Volume 26 Issue 3

August 2017

## **Articles**

Free-range laying hens in distinct environments

Animal welfare assessment through foraging ecology

Euthanasia of goat kids

Welfare issues in canine TNR

Carbon dioxide euthanasia of pigs

Modern slaughter techniques and halal meat production

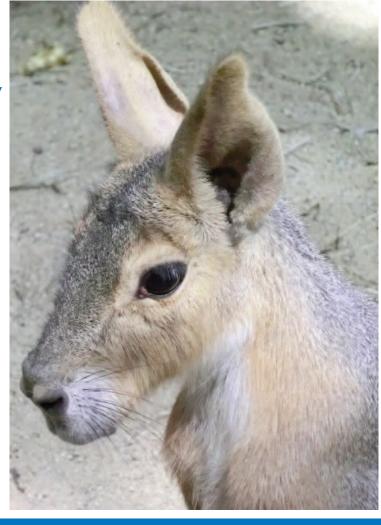
Farm inspections and improvement of compliance

Veterinarian and farmer opinions on post-disbudding analgesia

Broilers' fitness for transport

Characteristics of greyhounds and impacts on re-homing

Feather-pecking in organic laying hens in Europe



Reports and Comments
Book Reviews

ISSN 0962-7286

**Editor-in-Chief: Robert C Hubrecht Editorial Assistant: Steve Weddell** Administrative Officer: Samantha Griffin **Administrative Assistant: Wendy Goodwin** 

#### **Section Editors**

#### Laboratory animals

Professor Jann Hau

Department of Experimental Medicine, University of Copenhagen Faculty of Health Sciences and University Hospital 3B Blegdamsvej, DK-2200 Copenhagen N, Denmark

#### Ethics, philosophy and social science

Professor Peter Sandøe

Danish Centre for Bioethics and Risk Assessment Rolighedsvej 25, DK-1958 Frederiksberg, Denmark

#### General animal welfare science

Dr Isabelle Veissier

Herbivores Joint Research Unit

French National Institute for Agricultural Research F-63122 Saint-Genès-Champanelle, France

#### Farmed pigs

Dr Yolande M Seddon Large Animal Clinical Sciences Western College of Veterinary Medicine, 52 Campus Drive, Saskatoon, SK, S7N 5B4, Canada

#### **Farmed ruminants**

Professor Marina von Keyserlingk Animal Welfare Program The University of British Columbia 2357 Main Mall, Vancouver, Canada V6T IZ4

#### Farmed fish

Professor Victoria Braithwaite School of Forest Resources and Department of Biology Penn State University, University Park, PA 16802, USA

#### Companion animals other than horses

Professor Xavier Manteca School of Veterinary Science Universitat Autònoma de Barcelona 08193 Bellaterra (Barcelona), Spain

#### Horses and other equines

Associate Professor Hayley Randle School of Animal and Veterinary Sciences Charles Sturt University

Wagga Wagga, NSW 2678, Australia

#### **Poultry**

Dr T Bas Rodenburg Behavioural Ecology Group Wageningen University De Elst I, 6708 WD, Wageningen The Netherlands

#### Wild animals

Dr Sandra Baker University of Oxford The Recanti-Kaplan Centre **Tubney House** Abingdon Road, Tubney Abingdon OXI3 5QL, UK

#### Zoo animals

Dr Fay Clark Bristol Zoological Society, Bristol Zoo Gardens Clifton, Bristol BS8 3HA, UK

## **Editorial Advisers**

Dr MF Bouissou — INRA, Nouzilly, France Professor D Broom — University of Cambridge, UK Professor M Stamp Dawkins — University of Oxford, UK Mr Roger Ewbank — Ealing, London, UK

Professor Benjamin Hart — University of California, Davis, USA Professor David Morton — University of Birmingham, UK Dr James Serpell — University of Pennsylvania, USA Professor John Webster — University of Bristol, UK Professor Piet Wiepkema — Oosterbeek, The Netherlands

Animal Welfare (ISSN 0962-7286) brings together the results of scientific research and technical studies related to the welfare of animals kept on farms, in laboratories, as companions, in zoos or managed in the wild. Subscription rates: Individuals £85/US\$170 per Volume; Corporate/Institutes/Libraries £315/US\$630 per Volume.

Orders: Can be made direct to UFAW and are accepted by Volume, which comprises four issues per year.

Papers: Instructions for authors are summarised on the inside back cover; comprehensive instructions are available from our website, or on request from UFAW. Manuscripts should be submitted online at http://mc04.manuscriptcentral.com/ufaw-aw.

Animal Welfare is abstracted in Biological Abstracts; CAB Abstracts; Current Contents/Agriculture, Biology and Environmental Sciences; Focus on: Veterinary Science & Medicine; SciSearch; Biosis Previews; Toxicology Abstracts; Veterinary Update; is indexed in Zoological Record; and is covered by the Science Citation Index.

