

PROCEEDINGS OF THE

“The importance of attitudes, values,  
and economics to the welfare and  
conservation of animals”

**INTERNATIONAL SOCIETY FOR  
ANTHROZOOLOGY**



**Edited by**

**Marta Amat  
Valentina Mariotti**

## COLOFON

The organizers of the congress and the editors would like to thank all the authors for putting the texts to their disposal.

Published in Barcelone by

Universitat Autònoma de Barcelona  
08193 Bellaterra (Cerdàñola del Vallès)

SPAIN

© 2006

**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 permission of the copyright owner.**

**First published 2006**

## **PREFACE**

On behalf of the organizing committee and the School of Veterinary Science of the *Universitat Autònoma de Barcelona* I am delighted to welcome you to the 2006 meeting of the International Society for Anthrozoology to be held in Barcelona on the 5<sup>th</sup> and 6<sup>th</sup> of October, 2006.

The selected topic of the meeting is “The importance of attitudes, values and economics to the welfare and conservation of animals”. It is clear that the way people perceive animals is affected by cultural and economic factors. As animal welfare and wildlife conservation increasingly become global issues, a deeper understanding of the importance of cultural and economic background to the protection of animals is needed if we are to make significant progress in the field. The first objective of this meeting is to provide opportunities for this issue to be addressed and discussed.

In a world where many people have to endure poverty and a difficult life, many of us would like to see our professional activity having a positive impact on human welfare. I strongly believe that progress in animal welfare and conservation has the potential to benefit humans as well. The second objective of this meeting is to explore the relationship between human welfare and animal protection.

There is obviously more to a conference than just science. Barcelona is a pleasant and interesting city, and we are sure that it has many things to offer in terms of cultural and social life. We very much hope that you will find your stay in Barcelona both enjoyable and rewarding.

The selected topic of the meeting is to a large extent the result of a series of talks and shared interests with Don Broom and Francisco Galindo, whose input has been instrumental to organize this conference. I would also like to thank the ISAZ Board -particularly James Serpell and Kathy Kruger- for their advice and continued help. Finally, organizing a meeting like this, although rewarding, is also demanding and time consuming. I would like to thank my colleagues Marta Amat, Valentina Mariotti, Jaume Fatjó and José Luís Ruiz de la Torre for their enthusiasm and dedication.

I wish you all a happy stay in Barcelona and a successful meeting.

Xavier Manteca  
Organizing Committee  
ISAZ 2006

## **List of contents**

### **Oral presentations**

<b><u>D. M. Broom*</u></b> . <i>Future food animal production: efficiency and acceptability</i> .....	1
<b>A. Gardiner</b> . <i>British small animal veterinary practice and the human-animal bond: a historical perspective</i> .....	3
<b>Y. Kakuma</b> . <i>Animal welfare concepts in Japan: a survey for university students who are about to study animal welfare</i> .....	5
<b>P. Arkow</b> . <i>Using the Connections between Companion Animals, Family Violence and Social Capital to Facilitate Animal-Based Values Education</i> .....	7
<b>L. Dorn</b> . <i>Horse Psychology &amp; Training: Testing the Assumptions</i> .....	11
<b>M. McCabe</b> . <i>Anthrozoology in Post-Tsunami India</i> .....	13
<b>K. Van Driel</b> . <i>The benefits of researching human-animal interactions in the laboratory: a practical experiment</i> .....	15
<b><u>Z. Aznam Md. Jelani*</u></b> . <i>Islamic perspectives on animal cruelty, welfare, rights and conservation</i> .....	17
<b>A. Velarde</b> . <i>Ritual slaughter of farm animals</i> .....	19
<b>J. Swabe</b> . <i>Seals, Fish or Swimming Cockroaches? Exploring the Discourse on Commercial Seal Hunting</i> .....	21
<b>H. Pedersen</b> . <i>Human-animal relations in school visits to museums</i> .....	23
<b>F. Magraner Frau</b> . <i>Evolution of human-animal relationship in contemporary Spanish cinema</i> .....	25

<b>S. B. Barker.</b> <i>Therapy dogs in Healthcare Facilities: Assessing the Demand</i> .....	27
<b>V. Servais.</b> <i>Describing the human/animal communication system as a two-way interaction: the case of dolphin's encounters</i> .....	29
<b><u>L. Barraza*</u></b> . <i>Attitudes to wildlife conservation: ecological dilemmas</i> .....	31
<b>W. Davis.</b> <i>A description of owned dogs in Roseau, Dominica</i> ....	33
<b>S. Knight.</b> <i>Factors underlying attitudes towards animal use: A study of scientists and animal welfare groups</i> .....	35
<b>P. K. Anderson.</b> <i>The Human Avian Bond: An Ethnography of a Veterinary Clinic</i> .....	37
<b>H. Herzog.</b> <i>The Evolution of Pet-Keeping: Adaptation, By-Product or Cultural Drift?</i> .....	39
<b>R. W. Mitchell.</b> <i>A brief history of the use of anthropomorphism to understand animals</i> .....	41
<b>B. Daly.</b> <i>An examination of personality differences between "dog people" and "cat people"</i> .....	43
<b>G. Fallani.</b> <i>Physiological and behavioural aspects of emotional reactions in guide dogs</i> .....	45
<b>J. Serpell.</b> <i>The totemic significance of endangered wildlife: A new look at an old topic</i> .....	47
<b><u>A. Podberscek*</u></b> . <i>Where does East meet West? Comparing and contrasting attitudes to cats and dogs in Britain and China</i> .....	49
<b>R. Castellort.</b> <i>Behavioural test to improve adoption programmes in dog shelters</i> .....	53
<b>S. Waiblinger.</b> <i>How do farmers' attitudes impact on animal welfare? The relationship of attitudes to housing design and management on dairy cow farms</i> .....	55

**A. Ramanathan.** *Post-Disaster Scenarios: can they be a vehicle to influence attitudes, values & economics for better companion & farm animal welfare* ..... 57

**M. J. Martin.** *Animal Culture vs. “Collective Consciousness”* . 59

**S. Jenkinson.** *Attitudes, values and beliefs: their influence on divergent government restrictions on dog walking in nature conservation sites of England*..... 61

## **Posters presentations**

**J. Conesa.** *Thinking in Animal Signs: tracking as a biosemiotic exercise, ecopsychological practice, and a transpersonal path* .... 63

**W. Davis.** *Dog keeping and non-dog keeping households in Dominica: are attitudes towards animals different?* ..... 65

**S. Stone.** *The Importance of Companion Animals in Emergency Evacuations* ..... 67

**S. Huertas.** *Welfare of beef cattle during the pre-slaughter stages in Uruguay*..... 69

**J. D’Silva. J. Formosinho.** *Cheap Meat and the downfall of broiler chicken welfare*..... 71

**J. B. Greenebaum.** *“I’m not an activist but...:” Animal Rights vs. Animal Welfare in the Purebred Dog Rescue Movement* ..... 73

**T. Kauppinen.** *Improving farm animal welfare: farmers’ views and means*..... 75

**J. Schlosser.** *Pets as Independent Agents in the Photographic Work of Five Contemporary Artists* ..... 77

**M. Schnider.** *When Cultures Collide: Attitudes toward Dogs and Cats in a Multicultural Context* ..... 79

**S. Fifield.** *Intergenerational continuity of attitudes toward pets* . 81

<b>C. Cruz.</b> <i>Attitudes of Portuguese shepherds towards livestock guarding dogs</i> .....	83
<b>E. Friedmann.</b> <i>Quality of Life, Social Support, and Pet Ownership among Patients with Heart Failure</i> .....	85
<b>A. Brubaker.</b> <i>Self-reported concern for animal welfare by small farmers in the United States</i> .....	87
<b>C. Cruz.</b> <i>Influence of shepherd's attitudes on the efficiency of livestock guarding dogs: a case-study with a Castro Laboreiro Dog puppy</i> .....	89
<b>K. van Driel.</b> <i>The benefits of researching human-animal interactions in the laboratory: a practical experiment</i> .....	91
<b>G. Ghirardelli.</b> <i>The development of attachment in the domestic dog</i> .....	93
<b>L. Carrasco.</b> <i>Benefits of training-playing for a group of captive western-lowland gorilla (<i>Gorilla gorilla gorilla</i>)</i> .....	95
<b>M. Vinnari.</b> <i>Deep ecology and animal rights - Going to the same direction?</i> .....	97
<b>A. Ramírez.</b> <i>Agonistic games with cattle in Mexico today. An ethnographic account</i> .....	98
<b>M. Belew.</b> <i>Animals in Disasters: Lessons from Katrina, the Tsunami, and Other Calamities</i> .....	100
<b>J. Purvis.</b> <i>Quality of Life, Social Support, and Pet Ownership among Patients with Heart Failure</i> .....	102
<b>S. Glover.</b> <i>Veterinary Students' Attitudes toward Companion Animals' Legal Status</i> .....	104
<b>M. J. Martin.</b> <i>The Meta-Animal as Modern Shapeshifter</i> .....	106



**R. W. Mitchell.** *People's talk is friendlier when playing with an unfamiliar dog than with a familiar dog* ..... 108

**A. Di Nardo.** *Evaluation of welfare indicators on straw-bedded dairy cows* ..... 110

**E. Friedmann.** *Friendly dogs as potential moderators of cardiovascular response to speech in older hypertensive* ..... 112

\* Invited Speakers

## **Oral presentations**

### **Future food animal production: efficiency and acceptability**

Donald M. Broom

Centre for Animal Welfare and Anthrozoology  
Department of Veterinary Medicine  
University of Cambridge  
Madingley Road  
Cambridge CB3 0ES UK  
[dmd16@cam.ac.uk](mailto:dmd16@cam.ac.uk)

What is the impact food animal production in the world? What role does it play in human activity, who benefits from it, who pays costs associated with it and how should it proceed in the future? Most human action involves some degree of benefiting and tolerating others, in other words, morality is an inevitable result of natural selection.

A system or procedure is sustainable if it is acceptable now and if its effects will be acceptable in future, in particular in relation to resource availability, consequences of functioning and morality of action. Unsustainable agriculture is immoral and will eventually be prevented.

Animal production, and especially plant production, are of enormous benefit to those who need food, although many do not get enough. There can be negative effects of some animal production methods on: human health and other aspects of human welfare, on the welfare of the animal produced, on the functioning of ecosystems and on the extent of biodiversity. Some of these negative effects of high levels and efficiency of animal production are exacerbated by the spread of animal

production systems and some by the nature of the system. For example, pathogens, such as *E. coli* 0157:H7 can be passed from farm animals to humans, as can modified forms of H5N1 avian influenza. Bovine spongiform encephalopathy changed from very rare cattle disease to become a major epidemic with consequences for human health because of animal protein fed to cattle. Intensive housing conditions also make it more likely that poultry meat will carry *Campylobacter*.

Examples of poor welfare which occurs more frequently because of increased individual production efficiency include leg problems and ascites in broiler chickens, lameness, mastitis and reproduction disorders in very high producing dairy cows and physiological problems resulting from large muscle blocks in pigs. There are many examples of poor welfare caused by cost-saving animal housing systems.

Environmental effects of animal production include loss of forest in order to produce, often temporary grazing land and pollution resulting from farm animal manure production systems include depletion of rural communities and some loss of contact with animals during normal life.

All of such effects make some of animal production unsustainable and it is clear that the way that animal agriculture is organized in the world cannot be left to the free market. The view of the public must be passed on by governments or by direct pressure on retail and animal production companies.

## **British small animal veterinary practice and the human-animal bond: a historical perspective.**

Andrew Gardiner BVM&S, Cert SAS, MSc, MRCVS  
PhD student

Centre for the History of Science, Technology and Medicine;  
Welcome Unit for the History of Medicine, University of  
Manchester, Manchester, UK

[Andrew@wag-wag.freeserve.co.uk](mailto:Andrew@wag-wag.freeserve.co.uk)

This paper reviews changes that have occurred in British small animal veterinary practice since the 1950s. It is part of a larger historical project examining the history of 20<sup>th</sup> century veterinary medicine.

This field, as a branch of medical history, is poorly developed and no previous studies exist with a similar remit. Most recent veterinary historiography has been primarily concerned with livestock plagues; older histories have tended to adopt the ‘grand narrative’ style which privileges notable individuals, institutions and clinical breakthroughs. Some related work on companion animal veterinary medicine in America exists (Jones, 1997) and sociologists have examined aspects of veterinary practice and veterinary interactions (Sanders, 1995; Swabe, 1994).

The paper highlights issues pertinent to the vet–companion animal–owner interaction and how these have changed in the last 50 years. In this time, small animal practice has risen to become the dominant activity in western clinical veterinary medicine. Implications with respect to veterinary ethics, animal welfare and veterinary education/practice are

discussed. Central to each of these topics are considerations of values, attitudes and economics; companion animal practice is presented as a specialised branch of private medicine.

The paper points to the need for further studies into the human-animal bond in veterinary settings in order to help inform debate with respect to clinical and ethical decision making as medical technologies (e.g. transplantation, advanced surgery, chemotherapy) further expand into the veterinary field. The dog genome project, and its potential for heralding a new style of non-experimental comparative medicine of shared spontaneous diseases, is mentioned briefly in the context of the future of human and animal medical research and the rediscovered concept of 'one medicine'(Michell, 2005).

## **REFERENCES**

Jones, S.D. 1997. *J. Hist. Med.* 52: 202-235.

Sanders, C.R. 1995. *Soc. Forum* 10(2): 195-214.

Swabe, J.1994. *Psychologie en Maatschappij* 68(3): 248-260.

Michell, A.R. 2005. *Vet. J.* 170(2): 153-162.

# **Animal welfare concepts in Japan: a survey for university students who are about to study animal welfare**

Yoshie Kakuma<sup>1</sup>, Hideaki Tamura<sup>1</sup>, Shusuke Sato<sup>2</sup>

1 Department of Animal Sciences, Teikyo University of Science & Technology, Uenohara, Yamanashi, JAPAN. 2 Graduate School of Agricultural Science, Tohoku University, Miyagi, JAPAN  
[kakuma@ntu.ac.jp](mailto:kakuma@ntu.ac.jp)

Animal welfare is generally perceived as the good or bad status of life in particular animal(s). The definition refers mainly to the subjective feelings of animals in literature in English. That is, in the context of English-speaking cultures, suffering and pleasure in animals are more concerned than their lives in terms of animal welfare. However, Japanese people are likely to emphasise the death of animals. They often show difficulties to accept the idea of providing the best lives just while they are alive, which is the main concept of animal welfare in the West. With the current activities towards promoting animal welfare standards worldwide, it is necessary to understand the concepts in animal welfare in other languages and to use proper wording for good communication.

In order to see the picture of concepts in animal welfare among the Japanese who are not well educated on this topic, we carried out a questionnaire survey for 183 students of animal science course at a university just before a series of lectures on animal welfare started. We asked, ‘what do you think the animal welfare is?’, and also asked to rank eight

mammal species according to their needs for care and to give the reason. 27% of students focused on the living environment and 12% included wildlife conservation in the concepts of animal welfare. 72% answered that the welfare should be considered in all animals, although 11% answered working animals should be more concerned. Endangered species such as giant pandas were ranked first for the needs for care and the most students (43%) answered the reason as endangered or wildlife species. These results suggested that Japanese students regarded the extinction i.e. death as the most concerned and many confused animal welfare with animal protection or conservation.

