luiza M. **Toma**  
Bryan M. **Turner**  
Charles R. **Tyler**

### Sponsors



**IMPACTS OF ENVIRONMENTAL CHANGE ON REPRODUCTION AND DEVELOPMENT IN WILDLIFE  
THURSDAY 15 OCTOBER 2009**

Provisional programme; updates available from [www.zsl.org/science/scientific-meetings](http://www.zsl.org/science/scientific-meetings)

- 8.30 Registration opens  
9.15 Welcome
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**SESSION I: ENVIRONMENTAL CHANGE AND REPRODUCTION:  
SETTING THE SCENE**

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- 9.30 **Keynote paper: Climate change and seasonal reproduction in mammals**  
*Franklin Bronson (The University of Texas at Austin, USA)*
- 10.15 **Climate-driven mismatches between food supplies, optimal temperatures, and reproduction**  
*Cynthia Carey (University of Colorado, USA)*
- 11.00 **POSTER SESSION (TEA/COFFEE)**
- 11.30 **Developmental programming: lessons from human and animal studies**  
*Susan Ozanne (University of Cambridge, UK)*
- 12.15 **The potential role of epigenetic mechanisms in mediating effects of the environment**  
*Bryan Turner (University of Birmingham, UK)*
- 13.00 **LUNCH**
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**SESSION II: ACUTE AND CHRONIC EFFECTS OF THE ENVIRONMENT ON  
DEVELOPMENT AND REPRODUCTION**

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- 14.00 **Environmental consequences of altered nutrient supply during oocyte and embryo development**  
*Cheryl Ashworth (The Roslin Institute, University of Edinburgh, UK), Luiza Toma (Scottish Agricultural College, UK) and Morag Hunter (University of Nottingham, UK)*
- 14.45 **Early life programming of fecundity**  
*David Gardner (University of Nottingham, UK)*
- 15.30 **TEA/COFFEE**
- 16.00 **Effects of heat stress on mammalian reproduction**  
*Peter Hansen (University of Florida, USA)*
- 16.45 **Genomic aspects of spermatogenesis in fishes; effects of environmental contaminants**  
*Peter Kille (Cardiff University, UK)*
- 17.30 **POSTER SESSION with cash bar**
- 18.45 **End of Day One**
- 19.00 **SYMPOSIUM DINNER** – tickets to be booked in advance

**IMPACTS OF ENVIRONMENTAL CHANGE ON REPRODUCTION AND DEVELOPMENT IN WILDLIFE  
FRIDAY 16 OCTOBER 2009**

Provisional programme; updates available from [www.zsl.org/science/scientific-meetings](http://www.zsl.org/science/scientific-meetings)

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**SESSION III: ENDOCRINE DISRUPTION: A CAUSE FOR CONCERN?**

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- 9.15 **Impacts of endocrine disrupting chemicals on aquatic wildlife**  
*Charles Tyler (University of Exeter, UK)*
- 10.00 **Anthropogenic pollutants - a threat to ecosystem sustainability**  
*Stewart Rhind (The Macaulay Institute, UK)*
- 10.45 **POSTER SESSION (TEA/COFFEE)**
- 11.15 **Endocrine disruptors and transgenerational epigenetics**  
*Carlos Guerrero-Bosagna (Washington State University, USA)*
- 12.00 **LUNCH**

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**SESSION IV: ECOLOGICAL AND EVOLUTIONARY CONSEQUENCES OF ENVIRONMENTAL CHANGE**

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- 13.00 **The endocrine control of reproduction in Nereidae: a new multi-hormonal model with implications for their functional role in a changing environment**  
*Andrew Lawrence (The University of the West Indies, Trinidad and Tobago)*
- 13.45 **Impacts of sex ratio changes on population dynamics and evolution**  
*Tim Clutton-Brock (University of Cambridge, UK)*
- 14.30 **POSTER SESSION (TEA/COFFEE)**
- 15.00 **Effects of environmental change on wildlife health**  
*Karina Acevedo-Whitehouse (Institute of Zoology, ZSL, UK) and Amanda Duffus (Institute of Zoology, ZSL & Queen Mary, University of London, UK)*
- 15.45 **Large scale population effects, genetics and environmental change**  
*Nils Stenseth (Centre for Ecological and Evolutionary Synthesis, University of Oslo, Norway)*
- 16.30 **Closing remarks**  
*Sir Brian Heap (Cambridge, UK)*
- 16.45 **End of Symposium**

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**MEALS AND REFRESHMENTS** Coffee and tea will be served during breaks and a sandwich lunch is provided for all. A dinner will be held on Thursday evening; tickets cost an extra £40 each and must be purchased by 1 October 2009. Please advise any special dietary requirements on registration form.

## LOCATION



The Zoological Society of London's Meeting Rooms are next to its Main Offices, on the Outer Circle, Regent's Park. Cars may be parked in the ZSL London Zoo visitors' car park – please contact Joy Hayward (details below) to arrange a special parking rate for the symposium. The nearest public transport is by the 274 bus (to the Zoo), or by Underground (to Camden Town).

## NOTES

**Attendance** All places must be booked in advance. **Full rate:** two days £130; one day £80.

**Discounted rate:** (applicable for ZSL Members, students and SRF Members) two days £65; one day £40. Registration deadline: 1 October 2009 (a fee of £10 will be charged on all late registrations).

**Meals and refreshments** Coffee, tea and a buffet sandwich lunch will be served during breaks and are included in the ticket price. A dinner with the speakers will be held at the end of the first day; tickets cost £40 each and must be purchased no later than 1 October 2009. Please state if you have any special dietary requirements, including vegetarian.