#### © 2017 UFAW

All rights reserved; no part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior written permission of the Publisher. Opinions expressed by authors do not necessarily reflect the views of UFAW, its Council, Staff, Members or Associates, the Section Editors or the Editorial Advisers.

## **Published by**

Universities Federation for Animal Welfare The Old School, Brewhouse Hill, Wheathampstead, Herts AL4 8AN, UK Tel: +44 1582 831818 Fax: +44 1582 831414 Web: www.ufaw.org.uk



ISSN 0962-7286

Volume 26 Issue 3	August 201	7
Contents		
Corrigendum		
Articles		
Behaviour of free-range laying hens in distinct outdoor environments	2	255
H Larsen, G Cronin, CL Smith, P Hemsworth and J-L Rault		
Zoo foraging ecology: development and assessment of a welfare tool for captive animals SM Troxell-Smith, CJ Whelan, SB Magle and JS Brown	2	265
Technical contribution: evaluation of the efficacy of a non-penetrating captive bolt to euthanase dai 30 days of age	ry goat kids up to 2	277
MA Sutherland, TJ Watson and ST Millman		
Canine trap-neuter-return: a critical review of potential welfare issues	2	182
H Bacon, V Vancia, H Walters and N Waran	2	.02
The effect of age and method of gas delivery on carbon dioxide euthansia of pigs MA Sutherland, PJ Bryer and BL Backus	2	293
The compatibility of modern slaughter techniques with halal slaughter: a review of the aspects of 'n methods that divide scholarly opinion within the Muslim community	nodern' slaughter 3	801
A Fuseini, SB Wotton, PJ Hadley and TG Knowles	:	
Implementation of the European legislation to protect farm animals: a case study on French inspessolutions to improve compliance	ections to find 3	311
AC Lomellini-Dereclenne, M Miele, L Mounier and I Veissier		
Study investigating the attitudes and opinions of cattle farmers and veterinarians in the UK on th steroidal anti-inflammatory drugs (NSAIDs) for post-disbudding analgesia of calves	e use of non- 3	323
SYN Hambleton and TJ Gibson		
Fit for transport? Broiler chicken fitness assessment for transportation to slaughter L Jacobs, E Delezie, L Ducateau, K Goethals, D Vermeulen, J Buyse and FAM Tuyttens	3	35
Characteristics of ex-racing greyhounds in New Zealand and their impact on re-homing	3	345
JB Thomas, NJ Adams and MJ Farnworth	•	
Feather-pecking and injurious pecking in organic laying hens in 107 flocks from eight European co	ountries 3	355
M Bestman, C Verwer, C Brenninkmeyer, A Willett, LK Hinrichsen, F Smajlhodzic, JLT Heerkens, S Gunnarss		
Reports and Comments	3	865
OIE global strategy on animal welfare		
FAWC Opinion on the links between the health and well-being of farmers and farm animal welfare		
FAWC Opinion on sustainable agriculture and farm animal welfare		
Animal welfare in the European Union		
Book Reviews	3	69
Animal Welfare in Australia: Politics and Philosophy		
A New Basis for Animal Ethics: Telos and Common Sense		
Animal Housing and Human-Animal Relations: Politics, Practices and Infrastructures		

**On the cover:** Patagonian cavy (*Dolichotis patagonum*). Image appears courtesy of SM Troxell-Smith. For a related paper, see Troxell-Smith et al, pp 265-275, this issue.



## **Journal Subscription Order Form**

Please photocopy or cut out and complete in BLOCK capitals, then return form(s) by post to the address below. Subscriptions and UFAW Memberships may be requested from the Administrative Office by email: ufaw@ufaw.org.uk.

Subscriptions are accepted by Volume, which comprises 4 issues per year, and are payable in advance. Prices are subject to annual review.

Journal Subscription Category (please mark as appropriate)
Individuals           UFAW members£85/US\$170         Non-members£125/US\$250
Institutes/Libraries/Corporate UFAW members£225/US\$450 Non-members£315/US\$630
Please contact the Administrative Office for details of back-issue availability and cost.
<b>UFAW Membership Application</b> I hereby apply to join the Universities Federation for Animal Welfare as a member subject to the provisions of the Memorandum and Articles of Association. Under the Articles of Association and Current Byelaws of UFAW, members can become eligible for election by Council to voting membership after three years. I agree to my name being entered in the Register of Members.
Membership category (please mark as appropriate)
Standard£30/US\$60 Student£10/US\$20
Signature
Payment Options
I wish to pay by cheque: ( )
I enclose my cheque for made payable to UFAW.
OR
I wish to pay by credit card: ( )
(We can accept Visa/Delta/Mastercard — minimum £10)
Name of Cardholder
Card number
Type of Card (eg Visa/Delta/Mastercard)Expiry date
SignatureAmount to be debited
Name
Address
POST/ZIP CODE

Universities Federation for Animal Welfare
The Old School, Brewhouse Hill, Wheathampstead, Herts AL4 8AN, UK
Tel: +44 1582 831818 Fax: +44 1582 831414 Web: www.ufaw.org.uk