## **Using the Connections between Companion Animals, Family Violence and Social Capital to Facilitate Animal-Based Values Education**

Phil Arkow

Interim Director, Human-Animal Bond, American Humane Association  
Chair, Animal Abuse & Family Violence Prevention Project,  
The Latham Foundation  
37 Hillside Road, Stratford, NJ 08084 USA  
[arkowpets@snip.net](mailto:arkowpets@snip.net)

Human beings express 10 distinct values toward non-human animals (Kellert, 1989). Animal welfare proponents have attempted to impose two of these values upon children since 1868 in a didactic form of character-building instruction commonly called humane education (Arkow, 1990). Efforts to institutionalize the teaching of humane treatment of animals have met with limited success (Unti & DeRosa, 2003) due to numerous challenges, including failure to recognize the general public priority of human concerns over animal welfare issues (Arkow, 2006). With chronically inadequate funding and a lack of systemic support for classroom instruction that inspires empathy toward animals, humane education continues to be a good idea that has not caught on (Alberta SPCA, 2004).

Because pets are frequently considered members of the family (AVMA, 2002; Cain, 1983) who may move into emotional spaces left vacant when social capital declines and communities lose their normative qualities (Franklin, Tranter & White, 2001), one strategy to get animal-based values



education more widely accepted may be to emphasize the human welfare implications of animal welfare. These include: the “Link” between animal abuse and family violence (Ascione & Arkow, 1999; Merz-Perez & Heide, 2004); the impact of animals on children’s development (Ascione, 2005; Jalongo, 2004; Melson, 2001); and how the therapeutic, physiological, psychological and psychosocial impacts of pets affect not just individuals but also the entire community through the facilitation of what Putnam (2000) called “social capital” (Wood, Giles-Corti & Bulsara, 2005).

By presenting humane education’s human benefits, particularly in a zeitgeist of widespread support for character education, humane educators can revitalize and repackage an old concept in a more contemporary format that may make their programs more widely accepted.

This presentation will review 15 challenges to humane education and 12 innovative international strategies reflecting a new approach. It will propose a renaissance in humane education by redefining animal-based values education through its benefits for individual and community human welfare. This new emphasis may make necessary research, funding, and credibility for animal welfare instruction more readily available.

## **REFERENCES**

Alberta SPCA (2004). Humane Education: An idea whose time has come. *AnimalWise* 5(2), 4-5.

American Veterinary Medical Association (2002). *U.S. Pet Ownership & Demographics Sourcebook*. Schaumburg, IL: AVMA.

Arkow, P. (2006). Old Wine in a New Bottle: New Strategies for Humane Education." In, A. Fine (ed.): *Handbook on Animal-Assisted Therapy: Theoretical Foundations and Guidelines for Practice*, 2<sup>nd</sup> ed. San Diego, CA: Academic Press.

Arkow, P. (1990). *Humane education*. In, American Humane Association: *Operational Guide*. Englewood, CO.

Ascione, F.R. (2005). *Children & animals: Exploring the roots of kindness & cruelty*. (West Lafayette, IN: Purdue University Press.

Ascione, F.R. (1997). Humane education research: Evaluating efforts to encourage children's kindness and caring toward animals. *Genetic, Social & General Psychology Monographs* 123(1), 59.

Ascione, F.R. & Arkow, P. (1999). *Child abuse, domestic violence and animal abuse: Linking the circles of compassion for prevention and intervention*. West Lafayette, IN: Purdue University Press.

Cain, A.O. (1983). A study of pets in the family system. In, A.H. Katcher & A.M. Beck, (eds.): *New perspectives on our lives with companion animals*. Philadelphia: University of Pennsylvania Press, pp. 72-81.

Franklin, A., Tranter, B. & White, R. (2001). Explaining support for animal rights: A comparison of two recent approaches to humans, nonhuman animals, and postmodernity. *Society and Animals* 9(2), 127-144.

Jalongo, M.R. (ed.) (2004). *The world's children and their companion animals: Developmental and educational significance of the child/pet bond*. Olney, MD: Association for Childhood Education International.

Kellert, S.R. (1989). Perceptions of animals in America. In, R.J. Hoage, (ed.): *Perceptions of Animals in American Culture*. Washington, DC: Smithsonian Institution Press, pp. 5-24.

Melson, G.F. (2001). *Why the wild things are: Animals in the lives of children*. Cambridge, MA: Harvard University Press.

Merz-Perez, L. & Heide, K.M. (2004). *Animal cruelty: Pathway to violence against people*. Walnut Creek, CA: AltaMira Press.

Putnam, R.D. (2000). *Bowling alone: The collapse and revival of American community*. New York: Simon & Schuster.

Unti, B. & DeRosa, B. (2003). Humane education: Past, present and future. In, D.J. Salem & A.N. Rowan (eds.): *The State of the Animals II 2003*. Washington, DC: Humane Society Press, pp. 27-50.

Wood, L., Giles-Corti, B. & Bulsara, M. (2005). The pet connection: Pets as a conduit for social capital? *Social Science & Medicine* 61, 1159-1173.

# **Horse Psychology and Training: Testing the Assumptions**

Lisa Dorn

University of California, Davis; Davis, California, USA  
[ldorn@ucdavis.edu](mailto:ldorn@ucdavis.edu)

Horse Trainers and Psychologists commonly explain domestic horse behavior in terms of wild horse behavior. These explanations are used to justify many popular training techniques. However, in many cases, the wild horse behavior cited has not been studied systematically. This study is the first attempt to address some of these assumptions. Common assumptions about horse behavior are: 1) horses are herd animals, and therefore 2) horses respond to predators by fleeing; 3) horses respond to humans as predators, therefore 4) horses will want to flee from a trainer. However, literature Behavioral Ecology suggests that because of their relatively unique social system, horses should not respond to predators by fleeing. This study primarily addresses assumptions 2 and 3. First, wild stallions were exposed to three stimuli: a predator model (mountain lion), a control model (pronghorn), and a human. Responses to these stimuli were recorded on digital videotape and later decoded. Decoded data included behaviors such as, "head up," "body facing model," and "feeding." Principle Components Analysis was applied to 31 trials to determine which behaviors correlate. These behavior sets, or factors, were then used to characterize "alert" and "relaxed" behavioral states. The "alert" factor includes "head up" and "body facing model." The "relaxed" factor is most often associated with "feeding." Responses to the predator model and the human were compared using a weighted, least

squares ANOVA. Finally, the results from the analysis were compared to assumptions 2 and 3. Results indicate that horses respond to humans as predators, but with a dampened reaction. In addition, wild horses are unlikely to flee from a perceived predator. This research suggests that the assumptions underlying many training paradigms need to be reevaluated and points to a lack of effective communication between disciplines.

## **Anthrozoology in Post-Tsunami India**

Marie S. McCabe, DVM; Terry S. Wollen, DVM; Sushant Verma

Virginia Tech, Blacksburg, VA, USA; Heifer International.  
Little Rock, AR, USA; Cooperative Outreach of India,  
Bhuaneswar, Orissa, India  
[msuthers@vt.edu](mailto:msuthers@vt.edu)

The heavy waves from the tsunami of 2004 affected 128 kilometers of seashore in India, involving 108 villages, wiping out livestock and leaving 30,000 people displaced. This is a presentation of a phenomenological inquiry of the sociological, psychological and cultural aspects of the relationship between post-tsunami livelihood generation project participants and provided livestock. A Heifer International study tour was designed for veterinarians and other professionals interested in studying the effects of human-livestock interaction on values and attitudes.

In the southern coastal tsunami-impacted region a local service organization working according to the Heifer model, implemented a livestock centered, need based project for the rehabilitation of tsunami affected families. The project provided 2540 goats, 130 rams, and 11000 breeding chicks, to 1465 families. Another 1465 families will receive the first offspring from these animals. In the East, Cooperative Outreach of India provided additional animals using the values-based training approach. Project beneficiaries were trained on animal welfare, ethno-veterinary practices, biodiversity conservation, gender and justice.

The investigative team, including six veterinarians, two mental health professionals, two educators, an entrepreneur, a biologist, and two in-country staff, visited 10 villages to investigate the societal impact of livestock on restoration of positive human mental health and on preservation of culture. Empirical methods of gathering experiences, interviewing experiences and observing experiences were used. Sit down meetings with the villagers were conducted in group settings and with individual families. Seven meetings were held with project partner officers. It was recognized that people go through several phases of recovery: Horror, Platitude, Relief, Frustration and Anger, Rehabilitation, and finally Normalcy. The livestock programs implemented during the rehabilitation phase provided some of the first hope to the community members. Women began to speak up, children began to understand the value of training, and men and women began to use sustainable livelihood practices.

## **The benefits of researching human-animal interactions in the laboratory: a practical experiment**

Katja van Driel<sup>1</sup>, Janet Talling<sup>1</sup>, Diane Owen<sup>1</sup>, Martyn Pickersgill<sup>1</sup>

<sup>1</sup>Animal Welfare Unit, Central Science Laboratory, York, YO41 1LZ, UK [k.vandriel@csl.go.uk](mailto:k.vandriel@csl.go.uk)

There has been a considerable amount of research into using attitude and personality to modify behaviour towards farm animals. This has proved encouraging, and besides improving animal welfare has also led to increased production output. This monetary gain has undoubtedly helped put human-animal interactions (HAI) on the agenda, but whereas production is generally not the direct aim in a laboratory animal science, valid test results are. Having already shown that familiarity with its handler affects a rat's behaviour in a subsequent standard anxiety test (Van Driel K.S. and Talling J.C. 2005, *Behavioural Brain Research* 159(2): 243-245), we believe that investigating HAI may also prove worthwhile in the laboratory animal science sector as it can be used for the advantage of both animal welfare and scientific quality.

We asked fourteen female volunteers (6 experienced, 8 inexperienced rat handlers) to scruff a rat for 10 seconds before placing them on an Elevated Plus Maze (EPM). They also completed an Animal Attitude Scale ('AAS', Mathews S. and Herzog H.A. 1997. *Society & Animals* 5(2): 169-175). Both handling and EPM were filmed. Analysis showed that anxiety test results differed significantly between individual experimenters, regardless of experience ( $F=4.15$ ,  $df=13,115$ ,



p=0.00). Using this knowledge we now work backwards to investigate which human behaviours are responsible for causing this difference and its relation to attitude.

First results show that although there was no direct relationship between the amount the animals struggled during the scruff-hold and the AAS scores (on a 1-5 scale, Pearson=0.005, N=129, p=0.96), those who used their voice in a 'reassuring' manner did tend to have higher AAS scores than those who changed their pitch or kept quiet (F=1.74, df=2,120, p=0.09). Higher AAS scores were also positively correlated with time taken to complete the handling task (Pearson=0.256, N=124, p=0.004).

These preliminary findings quantify the benefit of HAI research in the laboratory, and provide justification for a more detailed investigation.

## **Islamic perspectives on animal cruelty, welfare, rights and conservation**

Z.Aznam Jelani<sup>1</sup> and W.N.A. Ibrahim<sup>2</sup>

<sup>1</sup> Department of Animal Science, Universiti Putra Malaysia, 43400 Serdang Selangor Malaysia. <sup>2</sup> Yeopian Farms Sdn. Bhd. Level 2, Block A (North), Pusat Bandar Damansara, 50490 Kuala Lumpur, Malaysia  
[aznam@agri.upm.edu.my](mailto:aznam@agri.upm.edu.my)

Islamic teachings as written in the Qur'an and the Hadiths clearly mentioned the importance of animals to mankind and the forbidden acts or attitudes of human towards animals during their close association. Although the Qur'an states that man should use the animals for their need, that do not mean to allow us to break established normal values designed to protect the animal rights. The teaching clearly mentioned that under any circumstances, it is not justifiable to cause unavoidable pain and suffering to the innocent creatures of God, but to provide physical and psychological needs of all animals. The promoters and advocates of prevention of animal cruelty, poor welfare in animals and failure to consider animal rights and conservation are in agreement that these heinous acts are issues related to one's moral standing. Religion, civilisation and culture have helped shape the moral codes of a society, but without clear guidelines, the definition of these actions can be very subjective depending on the culture, exposure and upbringing of the society. The Islamic perspective towards the animal cruelty, welfare, rights and conservations are very clear. Islam recognises the importance of moral values and behavior of man in daily life

not only towards other human beings, and the effect it has on life on this earth. Islam believes that when man understood and applies the concept of moral behaviour based on the principles preached by Islam as part of their lifestyle, there will no longer be issues of animal cruelty, neglect and abuse of animal rights and conservation. This paper highlights several examples of the Islamic teaching that specifically mentioned the do and don'ts to animals with the aim of reminding human of the Islamic teachings of the respects and responsibilities due to all animals and creations of God.

## Ritual slaughter of farm animals

Antonio Velarde<sup>(1)</sup>, Antoni Dalmau<sup>(1)</sup>, José Luis Ruiz de la Torre<sup>(2)</sup> and Xavier Manteca<sup>(2)</sup>

<sup>(1)</sup> IRTA-Monells, Finca Camps i Armet s/n, 17121 Monells, Girona, Spain

<sup>(2)</sup> Unitat de Fisiologia Animal, Facultat de Veterinària, Universitat Autònoma de Barcelona, 08193 Bellaterra, Barcelona, Spain.

[Antonio.Velarde@irta.es](mailto:Antonio.Velarde@irta.es)

Although legislation in all European countries requires pre-slaughter stunning, there is an exemption for animals slaughtered by religious methods. For the Jewish and Muslim community, it is a requirement that the animals must be alive, healthy and have suffered no injury at the time of slaughter. To meet these requirements, slaughter without stunning is performed in licensed slaughterhouses or occasionally during religious festivals on communal grounds.

Religious slaughter becomes problematic when it impairs animal welfare. There are at least three main animal welfare issues (EFSA, 2004). Firstly, the restraint of the animal during slaughtering may cause stress, especially if cattle are turned on their side or back in rotary casting pens. Secondly, the incision made in the throat to sever blood vessels, involves substantial tissue damage in areas well supplied with nociceptors. The activation of the protective nociceptive system induces the animal to experience pain. Thirdly, death due to sticking is not immediate and needs a period of time

during the animal is still conscious and can feel anxiety, pain, distress and other suffering.

Therefore, compromises that take into account both Religious beliefs and animal welfare standards during slaughter need to be sought. Some countries such as Iceland, Norway, Sweden and Switzerland have banned any slaughter practice without prior stunning. The European Union is promoting the social dialogue to find a consensus for acceptable standards of procedures during religious slaughter that would improve animal welfare. In both, Jewish and Muslim slaughter methods, the holy writings do not expressly ban pre-slaughter stunning. Therefore, some local Islamic authorities accept a stunning method as long as it does not kill the animals. Furthermore, in New Zealand there is a voluntary agreement of the Jewish community to stun cattle by captive bolt within 10s of slaughter.

# **Seals, Fish or Swimming Cockroaches? Exploring the Discourse on Commercial Seal Hunting**

Dr. Joanna Swabe

Independent Scholar, Amsterdam, The Netherlands  
[jo@swabe.org](mailto:jo@swabe.org)

The annual commercial slaughter of harp seals in Canada is one of the most controversial hunts of marine mammals in the world. This paper presents a sociological analysis of the discourse surrounding the commercial seal hunt. It focuses on the language and imagery used by both proponents and opponents of the hunt to either justify or condemn the killing of seals. The paper is based primarily on an analysis of governmental documents, scientific reports, media reports and animal protection literature relating to the sealing issue. It will draw upon the theoretical notions of figurational sociology, primarily Norbert Elias' theory of the civilising process.