**Posters** The organisers invite interested parties to submit abstracts for posters with research relating to the symposium topic. Abstracts of no more than 250 words can be emailed or posted (using enclosed form) to Joy Hayward (details below) by 18 September 2009 for consideration by the coordinators. Accepted poster presenters will be notified by 25 September 2009.

### Booking and enquiries

please contact:

Joy Hayward, Scientific Meetings Coordinator  
Zoological Society of London,  
Regent's Park (Outer Circle)  
London NW1 4RY, UK.

E: [joy.hayward@zsl.org](mailto:joy.hayward@zsl.org); T: +44 (0)20 7449 6227; F: +44 (0)20 7449 6411

[www.zsl.org/science/scientific-meetings/](http://www.zsl.org/science/scientific-meetings/)



# REGISTRATION FORM

## IMPACTS OF ENVIRONMENTAL CHANGE ON REPRODUCTION AND DEVELOPMENT IN WILDLIFE

15 and 16 October 2009 in the Meeting Rooms, Zoological Society of London, Regent's Park (Outer Circle), London NW1 4RY, UK.

<b>Symposium Attendance</b>	<b>Full rate</b>	<b>Discounted rate</b>	(applicable for ZSL Friends & Fellows <sup>1</sup> , SRF Members <sup>2</sup> and students <sup>3</sup> )
For two days or part days	£130	£65	
For one day or part day	£80	£40	

**Deadline for Registration** 1 October 2009 (there is a £10 fee on all late registrations).

Please return one form per delegate to Joy Hayward, Scientific Meetings Coordinator, ZSL London Zoo, Regent's Park, London NW1 4RY, UK, e-mail: joy.hayward@zsl.org or fax: +44 (0)20 7449 6411.

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### REGISTRATION

Please register me for: TWO DAYS / THURSDAY / FRIDAY (please delete as applicable)

- I AM / AM NOT a Fellow or Friend of The Zoological Society of London<sup>1</sup>
- I AM / AM NOT a Member of The Society for Reproduction and Fertility<sup>2</sup>
- I AM / AM NOT a registered graduate/undergraduate student<sup>3</sup>

<sup>1</sup>Please provide your ZSL Membership number .....

<sup>2</sup>Please provide your SRF Membership number .....

<sup>3</sup>Please provide a supporting statement from your course supervisor or a copy of your student card.

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### 3-COURSE DINNER (THURSDAY EVENING)

I would like to book for dinner on Thursday 15 October: please send me.....dinner tickets (£40 each).  
*Closing date for dinner bookings: 1 October 2009. Please list any special dietary requirements below.*

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### Your details

**Title:** ..... **First name:** ..... **Surname:** .....

**Name** (as you would like it to appear on your badge): .....

**Position:** ..... **Organisation:** .....

**Email:** ..... **Tel:** .....

**Special dietary requirements** (please specify, including vegetarian): .....

**Mailing address (billing address should be provided for card payments):** .....

**Delegate list:** We would like to make a list of delegates available to all attendees. Please indicate here if you **do not** want your information (name, position, organisation, email address) to be included [ ]

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### PAYMENT DETAILS

**Cheque** I enclose a cheque for £..... payable to: The Zoological Society of London.

Please note that cheques can only be accepted in Sterling drawn against a UK bank.

Direct payment by Euros or US\$ may also be possible; please contact Joy Hayward for information.

**Card** Please complete all details below and return by fax or by post:

Please debit my Visa / Mastercard (delete as appropriate)

Amount £.....

Card Number ..... / ..... / ..... / .....

Expiry Date ..... / ..... Card security code ..... (last three digits printed on or just beneath card signature strip)

Name on Card ..... (capital letters please)

Signature of Card Holder ..... Date .....

If you would prefer to give card details over the telephone please call Joy Hayward on +44 (0)20 7449 6227.

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**Cancellations** must be received in writing five working days prior to the symposium and will be refunded less a £15.00 processing charge. We regret that no refunds will be possible for places cancelled after 8 October 2009. Substitutions may be made at any time without charge; please notify Joy Hayward of any change in attendee details.

## CALL FOR POSTERS

### IMPACTS OF ENVIRONMENTAL CHANGE ON REPRODUCTION AND DEVELOPMENT IN WILDLIFE A 2-day international symposium

**Thursday 15 and Friday 16 October 2009** at the Meeting Rooms, Zoological Society of London, Regent's Park (Outer Circle), London NW1 4RY, UK

There are spaces for approximately 20 posters at this 2-day symposium. Posters will be on display throughout, and attendees will have plenty of time to study posters and interact with speakers and other delegates during tea/coffee breaks (poster area is close to refreshment points).

Abstracts of no more than 250 words outlining poster content should be emailed to [joy.hayward@zsl.org](mailto:joy.hayward@zsl.org) by 18 September 2009 for consideration.

**Posters supporting topics covered by the discussions at the symposium may be considered by the organisers for inclusion in the final publication.**

**Please note the deadline for submission of poster abstracts is 18 September 2009.**

**Those who have submitted successful poster proposals will notified by 25 September 2009 and further guidelines will be sent at that time.**

Title of poster

Author(s) of poster

Please indicate which author/representative will attend the symposium to present the poster. Registered delegates' posters will be given priority over poster abstracts submitted by non-delegates.

Contact email address for representative

Abstract of no more than 250 words outlining poster content

**For more information**, please contact

Joy Hayward: Tel: +44 (0)20 7449 6227; Fax: +44 (0)20 7449 6411; Email: [joy.hayward@zsl.org](mailto:joy.hayward@zsl.org)