The rhetoric of the commercial seal hunt offers insight into how animals are morally categorised within society to justify our instrumental use or protection of them. This paper will, for example, analyse how the Canadian government has sought to strip away the mammalian identity of the seal by legally reclassifying it as a fish. In so doing, the seal has been placed on a far lower rung of - what sociologists Arnold Arluke and Clinton R. Sanders have called - the sociozoologic scale. By assigning this mammal with the moral status of a creature, the sentience of which is often denied and has no legal protection, the Canadian authorities

have sought to justify the degradation of the seal to a pure economic commodity. The sealers themselves take this process of deanthropomorphisation one step further by dubbing these animals 'sea slugs' or 'swimming cockroaches'. Demonising seals as bugs that they can simply crush undoubtedly makes killing them easier.

In sharp contrast, the opponents of sealing have done the exact opposite by accentuating the seal pups' physical features to provoke a 'cute response' in humans. Indeed, as this paper will argue, seals possess the same paedomorphic characteristics as dogs and cats, thus stimulating a similar preference to protect and revere them. In this way, the young harp seal has become the ideal poster child for the animal protection movement. From the late 1960s, when commercial sealing practices first became widely publicised, the endearing image of the defenceless seal pup has generated increasingly vociferous protests and sparked a civilising offensive against commercial sealing, which the Canadian government and sealing industry has had to develop an increasingly economic rhetoric to counteract. This now even includes the denial that seal 'pups' are killed at all.

## **Human-animal relations in school visits to museums**

Helena Pedersen

Department of Education, Göteborg University  
Sweden

Home address:

Kastellholmskajen 1 c

111 49 Stockholm. Sweden

[hpedersen56@hotmail.com](mailto:hpedersen56@hotmail.com)

From education perspectives, ethnographic and natural history museums have been viewed in both positive and negative terms; as valuable teaching resources as well as sites of reproduction of colonialist narratives about the “other”. This paper investigates students’ encounters with two specific museum settings and considers in particular the human-animal relations negotiated within these encounters. The two museums in focus in the study are: 1) the Swedish Museum of Natural History, and 2) an exhibit on human-animal relations entitled “We love them... and eat them” (“Älskas... ätas”). The latter exhibit was arranged in cooperation between a zoo and a local museum.

The investigation is part of a one year of critical ethnographic field studies (interviews, participant observations, document analyses) at four Swedish upper secondary schools. Two of the schools, Ormviksskolan and Uggleroskolan, specialized in vocational programs in animal care. The other two schools, Bokmalsskolan and Kuggehjulsskolan, had mainly theoretically oriented programs without specific connection to animal sciences. In all four schools the students were 16-18 years old. The museum visits analyzed in this paper were



carried out by students and staff at Ormviksskolan and Uggleroskolan only.

It is concluded that different agendas are at work at the two museums; one inviting a conventional zoological gaze of “exoticism”, and the other interrogating issues of power inherent in above all institutionalized human-animal relations. However, student responses to the displays indicate that the learning taking place at both museums does not primarily follow the formal expectations of the museums or the school curricula, but is centered primarily around the oscillations between issues of life and death manifested by the exhibits. This interpretation of the students’ learning from museum experiences has implications for conceptions of “self” and “other” in human-animal boundary production and identity politics.

## **Evolution of human-animal relationship in contemporary Spanish cinema**

Fany Magraner Frau

Humanities Ph D. University of Balearic Islands; Adviser of the Education Department of the Balearic Islands; President of NGO Proyecto Cultura Animal. SPAIN

[fanymafr@arrakis.es](mailto:fanymafr@arrakis.es)

This review is aimed at showing, throughout the contemporary Spanish cinema, the parallelism between the structuring of the new Spanish citizenship, in the midst of tradition and modernity, and its dual relationship with animals, moving from violence to worship.

In fact, the presence of animals in discussions and philosophic, sociological, literary texts has been marginal in the Spanish tradition; nonetheless, it has been taking more significance from the twentieth century and, particularly, from the coming of modernity and democracy en Spain.

Some of the movies which are reviewed are *Un ángel pasó por Brooklyn*, *Furtivos*, *Vacas*, *Solas*, *Hable con ella*, *Reinas*, *Tapas...*

Likewise, a compared analysis will be used to show the similarities and differences between the evolution of the Spanish animalistic tradition and that of other cultures, specially the Anglosaxon one, with a longer presence of animals in it.

The handling of pets in Spanish movies reflects the complexity of society nowadays as well as the crisis of human thought, based on two trends: on the one hand, an anthropocentric attitude remains in force in both an instrumental use of animals and an unawareness of brutality acts, as bullfighting and other traditional feasts. On the other hand, because of the increasing standard of living and culture, along with the transition from a rural to a urban society, there has been a new relationship with animals, based on an emotional attitude which leads to praise pets as lifesaving, in a more and more individualistic, isolated and stressed era.

## **Therapy dogs in Healthcare Facilities: Assessing the Demand**

Sandra B. Barker, Ph.D., and Randolph T. Barker, Ph.D.

Virginia Commonwealth University, Richmond, USA  
[sbarker@vcu.edu](mailto:sbarker@vcu.edu)

A number of studies have been published documenting the benefits of animal-assisted activities/therapy (AAA/AAT) for patients and staff in healthcare facilities. However, no studies have been published providing evidence of the demand for such visits. The purpose of this study was to conduct a needs assessment of AAA/AAT in a major academic medical center having an active therapy dog program. The target population was all 58 nursing units and clinics. Target respondents were the department director, nurse manager, or nurse clinician designated as the primary medical center contact for each unit/clinic. One research assistant (RA) conducted all needs assessments by phone over a 6-week period following a written script. Responses were written verbatim by the RA on individual forms for each respondent and entered into an Excel spreadsheet. Responses were summarized and analyzed using descriptive statistics. A 91% response rate (53 of 58 possible respondents) was obtained. The majority of respondents (56%) responded favorably to having therapy dogs visit patients on their unit, 42% were not interested, and 2% were unsure. Responding favorably was related to previous experience with the therapy dog program. While 55% responding favorably had some experience with the program, only 4% of those not interested had any previous program experience. Respondents identified areas of concern for visiting dogs that included visiting immunosuppressed

patients, patients with open wounds, dermatological problems, allergies, or patients in isolation, intensive, or critical care. Results indicate a need to educate staff about AAA/AAT and the existing therapy dog program, evaluate the current program, as well as the need for further interdisciplinary research on the effect of animals in the workplace on the organization.

## **Describing the human/animal communication system as a two-way interaction: the case of dolphin's encounters.**

Véronique Servais

Dept. ASC, Université de Liège, Place du 20 août, Bât. A1,  
4000 Liège, Belgique [v.servais@ulg.ac.be](mailto:v.servais@ulg.ac.be)

Among the relationships that human beings develop with animals, the human/cetaceans relations are among the most intense and passionate : reporting their encounter with wild cetaceans, some people talk about pure love; most are deeply moved and sometimes experience a kind of mystical experience. These testimonies should not be discarded as “just illusions” or “just beliefs” but used to better understand the functioning of human/animal communication systems. What are the communicative or interactive conditions in which rich mental states are imputed to the animal? How can we describe the components of the communication process in order to make sense of such experiences? In order to answer these questions I have conducted anthropological fieldwork among people that have had deeply emotional experiences in their encounters with dolphins. The anthropological method has been chosen because it is the most efficient when a researcher needs to gather information in an alien or strange world, and because it forces him to take seriously what is reported to him, and to make sense of it. An important methodological presupposition has been that the interviewed people were not “just seeing what they wanted to see” but that some characteristics of the interaction itself (i.e. what the animal did) should be partly responsible for the emotional tone of the encounter. Specific elements of communication

have been identified to play an important role in the construction of the experience and will be presented. Moreover, this work shows the limits of the traditional anthropological analysis of the human/animal relationships (as the “projection” of cultural meaning on “neutral” animals). Taking the animal’s behaviour towards the human being into consideration, this study led to the elaboration of a “misunderstanding” (two-way) model for the description of human/animal interactions. The advantages of the model will be presented.

## **Attitudes to wildlife conservation: ecological dilemmas**

Laura Barraza

Centro de Investigaciones en Ecosistemas, UNAM

Education and conservation are two crucial challenges for this century. It is only through understanding people's relationships between their attitudes and their behaviour, that we might be able to build up and improve their attitudes towards the environment. I describe the immediate reactions of Mexican and English school children (aged 7 to 9) to particular situations, in which their moral values and environmental concern are shown. I explore the extent to which culture and the school ethos are influential factors in the development of environmental attitudes. An open-ended questionnaire with four questions was applied to 248 children from eight schools with different environmental ethos. Questions were related to attitudes towards invertebrates (spiders), reptiles (snakes), birds, and mammals (monkeys). Only responses to the monkey dilemma will be presented in this conference. No negative attitude was shown towards the monkey (in contrast with spider and snake). While 48% of the children mentioned they will refuse the offer of keeping the monkey as a pet, 32% will accept it; 10% will take it to the zoo, vet or free; 7.5% will ask their parents first and only 2.5% will report it to the police.

Cultural differences influence children's attitudes towards environmental issues. Schools with environmental policies were more likely to develop a strong sense of environmental awareness among their children than other types of schools. Thus, when children are exposed to situations that involve moral and environmental dilemmas their reactions vary



according to four major factors: 1) culture; 2) experience and affiliation for a particular animal; and 3) school ethos. Education programs can help foster more favorable attitudes toward conservation and increase interest in the population on the environment. Educational research is necessary to improve the planning and evaluation of environmental education and conservation programs.

## **A description of owned dogs in Roseau, Dominica**

Kelvin Alie<sup>1</sup>, B. Witkind Davis<sup>1,2</sup>, William J. Fielding<sup>3</sup>, Michelle Morters<sup>4</sup>, & Francisco Galindo<sup>5</sup>

<sup>1</sup>International Fund for Animal Welfare (IFAW), 765 Attucks Lane Hyannis, MA 02601 USA, <sup>2</sup>Center for Animals and Public Policy, Tufts University School of Veterinary Medicine, 200 Westboro Road, North Grafton, MA 01536, USA <sup>3</sup>The College of The Bahamas, Oakes Field, New Providence, The Bahamas, <sup>4</sup> International Fund for Animal Welfare (IFAW), 87-90 Albert Embankment London SE1 7UD United Kingdom, <sup>5</sup>IFAW Latin America, Tecoyotitla No 274, Col Florida CP 01030, Delegacion Alvaro Obregon, Mexico City, Mexico and Facultad de Medicina Veterinaria – Universidad Nacional Autonoma de Mexico

Roaming dogs are increasingly considered a nuisance and threat to the economy of Dominica yet little is known about the population's demographics. In 2004 a survey of 241 randomly selected households in Roseau, the capital, was undertaken to learn about how people care for their dogs and to describe the dog population. Such information is needed if education and animal control programmes are to be successfully implemented. Information on 149 dogs showed that Rottweiler crosses were the most common dogs (32.6%) followed by "mixed" dogs (of no definable cross) (22.4%); only 8.2% were reported as pure-breeds. The median age was three years with only 9.4% of the population over seven years of age. The survival rate of dogs aged one year or more was 72% per year. A definite preference was shown to keep male dogs (60%) (Binomial test:  $p=0.026$ ) and most animals were kept for protection (65%). Respondents reported allowing

nearly 30% of the dogs to roam. With only 8.5% of the dogs neutered and seven puppies being born per litter, the population produced more dogs than required to maintain its numbers. It is estimated that at least 54% of the female dogs need to be spayed if a spay/neuter programme is to be successful in stabilising the population. About 30% of the dogs were unvaccinated and almost 17% had never been dewormed making the population at risk from disease. Comparisons with studies in The Bahamas (Fielding & Plumridge, 2005) and the Yucatan, Mexico (Ortega-Pacheco, Rodriguez-Buenfil, Bolio-Gonzalez, Sauri-Arceo, Jimenez-Coello & Linde Forsberg, unpublished) suggest that environmental effects may be primarily responsible for controlling dog populations in these tropical and sub-tropical environments. This information will be used in developing a program to improve animal welfare in Dominica.

#### **REFERENCES:**

Fielding, W. J. & Plumridge, S. 2005. *JAAWS* 8(4): 245-260.

Ortega-Pacheco, A, Rodriguez-Buenfil, J. C., Bolio-Gonzalez, M. E., Sauri-Arceo, C. H., Jimenez-Coello, M. & Linde Forsberg, C. (unpublished)

## **Factors underlying attitudes towards animal use: A study of scientists and animal welfare groups**

Sarah Knight, Aldert Vrij, Kim Bard, Doug Brandon

Department of Psychology, University of Portsmouth,  
Portsmouth, Hampshire, U.K

[sarah.knight@port.ac.uk](mailto:sarah.knight@port.ac.uk)

Research examining attitudes toward the use of non-human animals by human beings has involved mainly students and laypersons, whilst some includes animal rights activists as participants. With few exceptions (Arluke, 1988; Paul, 2002), little is known about scientists involved with the use of animals in medical research, yet this group have been portrayed as uncaring towards animals and mostly inclined to reject the possibility of animal mind (Baldwin, 1993; Blumberg & Wasserman, 1995). The present study aimed to give a voice to different perspectives on animal use issues and to examine factors that underlie these views.

A sample of 372 participants comprising a 'scientist' group (n= 155), an 'animal welfare' group (n= 159), and a control group (n= 58), completed a questionnaire that measured attitudes toward five types of animal use (for medical research, dissection, entertainment, personal decoration, and animal management), and psychological factors that might underlie these attitudes. These factors were belief in animal mind, perceived alternatives to using animals, and belief that humans are superior to animals.

Multivariate analyses revealed that in comparison to the

animal welfare group, scientists were more supportive of all types of animal use, and between-group differences were explained in terms of the underlying factors examined. However, whilst scientists supported the use of animals for medical research, they were either neutral or opposed to all other kinds of animal use; hence they were not generally in favour of animal use. Further, the scientists did accept the existence of animal mind. The opinions of neither the scientists nor the animal welfare people better represented those of the control group. We suggest that the negative image of scientists sometimes portrayed by the media and in the literature of their opponents was not supported by our data, and that both scientists and animal welfare groups need to acknowledge that their views are sometimes more extreme compared to persons who are less involved with animal use issues.

## **The Human Avian Bond: An Ethnography of a Veterinary Clinic**

Patricia K Anderson, Ph.D

Western Illinois University, Sociology & Anthropology,  
Macomb, IL 61455, USA  
PK-Anderson@wiu.edu

Though birds are the third-most common companion animals in the United States, little literature focuses on the human-bird relationship with most references oriented toward birds as therapeutic tools or objects. Further, these studies tend to perpetuate popular myths about birds and their care. The informed perspective of the participant observer and ethnographer versed in the companion-parrot subculture and the requirements of these species can provide greater insight into this complex relationship.

This paper is based on four weeks of grant-supported ethnographic fieldwork, in a veterinary clinic specializing in avian and exotic medicine, and the results of analysis of 10 in-depth interviews with parrot owners outside the clinic. The resulting qualitative data are analyzed using the “Grounded Theory” method, and compared and contrasted to previous research on the human-avian bond. Previous analysis of qualitative data reveals that a number of companion bird owners consider their birds family members with whom they share deep emotional bonds. In analysis of additional survey data, caretaker’s attribution of mindedness to their avian companions was the dominant response. The current study considers the role of anthropomorphism. Although the anthropomorphism of avian companions by their caretakers

may enhance their social standing, it may also lead to misunderstanding, and jeopardize the welfare of the birds, due to failure to recognize the unique physiological and social needs of their species. Analyses based on participant observation, survey response, and literature review, illustrate the way the human-companion parrot relationship is culturally constructed, its implications for avian welfare, and builds on previous ethnographic studies of veterinary clinics.

## REFERENCES

APPMA [American Pet Products Manufacturers Association]. (2005). How Many Pets are in the US? <http://petplace.com/Articles/artPrinterFriendly.asp?conID=24763>.

Anderson, P. (2003) A Bird in the House: An Anthropological Perspective on Companion Parrots. *Society & Animals*, 11 (4), 393-418.

Anderson, P. (2005). Further Explorations Into The Avian-Human Bond. Podium presentation. ISAZ 2005, 14<sup>th</sup> Annual Conference, July 11-12, 2005, Niagara Falls, N.Y.

Bernard, R. H. (2002) *Research methods in anthropology*: Third edition. Alta Mira Press, Walnut Creek, CA.

Glaser, B. & A. Strauss (1967). *The discovery of grounded theory*: New York: Aldine.

Strauss, A. & J. Corbin (1990). *Basics of qualitative research*: Thousand Oaks, CA: Sage.

Sanders, C. (1999) *Understanding Dogs*. Philadelphia: Temple University Press.

## **The Evolution of Pet-Keeping: Adaptation, By-Product or Cultural Drift?**

Harold Herzog

Western Carolina University, Cullowhee, NC USA  
[herzog@email.wcu.edu](mailto:herzog@email.wcu.edu)

From an evolutionary perspective, pets are a problem. While the practice of pet-keeping often results in an increase in the net reproductive fitness of the companion animal, there is little evidence that the possession of pets enhances the average reproductive success of their owners. I review several perspectives that could account for the biological evolution of pet-keeping: (1) evolutionary adaptation, (2) evolutionary by-product, and (3) nest parasitism. I then propose an alternative explanation based on the neutral theory of cultural evolution (cultural drift) which suggests that some social phenomena emerge simply as a result of imitation.

Shifts in preferences of Americans for types of purebred dogs illustrate how drift can explain cultural manifestations of pet-keeping. From the American Kennel Club, I obtained the number of purebred puppies for each AKC recognized breed from 1926 through 2005 (N = 53,515,291 dogs). As predicted by the drift model, changes in dog breed popularity over the past 80 years conform to a power law function. Further, the dynamics of turn-over rates among the most popular breeds resemble turn-over in other types of transient cultural variants (e.g., pop songs). In short, dog breeds have become a form of fashion.



Can imitation-based cultural drift also explain why people keep pets at all? I argue that drift model is superior to the adaptationist and nest-parasitic explanations of the emergence of pet-keeping for the following reasons:

1. Pet-keeping is restricted to a single large-brained species of mammal having exceptional abilities to imitate.

2. Pet-keeping arose late in human evolution, only after the emergence of socially transmitted manifestations of culture such as art.

3. The forms and frequency of pet-keeping practices vary widely between and within cultures.

4. As with other types of fashion, preferences for types of pets can change rapidly.

## REFERENCES

Archer, J. (1996). *Evolution and Human Behavior*, 18, 237-259.

Bentley, A., Lippo, C., Herzog, H., & Hahn, M.W. (under review) Linear rates of popular culture change reflect random copying.

Herzog, H., Bentley, R. A., Hahn, M. W. (2004). *Proceedings of the Royal Society of London*, 271, S353-S356.

Serpell, J. 1996. *In the Company of Animals*.

## **A brief history of the use of anthropomorphism to understand animals**

Robert W. Mitchell

Eastern Kentucky University, Richmond, KY 40502, USA  
[robert.mitchell@eku.edu](mailto:robert.mitchell@eku.edu)

This presentation concerns the disagreements about anthropomorphizing animals at the end of the 19th and first half of the 20th centuries. Darwin and his colleagues (e.g., Romanes) supported the idea that humans were descended from animals by humanizing animals. Nature writers at the turn of the 20th century, strongly influenced by Darwinian theory and methods, anthropomorphized their subjects to the extent of writing animal biographies from the point of view of the animal and assuming many human qualities (teaching, knowledge of medicine) in anecdotal descriptions. Their methodology was criticized by well-known naturalist John Burroughs, among others. In turn, these critics were themselves criticized for their own use of anthropomorphic vocabulary and anecdotal methods by scientists in the developing field of comparative psychology, a science designed to test for comparable psychological abilities across species. Observers such as Lloyd Morgan and Thorndike plausibly explained apparent reasoning and thought in animals (and people) as a result of simpler mechanisms. Critical thought was applied to the problem of anthropomorphism by scientists such as Leonard Hobhouse and Kurt Koffka in the early to middle 1900s, but their resolutions accepting psychological description of animal and human behavior were ignored when in the 1920s behaviorism became doctrine for most researchers. For 40 years

behaviorists simply declared psychological (and anthropomorphic) terms off limits in discussing animal behavior (except in some of their own popular writing). A result of all the disagreement was, finally, to look at animals to see what they do that influences us to interpret their behavior psychologically, as when Hebb looked into why anthropomorphic terminology was so useful in describing apes and other animals. Oddly, the bias against using anthropomorphism to understand animals continues today, even though it had been shown to be unproblematic by several thinkers so many years ago.

## **An examination of personality differences between “dog people” and “cat people”**

Beth Daly, Ph.D. and L.L. Morton, Ph.D.

Beth Daly, Ph.D., & L.L. Morton, Ph.D., Faculty of Education, University of Windsor, 401 Sunset Ave., Windsor, Ontario, N9B 3P4, Canada  
[bethdaly@uwindsor.ca](mailto:bethdaly@uwindsor.ca)

Recent findings (Daly & Morton, 2003, in-press) regarding the empathic differences of children related to dog- or cat-preferences provoked an interest in whether a relationship might also exist between pet preference and personality, prompting the present investigation. The findings of this study are based on a large (n=369) urban adult population, and report specifically on the personality differences between “dog and cat people.”

In building a profile of dog- and cat-people, participants were categorized according to four groups: “Prefer Dogs”, “Prefer Cats”, “Prefer Both,” or “Prefer Neither.” A profile analysis of preference level for these groups was run, using the 5 scales (Shyness, Organization, Nervousness, Sympathy, Originality) of the SONSO Personality Inventory (Kentle, 1994) and pet preference as independent variables. While there was no main effect for Group  $F(3, 365) = 2.34, p > .05$  or Scale  $F(4, 362) = 0.76, p > .1$ , there was a Group by Scale interaction effect  $F(12, 1092) = 2.24, p < .01$ . Post-hoc analyses revealed differences on three scales. For Organized, “Prefer Cats” scored higher than “Prefer Both.” The “Prefer Dogs” group showed less Nervousness than “Prefer Both,” and with respect to Sympathy, the “Prefer Neither” group

showed lower ratings than “Prefer Both.” Further, “Prefer Neither” revealed low Sympathy scores when compared to Shyness,  $t(67) = 2.02$ ,  $p < .05$ . The “Prefer Dogs” group showed lower Nervousness scores when compared to Organization,  $t(161) = 2.07$ ,  $p < .05$ . “Prefer Both” showed higher scores on Nervousness,  $t(140) = 2.52$ ,  $p < .025$ , Originality,  $t(135) = 2.06$ ,  $p < .05$ , and Sympathy,  $t(138) = 2.89$ ,  $p < .01$ , when compared to Organized. Implications of these findings extend to decisions related to companion animal visitation, choosing pets for therapy programs, and aspects of veterinary training.

## **Physiological and behavioural aspects of emotional reactions in guide dogs**

Fallani, G.\*, Prato Previde, E.\*\*, Valsecchi, P.\*

\*Dipartimento di Biologia Evolutiva e Funzionale, Università degli Studi di Parma, Italy.

\*\*Istituto di Psicologia, Università degli Studi di Milano Bicocca, Italy

[fallani@biol.unipr.it](mailto:fallani@biol.unipr.it)

Guide dogs for blind people are engaged in a very complex assistance activity that requires a good cooperation and a strong attachment bond with the blind owner. The aim of this study was to analyse behavioural and physiological reactions of guide dogs in a distressing situation promoting attachment behaviours towards their human companions.

Subjects were 57 adult Labrador and Golden retriever dogs (14 males, 43 females) belonging to four different groups: 19 Custody dogs (tested with the puppy walkers), 13 Apprentice dogs (tested with the trainers), 10 Guide dogs (tested with their blind owners) and 15 Pet dogs (tested with their owner). Dog-human dyads were tested using a procedure (Strange Situation Test) consisting of seven 3-minutes episodes in which the dogs were placed in an unfamiliar environment, introduced to an unfamiliar woman and subjected to separation from their human companion. Tests were video-recorded and 26 dogs' behaviors were scored using 5-seconds point samplings. Polar Advantage telemetric system was used to record cardiac activity.

ANOVAs for repeated measures with groups and breeds as independent variables, showed a more anxious reaction in pet dogs that performed a high degree of proximity seeking behaviours ( $F_{3,49}=3.21$ ,  $p=0.03$ ). Heart rate generally increased during episodes characterised by the exclusive presence of the stranger ( $F_{6,294}= 97.271$ ,  $p<0.0001$ ), but this increase was more conspicuous in guide dogs than in custody and apprentice dogs ( $F_{3,49}=5.09$ ,  $p=0.004$ ). Dogs of these latter groups showed a more relaxed reaction to SST characterised by a high play activity. Golden retrievers showed more behaviours suggesting distress compared to Labrador retrievers.

Our data demonstrate that emotional reactions of guide dogs are more pronounced at physiological than at behavioural level, suggesting that the training experience modulates behavioural reactions without impairing the formation of a strong attachment between the dog and their blind owner.

## **The totemic significance of endangered wildlife: A new look at an old topic**

James A. Serpell

School of Veterinary Medicine, University of Pennsylvania,  
Philadelphia, PA, USA.

In many ways, the philosophy of the animal welfare/animal rights movement is entirely at odds with that of conservation and environmentalism, in that the former focuses on the well-being and interests of individual animals while the latter is typically concerned with the preservation of species and ecosystems. One area, however, in which the interests of these two groups converge is over the fate of particular, large, wild animals—the so-called ‘charismatic megafauna’—that appear to be most at risk of disappearing from the planet due to anthropogenic causes. By embodying our collective conscience regarding society’s role in their impending extinction, such animals seem to have acquired ‘sacred’ or iconic significance in western cultures.

While many environmentalists are ambivalent about this moral emphasis on a handful of anthropomorphic species, zoophilic chauvinism of this kind has ancient roots in the religious practice known as ‘totemism’. This paper will explore the history of the concept of totemism, beginning with J.F. McLennan’s seminal article in the *Fortnightly Review* of 1869, and by re-examining the various scholarly arguments—including those of Frazer, Durkheim, Freud, Goldenweizer, Malinowski and Lévi-Strauss—that have attempted to interpret this archaic belief system. The paper will conclude by drawing striking parallels between totemic



beliefs and practices among certain hunter-forager societies, and the modern eco-preservationist identification with anthropomorphic birds and mammals. Recognition of these parallels and their significance may help to reconcile some of the 'tribal' rivalries that currently exist in the wildlife conservation arena. Coincidentally, the paper will also propose a somewhat novel theory to explain the central role of animals in totemic beliefs.

## **REFERENCES**

McLennan, JF. 1869. *Fortnightly Review*, 69: 407-427.

## **Where does East meet West? Comparing and contrasting attitudes to cats and dogs in Britain and China**

Anthony L. Podberscek

Centre for Animal Welfare & Anthrozoology, Department of  
Veterinary Medicine, University of Cambridge, Madingley  
Road, Cambridge CB3 0ES, UK  
alp18@cam.ac.uk

Companion animals, especially cats and dogs, are popular worldwide, and much has been written over the past few decades about our relationships with, and attitudes to, them, although almost exclusively from a Western perspective. There are many factors which can influence our attitudes to animals. Some are to do with the animal itself (e.g., its appearance, its behaviour, its usefulness), some are to do with people (e.g., age, gender, education), some are to do with knowledge (e.g., learning from studies on animal behaviour) and some are to do with culture (see Herzog and Burghardt 1988; Herzog, Betchart and Pittman 1991; Serpell 2004). In this paper I will focus on the cultural factor, as this has not been extensively explored, to date. In particular, I will look at attitudes to dogs and cats in Britain and China, to explore western and eastern perspectives.

The keeping of pet/companion animals has a long history in Britain. Initially, it was the domain of the aristocracy, but it became more commonplace throughout all strata of society from about the end of the seventeenth century. In 2004, 52.3% of households in Britain owned at least one pet. Most commonly they owned a cat (24.6% of households, 9.6

million cats), while 21.1% owned a dog (6.8 million dogs). Other pets include birds (5.6% households), fish (16.5 % of households) and rabbits (4.6% of households). The total number of cats in the UK used to be lower than that of dogs, but this changed in the early 1990s, with cat owners becoming increasingly more likely to own more than one cat. And in 2003, the number of households owning cats rose above that for dogs (Pet Food Manufacturers' Association 2006).

In early North China (c. 6500–3000BC) and South China (c. 5000–3000 BC) the dog was one of the most important domesticated animals kept by farmers. Apart from being used as guards, and in ritual and sacrifice, dogs were also a major source of meat; dog flesh was served at ceremonial dinners and was eaten by kings (Chang 1977). In the earliest taxonomy of dogs, included in the co-called Chinese Book of Rites (800 BC), there were only three categories of dog: hunting, guarding and edible. No mention was made of pets. As in Britain, keeping animals as favourites was initially the domain of the aristocracy (Serpell 1996). The keeping of pets amongst the general population is a largely modern phenomenon and has developed in spite of the Communist government frowning on this practice (because of its links with Imperialism). Today, about 21% of households in China have a dog and 10% have a cat; 2% have a bird and 1% have a lizard. Four percent have a variety of other animals: rabbit, turtle, fish and chicken. Of the types of dog kept, most (61%) are toy/small breeds (e.g., Pekingese and Shih-Tzu), while 23% have medium-sized dogs and 16% have large dogs (Zu 1998).

A Market and Opinion Research International (MORI) poll of 1000 Chinese found that the majority approved of the use

of dogs as pets or companions, as guard dogs and as assistance animals; were ambivalent about the use of dogs in medical experiments and as ingredients in medicine; and disapproved of dogs as ingredients in health tonics, for their fur, and as food for humans. For the most part, respondents tended (rather than strongly) to agree or disagree with these uses of dogs, and those people who owned animals were not different in their opinions compared with those without animals. In the same survey, the majority of Chinese respondents (90%) agreed that people have a moral duty to minimize animals' suffering as much as possible. However, of those in agreement, most (67%) only tended to agree with this and 33% strongly agreed. This is in contrast to the response received when the same question was put to the British public ( $n = 1946$ ): although a similar percentage (91%) were in agreement with the statement, this time the majority of these strongly agreed with it (64%) and 36% tended to agree.

In Britain and China cats and dogs fulfil similar roles: pets, laboratory animals and working animals. However, in China they also fulfil other roles: they can be used for their fur and can be eaten. Another major difference is that in China animals are not just eaten for their nutritional value, they are also eaten because they are thought to have medicinal qualities.

While the level of pet ownership seems to have plateaued in Britain, it is likely it will continue to grow in China. It will be interesting to see what affect this will have on people's attitudes to animals in general and the roles which will be acceptable for cats and dogs to fulfil.

## REFERENCES

- Chang, K. C. 1977. Ancient China. In *Food in Chinese Culture: Anthropological and Historical Perspectives*, 23–52, ed. K. C. Chang. New haven and London: Yale University Press.
- Herzog, H. A., Betchart, N. S. and Pittman, R. B. 1991. Gender, sex role orientation, and attitudes toward animals. *Anthrozoös* 4: 184–191.
- Herzog, H. A. and Burghardt, G. M. 1988. Attitudes toward animals: Origins and diversity. *Anthrozoös* 1: 214–222.
- Pet Food Manufacturers' Association. 2006. <[http://www.pfma.com/public/petownership\\_stats.htm](http://www.pfma.com/public/petownership_stats.htm)> Accessed 26 June, 2006.
- Serpell, J. A. 1996. *In the Company of Animals: A Study of Human–Animal Relationships*. Cambridge: Cambridge University Press.
- Serpell, J. A. 2004. Factors influencing human attitudes to animals and their welfare. *Animal Welfare* 13: S145–151.
- Zu, S. 1998. Historical and cultural origins of Chinese attitudes to animals and current development. Paper presented at the 8<sup>th</sup> International Conference on Human–Animal Interactions “ The Changing Roles of Animals in Society”. 10–12 September, Prague, Czech Republic.

## **Behavioural test to improve adoption programmes in dog shelters**

R. Castellort, J. Fatjó, J. Ruiz, X. Manteca

Clinical Ethology Service of Veterinarian School  
Universitat Autònoma de Barcelona. Spain

Dog overpopulation in shelters is an increasing problem in Spain. Furthermore, a new legislation will soon forbid euthanasia in public centres of some regions, preventing any possible demographic control. For this reason, adoptions are being prioritized.

In order to ensure a minimum safety in adoption programmes from the point of view of public health, we have designed a canine behavioural test. This test evaluates aggressive, fear and play responses in 41 dogs owned by private persons. Aggressiveness was the main criteria to exclude a dog from adoption.

There are a lot of tests in the bibliography with varied targets and methodology. Our test is a reduced adaptation of that by Netto and Planta (1997). It consists of a 20 minute session of 15 sub-tests designed to detect several kinds of aggression, specially aggression towards family people, territorial aggression, fear aggression towards unknown people and predator aggression.

In the test, each dog was confronted with several daily situations while assessors evaluated its fear, neutral or aggressive signs and its body posture. In order to validate the test, we compared diagnosis obtained from the test and diagnosis obtained from an interview and a questionnaire to the owner. This allowed us to apply our test in shelter dogs.

Some sub-tests where dogs showed any response were eliminated from the evaluation. We used principal component analysis to reduce number of sub-tests. And, by cross tabs we chose those combination of sub-tests with higher percentage of agreements, sensitivity and specificity and lower percentage of false positives and false negatives. We found a 75.61% of agreements, zero % of false positives and 24.39% with 63% of sensitivity and 100% of specificity. Although this results look very promising, further research is needed to gain a deeper understanding on the ability of the test to distinguish between different types of aggression with a larger sample size.

## **REFERENCES**

Netto W.J. and Planta D.J., 1997. Behavioural testing for aggression in the domestic dog. *Applied Animal Behaviour Science* 52 (1997) 243-263.

## **How do farmers' attitudes impact on animal welfare? The relationship of attitudes to housing design and management on dairy cow farms**

Susane Waiblinger, Cornelia Mülleder, Christoph Menke, G. Coleman

Institute of Animal Husbandry and Welfare University of Veterinary Medicine, 1210 Vienna, Austria, and Monash University Victoria 3800 Australia

[Susanne.Waiblinger@vu-wien.ac.at](mailto:Susanne.Waiblinger@vu-wien.ac.at)

Stockpersons' attitudes have been shown to influence their interactions with the animals and consequently animal welfare. Management and housing design are further important factors influencing farm animal welfare. We hypothesized that the farmer's attitudes towards their cows not only predict interactions with them, but also relate to housing design and management decisions, and thus affect animal health and welfare via this pathway as well.

In two studies, on 30 (study 1) or 80 (study 2) dairy cow farms with loose housing systems, the attitude of the stockpeople (n=67 and n=220) was assessed using a questionnaire. Attitude items were aggregated to factors by PCA. The dimensions and design of the housing were recorded and a value for the quality of housing was built by judging important factors dichotomously (0=bad; 1= good for welfare) and adjacent averaging all values. In study 2, management was also assessed by a pre-structured interview and some animal related welfare parameters (e.g. lameness) were recorded. Spearman rank correlation coefficients were calculated.



In study 1, behavioural and affective attitudes of the farmer (responsible for decisions) correlated strongly to the level of welfare-friendliness of the housing (n=27): the better housing was associated with more patient behaviour during milking (PatienceMilk;  $r_s=0.57$ ,  $p=0.002$ ), higher importance of contact to the animals in general (ContactImp;  $r_s=0.47$ ,  $p=0.014$ ), and on greater enjoyment in working with and having contact with the cows (ContactEnj;  $r_s=0.41$ ,  $p=0.034$ ). In study 2, the same attitude factors (n=80) correlated to housing, but with lower coefficients. Further, general positive beliefs, ContactImp and ContactEnj, correlated with management taking into account animal needs ( $r_s=0.31$  to  $0.21$ ,  $p<0.01$  to  $0.1$ ).

The results show the importance of farmer's cognitive, behavioural and affective attitudes towards their cows for management and housing design decisions, and thus underline the broad significance of attitudes for animal welfare.

**Post-Disaster Scenarios: can they be a vehicle to influence attitudes, values & economics for better companion & farm animal welfare**

Dr. Anand Ramanathan, BVSc, MSc

Emergency Relief Operations Manager,  
Emergency Relief Manager - Disaster Relief Division,  
Animals In Crisis & Distress,  
International Fund for Animal Welfare,  
31, Workshop Road,  
South Yarmouth, MA ~ 02664.  
Direct Tel: +1-508-744-2196  
Mobile: +1-508-364-6802  
Tel: +1-508-744-2000 ~ Fax: +1-508-744-2099  
[ranand@ifaw.org](mailto:ranand@ifaw.org) Website: [www.ifaw.org](http://www.ifaw.org)

Disasters are life-changing circumstances for animal owners & their animals. The images of a hurricane-ravaged New Orleans covered the front pages of newspapers across North America and provided the lead story on electronic media for weeks after. So did the tsunamis in south Asia, the earthquake in the Indian subcontinent, and the quakes & volcanoes in Indonesia over the recent past. The image of a little boy being prevented to take his dog "snowball" with him while evacuating the dark waters of New Orleans is still etched in our memories. One can also imagine an Indonesian farmer's plight when his livelihood is lost with his livestock dying for lack of food & water following the recent volcano in Mt. Merapi in central Java.

Most people around the world, were riveted by the stories of reuniting lost animals to their "people" that came out of these disasters. As global attention continues to focus on natural disasters, these incidents can act as major drivers of change for influencing attitudes, values & economics towards companion & farm animal welfare. A case in point is the pets evacuation bill under discussion in the US both federally and in some of the affected gulf-coast US states. While animal disaster relief groups should focus on assisting animals in disasters alongside humanitarian relief agencies, they could also use such disaster events to reach communities and their governments in countries afar. This presentation aims to give participants an insight into some case studies on how to use such events as drivers of change by seizing opportunities, through effective campaigns & messaging for better companion & farm animals welfare.

## **Animal Culture vs. “Collective Consciousness”**

Melanie J. Martin  
Rachela Permenter

Slippery Rock University  
Slippery Rock, Pennsylvania  
United States of America  
[mjmar61@sruc.edu](mailto:mjmar61@sruc.edu)

In this essay, we examine how acceptance of nonhuman cultures affects how humans view and treat animals. The validation of culture may be the final barrier to validating the experiences of nonhuman species, and may prove the most difficult to topple because we cannot determine its existence in a laboratory. Indeed, whenever we identify nonhuman behavior as corresponding to human definitions of culture, those definitions promptly change because we define culture by what it is *not*. Humans continually assert that nonhumans do not have cultures; that those who argue otherwise have perceived only a “collective consciousness,” something systematic and mysterious in nature that we tend to attribute to cultures outside of our own in order to portray their understanding as instinctual, rather than based on voluntary exchanges between selves. Literatures that are subversive of this self/world binary and the idea of a universal definition of culture, such as Linda Hogan’s *Solar Storms*, use Foucauldian ideas of identity to portray the boundaries of self as permeable and identity as fluid, a ceaseless exchange between one’s own being and the world.<sup>1</sup> Rather than attempting to defeat the perception of “collective consciousness,” they account for it by finding the truth that lies between perception and reality in order to explain what

advocates of a universal, individual-based idea of culture have overlooked. The difference between “culture” and “collective consciousness” lies in perception. To prolong this perception, as Jean Baudrillard describes, we isolate animals from their cultural environments, creating “simulacra of animals” that provide alleged evidence for denying nonhuman cultures.<sup>2</sup> By denying individual access to the collective, we illustrate its potential to threaten the myth that only humans have culture. Through literary analysis, this essay examines contemporary perceptions of nonhuman cultures, illustrating how these perceptions dramatically influence how we treat both animals and humans.

## REFERENCES

<sup>1</sup>Hogan, Linda. *Solar Storms*. New York: Scribner, 1997.

<sup>2</sup> Baudrillard, Jean. *Simulacra and Simulacrum*. Ann Arbor: Michigan UP, 1994.

## **Attitudes, values and beliefs: their influence on divergent government restrictions on dog walking in nature conservation sites of England**

Stephen Jenkinson

Kennel Club Access Advisor, Hope Valley, Derbyshire, UK  
[steve@sjacm.co.uk](mailto:steve@sjacm.co.uk)

This review highlights conflicts within government policy and practice regarding restrictions on access to nature conservation areas for dog owners, with the premise that management decisions are subjectively driven by attitudes, values and beliefs. Ajzen's theory of planned behaviour is proposed as both an explanation for conflicts between the welfare of companion dogs and wildlife conservation, and a concept for more effective, balanced management.

Studies of nationally-important sites by the state's nature conservation agency show that in over 90% of cases the principle reasons for 'unfavourable' conditions are damaging land management practices. Disturbance from public access is cited in under 5% of cases (English Nature, 2003).

The state forestry service is the biggest governmental owner of nature conservation sites with public access. It welcomes dog walkers and seeks only to apply restrictions in sensitive seasons and locations. Conversely, the government's nature conservation agency cites dogs as the "biggest threat to wildlife" (English Nature, 2005), and has attempted to prohibit dog ownership in private homes near conservation areas. This mirrors the findings of Podberscek (1994) regarding dog attacks on people, and the philosophical

differences between welfareists and conservationists (Rawles, 1997).

Whilst dog walkers are one of the most frequent users of public access to the countryside, local government land managers largely view dogs as a one-sided, 'problem' issue; a minority of approximately 5% describe dog walkers as "customers" or cite wider social, economic, welfare or conservation benefits.

Ajzen's theory (1991) highlights the role of attitudes, values and beliefs in predicting behaviour; it is submitted this unified concept can explain current management shortcomings. It is also submitted such frameworks are more valuable keys to developing effective management interventions to reduce conflict between human/canine welfare and nature conservation, than discrete surveys of wildlife populations or observed dog owner behaviour.

## **REFERENCES**

Ajzen, I. 1991. *Organizational behaviour and human decision processes* 50: 179-211

English Nature. 2003. *England's best wildlife and geological sites.*

English Nature. 2005. *Sitelines* 54:8-13

Podberscek, A. 1994. *Anthrozoos* 7(4): 232-241

Rawles, K. 1997. In: *The Philosophy of the Environment.* Edinburgh University Press.

## **Posters presentations**

### **Thinking in Animal Signs: tracking as a biosemiotic exercise, ecopsychological practice, and a transpersonal path**

Jorge Conesa-Sevilla

*Address & Email* (correspondence): Le Côté, 2054 Les Vieux-Prés, CH

*Institutional Affiliation*: Sleep Laboratory, The University Hospital of Bern

3010 Bern, Switzerland

[ecopsicologie@yahoo.fr](mailto:ecopsicologie@yahoo.fr)

[jorgeconesa@yahoo.com](mailto:jorgeconesa@yahoo.com)

Tracking, or *signcutting*, of human and non-human animals is a skill that is still being taught and endures in our modern world. The argument is made for the obvious immediate cognitive and affective benefits inherent in the functions of tracking: a trans-species and biosemiotic communicative exchange. Furthermore, *signcutting* is revisited as one of many valuable ecopsychological practices that allow the modern mind, assuming usually an urban mind, the opportunity to identify with wild animal intelligence in its own natural semiotic space and PLACE. Moreover, it is argued that both the ecopsychological and the biosemiotic aspects of *signcutting* are intrinsic to its practice and, when approached deliberately, *signcutting* continues to be a powerful tool for transpersonal work. Anthrozoologically speaking, *signcutting* is one aspect of *totemic doing* and thus of identification with animal forms, habits, spirits, intelligences, and virtues. Finally, tracking is presented as a



co-opted empirical tool that has impacted the crystallographic work leading to the discovery of DNA, the techniques used in stellar cartography, and in the functional inference of sub-atomic exotic particles.

Although the tone of this presentation is impressionistic by choice, the above arguments are supported by Paul Shepard's own insights into the co-evolution of human and non-human animal intelligences: *"The human mind came into existence tracking, which for us creates a land of named places and fosters narration, the tale of adventure. Perhaps the quest began as food search. But in scrutinizing the details of the potential prey, competitors, and predators upon ourselves, and all the signs they leave, it seems more abstract, like scientific curiosity, communicated in art and narrated in myth...The whole sequence of brain and mind evolution by attention to animals constitutes a unique twist in the primate obsession with the self and society."*--Paul Shepard, The Others: How Animals Made Us Human. (1996).

## **Dog keeping and non-dog keeping households in Dominica: Are attitudes towards animals different?**

Kelvin Alie<sup>1</sup>, B. Witkind Davis<sup>1,2</sup>, William J. Fielding<sup>3</sup>, Michelle Morters<sup>4</sup>, & Francisco Galindo<sup>5</sup>

<sup>1</sup>International Fund for Animal Welfare (IFAW), 765 Attucks Lane Hyannis, MA 02601 USA, <sup>2</sup>Center for Animals and Public Policy, Tufts University School of Veterinary Medicine, 200 Westboro Road, North Grafton, MA 01536, USA <sup>3</sup>The College of The Bahamas, Oakes Field, New Providence, The Bahamas, <sup>4</sup> International Fund for Animal Welfare (IFAW), 87-90 Albert Embankment London SE1 7UD United Kingdom, <sup>5</sup>IFAW Latin America, Tecoyotitla No 274, Col Florida CP 01030, Delegacion Alvaro Obregon, Mexico City, Mexico and Facultad de Medicina Veterinaria – Universidad Nacional Autonoma de Mexico

In 2004, 241 randomly selected heads of households were interviewed to discover their attitudes and actions regarding pet ownership. This paper examines their responses to determine what differences, if any, are associated with dog keeping.

There were no differences in the level of education of those interviewed from dog keeping (D) and non-dog keeping (ND) households ( $p=0.84$ ), household income ( $p=0.31$ ), or type of accommodation (single family house or apartment) ( $p=1.0$ ). Respondents from D households were generally more positive than those from ND households towards liking animals. D households were more likely than ND households to feel sorry for stray animals ( $p<0.001$ ). Both D

and ND households were just as unlikely to own an animal they found and just as likely to feed dogs that they did not own ( $p>0.7$ ). Both types of households had similar negative views towards dog fighting ( $p=0.55$ ). Both types of household displayed similar ( $p>0.05$ ) ignorance of the laws relating to dog fighting, animal poisoning, animal cruelty and animal neglect. ND households were more likely than D households to want owners to license their dogs ( $p<0.001$ ) but both types of household thought that different breeds should have different license costs ( $p>0.14$ ) and not surprisingly, respondents from ND households thought that the dog license should be higher than those in D households ( $p<0.001$ ). D households were more likely than ND households to consider adopting a dog from a shelter ( $p<0.001$ ). If they were to adopt a dog, both D and ND households showed similar preferences ( $p>0.05$ ) towards, the sex (male), size (small) and willingness to pay (unwilling). D households were almost more willing than ND households to adopt a neutered dog ( $p=0.052$ ). These findings will help IFAW develop an educational curriculum that addresses the difference in attitudes between D and ND households.

## **The Importance of Companion Animals in Emergency Evacuations**

Sherril M. Stone, PhD, Patrick Tucker

Oklahoma State University  
Tulsa, Oklahoma, United States  
[sherril.stone@okstate.edu](mailto:sherril.stone@okstate.edu)

Due to the increasing natural disasters such as hurricane Katrina, wildfires, and the Asian Tsunami, individuals are beginning to make plans for emergency evacuation of their homes. The onslaught of the natural disasters around the world has prompted emergency planning agencies at all levels of government to show an interest in developing evacuation plans to meet the desires of society. This descriptive study gathered information to gain a better understanding the value of the items, specifically companion animals, which people want to take with them during times of an emergency evacuation and provides a better understanding of the importance of these items.

The participants were recruited by word of mouth from Oklahoma State University (OSU), Connecticut University, the city of Tulsa, Oklahoma, the researcher's faculty webpage, and from an online experimental website at OSU (Experimetrix). The participants completed the Emergency Evacuation survey developed by the researchers along with several demographic questions. The participants were to list items that they would take with them in the event of a future emergency evacuation and to rank order these items in order of importance (1<sup>st</sup>, 2<sup>nd</sup>, and 3<sup>rd</sup>). They were provided an opportunity to make comments and to explain their choices.

There were 318 participants ranging in age from 18-67 years (mean age 23.3 years). The participants were citizens of the United States, Japan, Canada, Korea, Tanzania, Sweden, and the United Kingdom. The results indicated that the participants reported that family/children, companion animals, and cell phones were the three most important items with photographs, wallet/money/ID, and a range of other items as important. The participants reported that they would refuse to leave the home without their family/children and companion animals but would not refuse to leave without the other items.

## **Welfare of beef cattle during the pre-slaughter stages in Uruguay**

S. Huertas<sup>1\*</sup>, A. Gil<sup>2</sup>

1:Facultad de Veterinaria, Uruguay. Lasplaces 1550 Montevideo, Uruguay, 11600, 2: Ministerio de Ganadería, Agricultura y Pesca, Uruguay  
[stellamaris32@adinet.com.uy](mailto:stellamaris32@adinet.com.uy)

Concern on animal welfare is growing in importance throughout the world and in Uruguay improper management of animals before the slaughter is under evaluation. Cattle is transported in trucks by road to the slaughter house and practices of loading, unloading and controlling the animal during the transport is done by the truck drivers, using sometimes inappropriate tools. This causes different kind of bruises and recording the lesions could be a way of estimating the level of welfare during transport and the final stages of life of the beef cattle. In the near future Uruguay should update the cattle management to the international standards on animal welfare to export their products. The objective of this study was to identify and quantify the main bruises in the bovine carcass and characterize transport trying to determine welfare level of animals. 448 trucks were inspected at arrival to 13 slaughtered plants all over the country and data was collected on an adequate questionnaire. More than 50% of the trucks belonged to the last ten years but 17% were not appropriately maintained. The primary tools used to help animal movement were shouts (40%), electric devices (57%) and sticks (3%). Following a standard procedure, carcass bruises were identified, classified and

quantified by zone (butt, loin, rib-plate and shoulder) and by 3 degrees of muscle participation. From 30.314 half carcasses observed, 48% of them presented injuries. From the injured ones: bruises on the loin were 10%, butt zone was 86%, and bruises in the rib-plate were 17% as well as 17% on the shoulders. Deep bruises were 20% of the total and mean loses weighted around 1 kg per animal. Results clearly show that animal welfare could be seriously compromised in some cases in the country and there is also a direct relation between welfare and pre slaughter animal handling, transport characteristics and carcass bruises.

## **Cheap Meat and the downfall of broiler chicken welfare**

Joyce D'Silva

Compassion in World Farming, Charles House, 5a Charles Street, Petersfield, Hants GU32 3EH UK

[joyce@ciwf.co.uk](mailto:joyce@ciwf.co.uk)

The widespread availability of cheap chicken meat is a late 20<sup>th</sup> century phenomenon, which seems unlikely to change. However the cheap chicken is the chicken bred for fast, meaty growth, whose welfare has been seriously undermined as a result. Lameness and cardiovascular problems in pre-pubertal birds, combined with chronic hunger in the breeding flock, make cheap chicken the most wide-scale farm animal welfare scandal in the world.

Chicken used to be a Sunday treat. The post-war development of antibiotics and effective vaccines facilitated the development of multi-thousand flocks which could be kept alive long enough to reach slaughter-weight.

Chicken breeding companies set out to breed an ever-faster growing, more profitable chicken, with scant regard for welfare (Kestin et al 2001 *Veterinary Record* 148: 195-197, Whitehead et al 2003 *Poultry Genetics, Breeding and Biotechnology* 29-52). As growth time to slaughter weight has halved, it would appear that a chicken's potential for a welfare-friendly, pain-free life has also been radically cut (Kestin et al 1992 *Veterinary record* 131: 190-194, SCAHAW Report 2000, Danbury et al 2000 *Veterinary Record* 146: 307-311).



The breeding flock often suffers varying degrees of chronic hunger (Mench 2002) in an attempt to counteract the in-bred tendency for fast growth so that the birds live long enough to breed.

Currently consumers are enjoying the availability of cheap chicken and eating it with an untroubled conscience.

As long as this situation persists, the welfare of broilers is unlikely to improve. Attempts to achieve legal change, either through court-room challenge (CIWF v DEFRA 2003), or European Union (EU) legislation (Proposed EU Directive on the Protection of Chickens Reared for Meat CNS/2005/0099), have encountered opposition.

With 48 billion broilers slaughtered globally every year (FAO 2005, FAOSTAT), the challenge faced by those seeking welfare improvements in the lives of broilers is huge.

## **“I’m not an activist but...:” Animal Rights vs. Animal Welfare in the Purebred Dog Rescue Movement**

Jessica B. Greenebaum, Associate Professor of Sociology

Central Connecticut State University, 1615 Stanley Street,  
New Britain, CT 06050

[greenbaumj@ccsu.edu](mailto:greenbaumj@ccsu.edu) 860-832-2822

While previous sociological research on the relinquishment of dogs has focused on animal shelters and shelter workers, this research is based on interviews with purebred rescue workers, a population previously ignored by researchers. The attitudes, values, and identity of purebred dog rescue workers are described in relation to the animal rights/welfare movement. One might assume that the collective goal of purebred dog rescuers is to protect animals and change societal views towards *all* animals, but the rescuers typically reject associations with political activists and advocates of animal rights.

I used a qualitative research design and interviewed 26 rescue workers. I conducted both person-to-person interviews and phone interviews to compare rescue experiences based on geography, as the treatment of animals differs across the country. All of the interviews were tape-recorded, transcribed and coded after data collection.

The identities of those who rescue purebred dogs are shaped in reaction to the social stigma they apply to activists. The rescue workers associate activists, especially animal rights activists, with extremism and radicalism, which violates their

apolitical, “mainstream” principles of animal care and social change. In addition to rescuing, fostering, and finding “forever homes” for dogs, the rescuers educate potential dog owners about the dangers of irresponsible breeders and pet shops, the importance of spaying or neutering their dog, and the best practices for dog ownership. Therefore, rather than perceiving themselves as part of a social movement fighting for the rights of animals, the rescuers perceive themselves as individual advocates working quietly to change the welfare of individual dogs.

This research identifies divisions among animal protectionists. By distinguishing themselves from animal rights activists, they reinforce the notion that the social construction of animals differs *even* among those who have dedicated their lives to protect animals.

## **Improving farm animal welfare: farmers' views and means**

Tiina Kauppinen<sup>1</sup>, Annukka Vainio<sup>2</sup>, Anna Valros<sup>1</sup> and Kari Vesala<sup>2</sup>

<sup>1</sup>University of Helsinki, Ruralia Institute, Mikkeli, Finland;

<sup>2</sup>University of Helsinki, Department of Social Psychology, Helsinki, Finland

[tiina.kauppinen@helsinki.fi](mailto:tiina.kauppinen@helsinki.fi)

Farmer's attitude and behaviour towards farm animals are crucial factors affecting animal welfare. We studied connections between Finnish farmers' attitudes and welfare of their farm animals to see if they are related, to motivate farmers to improve animal welfare, and to increase the mutual understanding between different interest groups working around animal welfare to resolve potential conflicts between them.

We used a qualitative attitude interview method on 9 cattle farms and 9 pig farms, including large and middle-sized, organic, and corporative farms, to gather information about farmers' attitudes towards improving animal welfare, not captured by surveys. We were interested in knowing how farmers define farm animal welfare, how they perceive their possibilities to improve welfare and if they have intentions to improve animal welfare. In addition to the interview, we made a rough estimate of animal welfare on each farm by scoring locomotion, lying area, social contacts, air conditioning, feeding, and stockmanship.

Farmers conceptualized animal welfare in two different ways. Most of them perceived animal welfare in utilitarian terms as productive business. These farmers were interested in the productivity of the whole farm where a single unproductive animal could be replaced with a productive one. The second view perceived animal welfare in moralistic way: animals were conceived as individuals and most important issue was to provide an animal with a good life. These two attitudes were frequently overlapping: farmers could use both attitudes at the same time.

When comparing farmers' attitudes to welfare scores, we found no connection between farmers' moralistic and utilitarian conceptualizations and animal welfare scores – this suggests that farm animals may have equally good welfare housed by either “a moralistic” or “a utilitarian” farmer. From farmers' perspective improving productivity may as well work as a tool for improving farm animal welfare.

## **Pets as Independent Agents in the Photographic Work of Five Contemporary Artists**

Julia Schlosser, M.F.A.

Graduate Student, M.A. program in Art History, California State University, Northridge, Northridge, CA, USA

[schlosserja@earthlink.net](mailto:schlosserja@earthlink.net)

This paper seeks to compare the degrees and ways that five contemporary artists allow pets (companion animals) to function as independent beings in their photographic artwork. The idea that an animal might direct the course of an artist's image-making collaboratively with the artist is a strategy that Susan McHugh calls "the 'pack aesthetic' or collaborative production of art and artistic agency." (McHugh, S. 2001) The work of artists William Wegman, Carolee Schneemann, Roger Ballen, Tony Mendoza and Marc Joseph has all incorporated companion or pet animals in ways that allow them to confound the normative reaction to images of pets in a fine art context. It is their ability to conceive of animals as individuals with agency and resistance that underlies and drives these artists' work.

Although the only significant relationships most people in western culture have with live animals are with their pets, images of pets often remain demeaned in the fine art discourse. Most are considered kitsch at best. Recently, though, there has been a growing body of both artwork and scholarship that allows pet animals to be considered in new ways relative to human beings. This trend of imaging and writing underscores the concerted efforts of philosophers and animal scholars to subvert our normally one-sided concept of

animals and to conceptualize of them in ways that allow the individual agency, self-directed behavior and resistance of the animal to be considered. I propose that, as individuals, we have begun, consciously or not, to attempt to resolve our ethical crises regarding our larger societal responsibilities to animals in a variety of situations-- the environment, the slaughterhouse, the medical laboratory, zoos, animal shelters- - in our relationships with our pets. The work of these artists points up a rich opportunity for us to reconsider and reframe our complicated relationships not only with our pets, but with all non-human animals.

## REFERENCES

Baker, Steve. 2000. *The Postmodern Animal*, Reaktion.

Haraway, Donna. 2003. *The Companion Species Manifesto: Dogs, People and Significant Otherness*, Prickly

Paradigm Press.

McHugh, Sarah. 2004. *Dog*, Reaktion.

Rothfels, Nigel. ed. 2002. *Representing Animals*, Indiana University Press.

Wolfe, Cary, ed. 2003. *Zoontologies: The Question of the Animal*, University of Minnesota Press.

## **When Cultures Collide: Attitudes toward Dogs and Cats in a Multicultural Context**

Margaret Schneider, Ph.D. and Lorah Pilchak Harley, M.A.

OISE/University of Toronto, 252 Bloor St. W. Toronto, ON  
Canada M5S 1V6 [mschneider@oise.utoronto.ca](mailto:mschneider@oise.utoronto.ca)

The purpose of this research is to understand how culturally based attitudes toward cats and dogs interact in multicultural urban areas. Many cities in North America include people from various cultures with diverse feelings about companion animals. Thus, culturally-based attitudes are among the factors that come into play when governments develop policies regarding licensing, off-leash parks, breed-specific sanctions, allowing service dogs in schools, etc. Sometimes these attitudes are the source of conflict. How does a recent immigrant who believes that dogs are unclean understand a society in which dogs are everywhere? How does someone whose culture views cats with distrust perceive people who have cats as pets? The goal is to understand how the collision of attitudes affects urban life in order to suggest strategies for ameliorating potential conflicts.

This research utilized semi-structured interviews to collect data from 26 first- and second- generation urban Canadians aged 21 to 60, representing Asia (n=8), Africa (n=5), Latin America (n=5) and the Caribbean (n=7). There were equal numbers of males and females. The data were analyzed using the constant comparison method, developed by Glasser and Strauss, in order to identify themes.



In general, participants understood, though did not share, prevailing attitudes toward dogs and cats. Second generation Canadians were less rooted in their culture's attitudes than were their parents, often because of opportunities to interact with companion animals belonging to friends. Being familiar with two cultures, they were able to act as "cultural interpreters". This finding suggests that acculturation theories would be helpful in understanding the nuances of culturally based attitudes toward companion animals. Participants were more accepting of companion animals that had a use, such as therapy animals or service dogs, suggesting that disseminating scientific information regarding the benefits of animals using popular media might promote more positive attitudes.

## **Intergenerational continuity of attitudes toward pets**

Sarah Fifield<sup>1</sup>, Andrew Gilbey<sup>2</sup>

Airways Training Centre, P.O.Box 14-131, Christchurch Airport, New Zealand. Massey University, Palmerston North, New Zealand<sup>2</sup>

[sarah.fifield@airways.co.nz](mailto:sarah.fifield@airways.co.nz)<sup>1</sup>

Intergenerational continuity is the transmission of attitudes, values, and behaviours across generations of family members. This study examined the intergenerational continuity of pet ownership, and attachment to pets across three generations of family members.

Parents of 287 primary school children completed questionnaires about current and historical pet ownership, and levels of pet attachment of their parents (G1), themselves (G2), and their children (G3).

G1 who owned pets were more likely to have provided a pet during G2's childhood ( $\chi^2 = 9.47, p < .001$ ), and to have grandchildren (G3) who had a pet in the family ( $\chi^2 = 5, p < .05$ ), than those who did not own a pet. G2 who had a pet in the family during childhood more often provided pets for their children ( $\chi^2 = 28.6, p < .001$ ). G2 couples that owned a pet before having children, more often provided pets for the G3 family ( $\chi^2 = 37.13, p < .001$ ). G1 attachment was significantly related to G2 and G3 attachment to pets. G2 attachment was related to G3 attachment ( $\rho = .39, p < .001$ ).

Those highly attached to pets spent more time with the pet, showed more physical affection to the pet, talked more often to the pet, and would be more affected by loss of the pet.

Pet ownership and attachment to pets showed evidence of intergenerational continuity. As intergenerational continuity applies to both positive and negative attitudes and values, the findings have implications for the welfare of pets provided for children, when parents do not want or like animals. Whilst pets may be good for the family, the family may not be so good for the pet.

## **Attitudes of Portuguese shepherds towards livestock guarding dogs**

Carla Cruz<sup>\*</sup> & Francisco Petrucci-Fonseca

Grupo Lobo, Departamento de Biologia Animal, Faculdade de Ciências da Universidade de Lisboa, Bloco C2, 3º Piso, Campo Grande, 1749-016 Lisboa, Portugal

<sup>\*</sup>Current address: Quinta do Álamo, Apartado 29, 6234-907 Alpedrinha, Portugal [carla\\_cruz@oninet.pt](mailto:carla_cruz@oninet.pt)

Livestock guarding dogs (LGDs) are a traditional European method for flock protection. Disappearance of large carnivores, along with lack of interest of rural populations for livestock husbandry in extensive systems, has led to the decline of these dogs and loss of knowledge on their correct education. However, many endangered carnivore species are currently expanding their distribution ranges. This leads to an increase of predation on flocks, thus an increase of economic damage on rural populations and therefore higher animosity towards predators. Since the 1990s, several projects have been established throughout Europe aiming to reduce human-carnivore conflicts through the use of livestock guarding dogs, a non-lethal means to protect flocks from carnivores.

In order for LGDs to be effective, it is necessary not only an adequate genetic component (i.e. adequate breed type), and proper husbandry and upbringing conditions but also that shepherds aid in their education through correct behaviour towards the dogs. Recognition of adequate human actions and timely correction of improper attitudes are extremely important in the correct development of LGDs, as what these

animals learn in their first few months will decisively influence their behaviour with the flock.

In this presentation, we show attitudes Portuguese shepherds have with the dogs used to guard their flocks and discuss the implications in the effectiveness of livestock protection. During monitorization sessions for behavioural development of LGD puppies placed in several flocks, we qualitatively assessed the different attitudes displayed by shepherds towards the dogs, in order to assess which are adequate and which are improper for their correct development. “Desirable” attitudes concern acts leading to increase the LGD bond with the flock, reducing its interaction with other animals and people, whereas “undesirable” attitudes lead to a strengthening of social bonds with people, leading to the dog not paying attention to livestock.

## **Quality of Life, Social Support, and Pet Ownership among Patients with Heart Failure**

Jeffrey Purvis, Erika Friedmann, Sue A. Thomas, Patricia G. Morton

University of Maryland, Baltimore, MD, U.S.A  
[efrie002@son.umaryland.edu](mailto:efrie002@son.umaryland.edu)

Patients' perceptions of their quality of life (QOL) are an important indicator of their ability to function. Pet ownership may influence or be influenced by individuals' assessment of their QOL. We investigate the interrelationship of these variables and social support in patients with chronic heart failure over one year. Patients (N=153, average age=60.1 years) enrolled in the Sudden Cardiac Death in Heart Failure Trial (SCD-HeFT) clinical trial from 20 sites participated in the Psychosocial Factors Outcome Study (PFOS). All had NYHA stage II or III heart failure; 54 owned dogs; 39 owned cats. SCD-HeFT provided demographic, medical history, and cardiac data. Participants completed questionnaires to assess social support (Social Support Questionnaire -6), QOL (Minnesota Living with Heart Failure Scale) pet ownership and pet attachment at entry, 6 months and 1 year later. At entry, cat owners had worse QOL [ $t(129)=2.92$ ,  $p=.024$ ] indicating more impairment in their daily activities due to heart failure than other study participants. QOL was negatively related to attachment to their pets [ $r=.355$ ,  $p=.05$ ] and to social support [ $r=-.364$ ,  $p=.04$ ] at study entry among cat owners, but not among other participants. Cat owners with poorer QOL were more attached to their pets and had fewer people to provide social support than those with better QOL. Overall QOL improved from initial assessment to 12

months later [ $F(1,115)= 9.53, p=.003$ ]. QOL at one year did not differ significantly between cat owners and others. There was no significant relationship of QOL to social support or pet attachment at 12 months in either group. The inter-relationships between quality of life, social support, and pet ownership may be different for cat owners than for others. The complex inter-relationship between support from other people, pet attachment, and quality of life requires further investigation. It is important to consider types of pets owned when studying psychological and physical aspects of health in relation to pet ownership.

## **Self-reported concern for animal welfare by small farmers in the United States**

Alexali Brubaker

San Francisco State University/ San Francisco, CA 94132  
[asbrubaker@gmail.com](mailto:asbrubaker@gmail.com)

Modern livestock farming in the United States runs the gamut from enormous agribusinesses to small family farms. Animal welfare and human health concerns are frequent reasons that consumers avoid purchasing animal products from factory farms. Organic food's rise in popularity shows that many consumers are willing to spend extra money to address such concerns.

The present study was conducted to explore small farmers' diverse reasons for utilizing non-factory-farming methods. Farm characteristics such as species raised, organic certification, geographic region, and CSA (community-supported agriculture) participation were examined for their potential relationship with farmers' self-reported valuation of humane treatment of livestock.

Information from a sample of 100 farm listings from a free online farm directory, [www.localharvest.org](http://www.localharvest.org), was coded and entered into an SPSS (statistical package for the social sciences) database. Farmers who raised mammals were significantly more likely to mention animal welfare as a reason behind their chosen methods than those who raised birds ( $F(98) = 16.88, p < .001$ ). Farmers who did not participate in the CSA system were also significantly more



likely to mention concerns with animal welfare ( $F(96) = 4.21$ ,

$p < .05$ ). Perhaps surprisingly, farmers who produced only eggs or dairy products were not significantly more likely to cite welfare concern than those who raised meat.

Adherence to organic methods, whether certified or uncertified, did not significantly affect whether welfare concerns were stated. The most common non-welfare-related reasons offered for choosing to run small farms were: environmental ( $N=34$ ), (human) health ( $N=33$ ), product quality/taste ( $N=28$ ), and community-mindedness/other ( $N=4$ ).

These findings show that consumers and farmers may have different interpretations of the significance of organic farming to animal welfare. The difference in concern stated for mammals versus birds also raises questions about perceived similarity of other mammals to humans as a factor involved in the development of compassion.

## **Influence of shepherd's attitudes on the efficiency of livestock guarding dogs: a case-study with a Castro Laboreiro Dog puppy**

Carla Cruz\* & Francisco Petrucci-Fonseca

Grupo Lobo, Departamento de Biologia Animal, Faculdade de Ciências da Universidade de Lisboa, Bloco C2, 3º Piso, Campo Grande, 1749-016 Lisboa, Portugal

\*Current address: Quinta do Álamo, Apartado 29, 6234-907 Alpedrinha, Portugal [carla\\_cruz@oninet.pt](mailto:carla_cruz@oninet.pt)

Livestock guarding dogs (LGDs) are a non-lethal traditional method to protect flocks from carnivores, minimizing predator impact on rural environments. An efficient LGD is attentive, trustworthy and protective. In order to be most effective, it should be socialized from puppyhood with the livestock they are meant to protect, remaining near it at all times. Proper genetics, breed type and environment are critical for the development of an efficient LGD, but shepherd's role is fundamental in education.

A case study in Portugal with a Castro Laboreiro Dog puppy shows the shepherd's influence in LGD's behaviour. The animal was placed in a flock at 9 weeks of age, as part of a research project where shepherds were given LGDs in exchange for abiding certain rules regarding their education. Due to non-compliance, the pup was temporarily placed in another flock/shepherd between 20 and 27 weeks of age, for re-education, being returned to its flock after it.

Between 13 and 30 weeks of age, the dog was sampled 7 times, in a total of 32.7 hours and was visible 60.6% of the

time. We used instantaneous sampling to determine dog's and shepherd's distance and position regarding the flock and each other and used Spearman correlation coefficient to determine correlations between variables. Up to 20 weeks of age, the dog remained near the shepherd, ignoring the flock and even abandoning it. During re-education, the dog remained near the flock and away from the shepherd. Despite *in situ* education of the original owners, their attitudes remained essentially the same and after returning to its flock, the dog's behaviour soon regressed to incorrect. This shows that although correct LGD behaviour may be possible, its display also depends on the shepherds' attitude towards the dog. We also compare this behaviour with that of other same breed LGD puppies properly educated.

## **The benefits of researching human-animal interactions in the laboratory: a practical experiment**

Katja van Driel<sup>1</sup>, Janet Talling<sup>1</sup>, Diane Owen<sup>1</sup>, Martyn Pickersgill<sup>1</sup>

<sup>1</sup>Animal Welfare Unit, Central Science Laboratory, York, YO41 1LZ, UK [k.vandriel@csl.go.uk](mailto:k.vandriel@csl.go.uk)

There has been a considerable amount of research into using attitude and personality to modify behaviour towards farm animals. This has proved encouraging, and besides improving animal welfare has also led to increased production output. This monetary gain has undoubtedly helped put human-animal interactions (HAI) on the agenda, but whereas production is generally not the direct aim in a laboratory animal science, valid test results are. Having already shown that familiarity with its handler affects a rat's behaviour in a subsequent standard anxiety test (Van Driel K.S. and Talling J.C. 2005, *Behavioural Brain Research* 159(2): 243-245), we believe that investigating HAI may also prove worthwhile in the laboratory animal science sector as it can be used for the advantage of both animal welfare and scientific quality.

We asked fourteen female volunteers (6 experienced, 8 inexperienced rat handlers) to scruff a rat for 10 seconds before placing them on an Elevated Plus Maze (EPM). They also completed an Animal Attitude Scale ('AAS', Mathews S. and Herzog H.A. 1997. *Society & Animals* 5(2): 169-175). Both handling and EPM were filmed. Analysis showed that anxiety test results differed significantly between individual experimenters, regardless of experience ( $F=4.15$ ,  $df=13,115$ ,

p=0.00). Using this knowledge we now work backwards to investigate which human behaviours are responsible for causing this difference and its relation to attitude.

First results show that although there was no direct relationship between the amount the animals struggled during the scruff-hold and the AAS scores (on a 1-5 scale, Pearson=0.005, N=129, p=0.96), those who used their voice in a 'reassuring' manner did tend to have higher AAS scores than those who changed their pitch or kept quiet (F=1.74, df=2,120, p=0.09). Higher AAS scores were also positively correlated with time taken to complete the handling task (Pearson=0.256, N=124, p=0.004).

These preliminary findings quantify the benefit of HAI research in the laboratory, and provide justification for a more detailed investigation.

## **The development of attachment in the domestic dog**

Ghirardelli G.\*, Fallani G.\*\*, Prato-Previde E.\* and Valsecchi P.\*\*

\*Istituto di Psicologia, Università degli Studi di Milano, Italy; \*\*Dip. Di Biologia Evolutiva e Funzionale, Università degli Studi di Parma, Italy

Social animals have evolved a predisposition to form attachment bonds, especially infants with their mothers. Attachment is characterized by the experience of security and comfort obtained from the relationship with an intra or inter specific care-giver.

The aim of our study was to investigate the attachment bond between 6-8 weeks dog puppies and their mothers and to compare it with the bond that these dogs form with their owners in adulthood.

One hundred and thirty-one puppy-mother pairs of different breeds were observed in a modified version of Ainsworth's Strange Situation Test and, after 10 months, twelve of those puppies were tested with their owners. The test consisted of 7 consecutive 3-minutes episodes in which the dogs were placed in an unfamiliar environment, introduced to an adult female human stranger and subjected to separation from their mothers/owners. The behaviour of each dog was video-recorded and 26 behaviours were scored using 5-seconds point samplings.

Factor Analysis extracted 6 main dimensions: interaction with the human stranger (behaviours of confidence/fear towards the stranger), anxiety, attachment to mother, exploration, reunion with the mother and scratching. The ANOVA test for repeated measures showed that “individual play” occurred mainly during puppy-mother reunions ( $F_{6,780}=8,0097$ ;  $p<0,001$ ) suggesting that the mothers acted as a “secure base”. Furthermore puppies explored more in the presence of the mother, especially in episode 1 ( $F_{6,780}=23,064$ ;  $p<0,001$ ) and exhibited attachment behaviours like following and licking the mother during reunions, scratching and remaining oriented to the door during separations. The mothers displayed greeting behaviour ( $F_{1,130}=5,1495$ ;  $p<0,005$ ) and licked puppies ( $F_{1,130}=5,8551$ ;  $p<0,005$ ) mainly after the first separation episode. Puppies showed an increasing attitude to socialize with the human stranger along the procedure ( $F_{2,260}=132,64$ ;  $p<0,001$ ). Overall, these results suggest similarities between puppy-mother and child-mother bonds, and highlight differences in attachment behaviours between puppy-mother and adult dog-owner pairs.

## **Benefits of training-playing for a group of captive western-lowland gorilla (*Gorilla gorilla gorilla*)**

Carrasco, L.; Colell, M./ Abelló, M.T.; Velasco, M.

Departamento de Psiquiatría y Psicobiología Clínica,  
Facultad de Psicología. Universidad Barcelona, Spain./  
Barcelona Zoo

[laracarrasquesquera@hotmail.com](mailto:laracarrasquesquera@hotmail.com)

There is an increasing interest in examining the effects of human caregivers on non-human primates from the perspective of well-being and enrichment.

This study assessed consequences of training-playing for a group of five gorillas at the Barcelona Zoo. We conducted this procedure (training-playing) as a part of a research project regarding imitation capacities in apes. The level of interaction during routine cleaning and feeding was considered the baseline condition. The test condition involved an habitual human spending 30min per day, 5 days a week, with two of the subjects to carry out the training stage of the imitation study. During this phase the model human uses reinforcement in a game context and expected a copy of actions to be shown. Afterwards the group's behavior was observed for 10 hours per subject outside of the usual training context and in absence of the human model, in the outside gorilla exhibit area.

Preliminary results show that some positive changes occurred in social behavior when comparing results between baseline data to training sessions. During the time that the human interaction was increased due to the training/playing sessions



we observed that self-directed, abnormal behavior and inactivity were reduced, while affiliative social behavior increased especially those related with play (they showed a clear increment of solitary and social playing behavior). These results suggest that through playing, as occur with children, we manage to create a relaxed environment and a playful behavior which have increased affiliative social interactions between group members. Barcelona Zoo great apes management is based on a good understanding between gorilla keepers and gorillas. Keepers try to be well accepted by the gorilla group as peripheral individuals. By promoting play between keepers and gorillas we consider the gorilla willing to play can be readdressed to other gorilla members of the group increasing significantly the well-being of the whole group.

## **Deep ecology and animal rights -Going to the same direction?**

Markus Vinnari

Turku School of Economics, Hameenkatu 12 B 12, 33500  
Tampere Finland.

[markus.vinnari@tukkk.fi](mailto:markus.vinnari@tukkk.fi)

This poster analyses the historical development of vegetarianism and the philosophical argumentation supporting a plant based food system in Western countries. Two of the most important justifications for animal welfare and animal rights movements, utilitarianism and the deontological theory, are presented and discussed in depth. The deep ecological philosophy developed by the Norwegian philosopher Arne Naess is considered as a basis for veganism. Implications of deep ecology for animal rights issues are considered. The outcome of the presentation is that advocates of the deep ecological movement should also be advocates of animal rights movement.

## **Agonistic games with cattle in Mexico today. An ethnographic account**

Ana Cristina Ramírez Barreto

Facultad de Filosofía, Universidad Michoacana de San Nicolás de Hidalgo

Morelia, Michoacán, México

[anacrb@umich.mx](mailto:anacrb@umich.mx)

Several games with cattle are currently realized in Mexico. In all of them violence is used in many forms in order to produce aesthetic, spectacular effects; to appreciate those and feel the emotion constitutes the purpose of each game. We could think that these games are supported by an economy of the –human and animal– emotions, which is not only socially constructed but also deeply unknown.

The paper presents the results of the ethnographic research that I realized between 2000 and 2005. I present here a typology of these games (jaripeo, charrería, bullfight, rejoneo and 'toros caballeros'). I provide a brief historical review showing their continuity and differences from the nineteenth century and the political strategies that have tried to regulate them –sometimes regarding animal welfare.

I conclude with a general diagnosis of the current situation of these games in Mexico considering: a) the weakness of the public sphere to discuss this issue and to generate an opinion on the human and animal well-being; b) the increasing availability of young males who understand their participation in these games as a legitimate way to gain fame and money; and c) the complexity of the spectacle and the

multiple interests that interweave and make difficult to settle issues about their meaning, economy and ethics.

## **Animals in Disasters: Lessons from Katrina, the Tsunami, and Other Calamities**

Marie Belew Wheatley, President & CEO, American Humane Association

63 Inverness Dr. East, Englewood, 80112

[mariew@americanhumane.org](mailto:mariew@americanhumane.org)

The human-animal bond may be at its strongest during disasters, when humans go to unprecedented lengths to protect and rescue animal companions, often at risk to their own lives. A study of 397 California households forced to evacuate during a flood found that only 20% of the families failed to take along their pets; 80% of the people who returned to the disaster site did so at personal risk to rescue family pets (Heath, 2000; Heath, Kass, Beck & Glickman, 2001).

When Hurricanes Katrina and Rita struck the U.S., they unleashed enormous outpourings of human resources. Most major American animal shelters were involved for several months, sending rescue and relocation crews and receiving abandoned animals. Katrina mirrored and magnified experiences from other disasters in which animal relief faced public outcry that human relief was being diverted or diluted by animal aficionados.

In disasters, incident management officials encounter victims and responders with varying attitudes about animals. Meanwhile, animal-related public health and safety issues, such as rabies outbreaks after the Indian Ocean tsunami, often receive inadequate attention.

Following the hurricanes, the American Humane Association organized the National Emergency Animal Management Summit, convening 150 animal protection, government and NGO professionals to integrate human and animal emergency response plans at the federal, state, and local levels.

Identified issues included: communications; accreditation and training of volunteers to work within incident management systems; integration of animal and human evacuations and sheltering plans; animal identification procedures; interagency cooperation; equipment and supply management; animal processing and protocols; and information management.

This presentation will review lessons learned from recent disasters and identify areas for improvement. From these lessons, participants may identify best practices and action steps for more effective working relationships that improve the welfare of animals, guard the health and safety of volunteers, and ensure that problems encountered in managing animal populations during and following disasters are not repeated.

## **REFERENCES**

Heath, S.E. (2000). An epidemiological study of public and animal health consequences of pet ownership in a disaster: The January 1997 flood of Yuba County, California. *Dissertation Abstracts International, Section B: The Sciences and Engineering*, 60(11-B), p. 5384.

Heath, S.E., Kass, P.H., Beck, A.M., & Glickman, L.T. (2001). Human and pet-related risk factors for household evacuation during a natural disaster. *American Journal of Epidemiology* 153(7), 659-665.

## **Quality of Life, Social Support, and Pet Ownership among Patients with Heart Failure**

Jeffrey Purvis, Erika Friedmann, Sue A. Thomas, Patricia G. Morton

University of Maryland, Baltimore, MD, U.S.A  
[efrie002@son.umaryland.edu](mailto:efrie002@son.umaryland.edu)

Patients' perceptions of their quality of life (QOL) are an important indicator of their ability to function. Pet ownership may influence or be influenced by individuals' assessment of their QOL. We investigate the interrelationship of these variables and social support in patients with chronic heart failure over one year. Patients (N=153, average age=60.1 years) enrolled in the Sudden Cardiac Death in Heart Failure Trial (SCD-HeFT) clinical trial from 20 sites participated in the Psychosocial Factors Outcome Study (PFOS). All had NYHA stage II or III heart failure; 54 owned dogs; 39 owned cats. SCD-HeFT provided demographic, medical history, and cardiac data. Participants completed questionnaires to assess social support (Social Support Questionnaire -6), QOL (Minnesota Living with Heart Failure Scale) pet ownership and pet attachment at entry, 6 months and 1 year later. At entry, cat owners had worse QOL [ $t(129)=2.92$ ,  $p=.024$ ] indicating more impairment in their daily activities due to heart failure than other study participants. QOL was negatively related to attachment to their pets [ $r=.355$ ,  $p=.05$ ] and to social support [ $r=-.364$ ,  $p=.04$ ] at study entry among cat owners, but not among other participants. Cat owners with poorer QOL were more attached to their pets and had fewer people to provide social support than those with better QOL. Overall QOL improved from initial assessment to 12

months later [ $F(1,115)= 9.53, p=.003$ ]. QOL at one year did not differ significantly between cat owners and others. There was no significant relationship of QOL to social support or pet attachment at 12 months in either group. The inter-relationships between quality of life, social support, and pet ownership may be different for cat owners than for others. The complex inter-relationship between support from other people, pet attachment, and quality of life requires further investigation. It is important to consider types of pets owned when studying psychological and physical aspects of health in relation to pet ownership.



## **Veterinary Students' Attitudes toward Companion Animals' Legal Status**

Sylvia Glover<sup>1</sup>, JD, Assistant Attorney General/Sr. Counsel;  
Francois Martin<sup>2</sup>, MA, Ph.D.

(1) Office of the Attorney General/WSU Division, PO Box 641031, Pullman, WA 99164-1031; (2) College of Veterinary Medicine, Washington State University, PO Box 647010, Pullman, WA 99164-7010

[sylviag@wsu.edu](mailto:sylviag@wsu.edu)

[fmartin@vetmed.wsu.edu](mailto:fmartin@vetmed.wsu.edu)

The human-animal bond impacts veterinary education and practice (Martin & Taunton 2006, 2005; Martin *et al*, 2003). Pets' changing social status has led to dialog regarding how the law should reflect their significance (Nunalee & Weedon, 2004; Byszewski, 2003; Root, 2002). Veterinary students' attitudes toward companion animals' legal status have not been evaluated, however.

**Method:** Seventy-seven third-year veterinary students (13 males; 63 females; one unspecified) were surveyed about attitudes concerning the legal status of dogs and cats (13-question 4-point Likert-type scale survey).

**Results:** Participants' mean age was 26.7. 42% were interested in small animal medicine; 11.6% in equine; 42% in mixed practice; 4.4% indicated "other."

Legal Significance of Companion Animals: 90.9% agreed/strongly agreed that there should be strong animal protection laws, and 35.1% believed or strongly believed that de-clawing and ear cropping should be illegal. 44.2%

agreed/strongly agreed that pets do not deserve the same consideration as human beings, while 10.4% agreed/strongly agreed that they should have the same rights as humans.

Property Status: 88.3% agreed/strongly agreed that dogs and cats are personal property. 79.2% agreed/strongly agreed that humans are guardians and must be guided by the companion animals' best interests in decision-making. 88.3% disagreed/strongly disagreed that a veterinarian should provide services upon the owner's request, regardless of the animal's best interests.

Legal Valuation: 83.1% agreed/strongly agreed that legal damages should be fair market value. 35.1% agreed/strongly agreed that pain of the animal should be compensated. 27.3% agreed/strongly agreed that the owner's emotional pain should be compensated. 22.1% agreed/strongly agreed that pets should have standing to bring lawsuits.

**Conclusion:** Results suggest that most veterinary students hold conventional views regarding pets' legal status, seeing animals as property but subject to special protections. Some support enhanced legal status, including limitations on owners' decision-making and expanded legal damages. These trends appear to reflect societal currents.

## **The Meta-Animal as Modern Shapeshifter**

Melanie J. Martin

Rachela Permenter  
Slippery Rock University  
Slippery Rock, Pennsylvania  
United States of America  
[mjmar61@sruc.edu](mailto:mjmar61@sruc.edu)

This poster presentation illustrates the tendency to think of animals as a homogenous group, and the effects of this tendency on society. Using literature as a lens, it presents literary works in which animal species are homogenized rather than distinguished from one another, and vice versa. In this presentation, we will discuss what trends in homogenization represent: namely, fear and resentment of the animal kingdom's perceived entitlement to the realm of the physical. Homogenization presents the boundaries between animal species as fluid, usually with the exception of human beings, portraying the animal as a shapeshifter. This portrayal creates an adversary of "the animal," illustrating its reciprocal bond to the physical realm while also illustrating fears of ungoverned evolution, the Western version of shapeshifting. Humankind's increased intellectual capacities have caused us to perceive the physical realm as a borrowed remnant of eras past; we feel compelled to manipulate the physical, but perceive its manipulation of us as a thing of the past, as we are constantly creating alternatives to adaptation (evolution). We fear self-evolution because we wish to view ourselves as "finished products" of evolutionary history. To present this idea positively, humankind had to create and prolong a negative image of

evolution as a monstrous phenomenon. In this presentation, we will focus on literature that presents the collision of Native and Western perceptions of the animal as shapeshifter, but will address other literatures that lend themselves well to the subject, such as Octavia Butler's *Wild Seed* and the fiction of Ursula LeGuin.

## **People's talk is friendlier when playing with an unfamiliar dog than with a familiar dog**

Robert W. Mitchell

Eastern Kentucky University, Richmond, KY 40502, USA  
[robert.mitchell@eku.edu](mailto:robert.mitchell@eku.edu)

People often talk when they play with a dog. To see if people differed in the way they talked to familiar and unfamiliar dogs during play, I analyzed talk by 23 people playing with their own and another's dog. I predicted that people would express greater friendliness and positive feeling toward the unfamiliar dog than toward their own dog. Players were videotaped, and their talk was transcribed by two coders who obtained 80% agreement on words. I used two measures, a baby talk speech register and praise, as evidence of friendliness and positive feeling. A baby talk speech register was present when at least two of three independent coders decided that an utterance was like baby talk, i.e., was expressed in a high pitch, was whispered, and/or showed extended word duration. Praising utterances called the dog or its actions "good" or "nice." People playing with the unfamiliar dog used more baby talk (mean = 48% of their utterances) than when playing with their own dog (mean = 35%; Wilcoxon T,  $z = 2.45$ ,  $p < .05$ ). Although people used approximately the same proportion of praising utterances with their own dog (mean = 2%) and the unfamiliar dog (mean = 5%; Wilcoxon T,  $z = 1.77$ , ns), seven people did not praise either dog. If only individuals who used praise were included, unfamiliar dogs received more praise (8%) than familiar dogs did (3%; Wilcoxon T,  $z = 2.05$ ,  $p < .05$ ). People used the baby talk speech register and praising the dog to

indicate their friendliness and positive feeling toward the dog, something they have greater need of doing with the unfamiliar dog (to whom they are unknown and unpredictable) than with the familiar one.

## **Evaluation of welfare indicators on straw-bedded dairy cows**

Fusaro I., \* Giammarco M.,\* Pezzi P.,\* Gramenzi A.,\* Di Nardo A.,<sup>°</sup> Dalla Villa P.,<sup>°</sup> Nicolussi P.,<sup>§</sup> Formigoni A.<sup>^</sup>

\* Dipartimento di Scienze degli Alimenti - Università di Teramo - Italy

<sup>°</sup> Istituto Zooprofilattico Sperimentale dell'Abruzzo edel Molise "G. Caporale", Teramo - Italy

<sup>§</sup> Istituto Zooprofilattico Sperimentale della Sardegna, Sassari - Italy

DI.MOR.FI.PA. - Università di Bologna – Italy

Correspondance autour: [a.dinardo@izs.it](mailto:a.dinardo@izs.it)

The provision of straw is included as an important criterion in resource-based cattle welfare assessment schemes. The welfare implications of straw provision in cattle can be referred to floor comfort and to nutritional requirements. Purpose of the present work has been to evaluate the influence of straw-bedding on some welfare indicators.

Seventy (n = 70) midlactation Italian Holstein dairy cows housed in a free-stall barn were divided into two groups of 35 animals each, balanced by age, parity, milk yield and composition, somatic cell count, (SCC) and Body Condition Score (BCS). Each group had access to an outdoor paddock for 8 weeks. The paddock was divided into two areas: the outdoor paddock provided to the control group consisted of slatted floors and the outdoor paddock of the treatment group consisted of a bedded pack of 5 kg of straw per cow per day. Milk yield and composition from ten (n = 10) animals of each group were recorded. The same animals were monitored for health status and behaviour. A score ranging from a

minimum of 1 point to a maximum of 3 points was assigned to evaluate BCS, limb lesions, claws pain, locomotion score, udder cleanliness, reactivity to external and human stimuli and recorded. Herd feeding behaviour of both groups was monitored 1 hr before and during feed delivery, and 2, 4, 6, 12 and 18 hours after that. Evaluations were conducted three times during the experiment: on weeks 1, 4, and 8.

Cows kept on concrete floor produced less milk than cows on straw ( $28,4 \pm 6.7$  vs  $31.9 \pm 7.2$ ;  $P < 0,01$ ). Somatic cell count was higher in control than in treated group ( $3.16 \pm 2.15$  vs  $2.12 \pm 2.09$ ,  $P < 0.01$ ) whose bedding condition contributed to cow cleanliness, udder health and milk quality. Beneficial effects of straw bedding were also underlined by a greater locomotion score in treated group than in control one ( $4.222 \pm 0.647$  vs  $3.100 \pm 0.308$ ,  $P < 0.001$ ). Cows exposed to concrete floor showed more limbs lesions, claws pain and had more difficulties in standing compared to treated animals ( $0.850 \pm 0.366$  vs  $0.111 \pm 0.323$ ,  $P < 0.001$ ). Results of herds feeding behaviour evaluation underline that a comfortable bedding encourages resting and rumination activity: ruminating cows in the outdoor straw bedded paddock were 64% vs 31% of the control group, ( $P < 0.001$ ). Further research is necessary to explore the applicability of local soft surface areas in traditional concrete flooring system.



## **Friendly dogs as potential moderators of cardiovascular response to speech in older hypertensives**

Erika Friedman

University of Maryland, Baltimore, MD, U.S.A  
[efrie002@son.umaryland.edu](mailto:efrie002@son.umaryland.edu)

As the population ages and obesity increases, the number of elderly hypertensives is rising dramatically. Uncontrolled hypertension (HTN) leads to strokes, myocardial infarctions and renal failure and mortality. Morbidity and mortality decrease when blood pressure (BP) is controlled. Cardiovascular reactivity, exaggerated BP responses to stressors, is associated with the development of HTN and with HTN associated morbidity and mortality. Reactivity is greater in individuals with higher BP. Speaking is a social stressor, occurring frequently in daily life, that is accompanied by significant BP surges. BP reactivity to speech is related to the stressful nature of the situation and the emotional content of the speech. The current study evaluates whether pets may be an effective intervention for moderating cardiovascular stress responses in elderly hypertensives.

Community living elderly (N=11) with pre- to mild HTN (BP: 120-159/80-99 mmHg) and who were cognitively intact participated in the study. The quiet-talk-quiet (QTQ) protocol, sitting quietly for 2 minutes, talking for 2 minutes, and sitting quietly for 2 minutes, was used to assess the BP response to speaking. It was repeated twice: with an unfamiliar friendly dog in the room and without the dog. The

dog was randomly assigned to be present either for the first or the second QTQ.

The 3 way interaction between dog presence (dog in, dog not in), activity (quiet, talk), and order (dog in first, dog in second) was used to examine the moderating effect of the presence of the dog on BP responses to speaking; it was significant for DBP [ $F(1,9) = 12.8, p = .006$ ], and tended to be significant for SBP [ $F(1,8) = 4.4, p = .12$ ]. BP while speaking was (7/2 mmHg) lower when the dog was present than when it was not present; BP while quiet did not differ.

Pets might provide a viable means of decreasing BP surges during stressful activities in older hypertensives. This has the potential to decrease HTN related morbidity and mortality.