



Universities Federation for Animal Welfare Annual Report 2018–2019

Science in the Service of Animal Welfare



www.ufaw.org.uk

UFAW – the International Animal Welfare Science Society

The Universities Federation for Animal Welfare, founded in 1926, is an independent charity promoting animal welfare science worldwide, together with high standards of welfare for farm, companion, laboratory and captive wild animals and for those animals with which we interact in the wild.

This report highlights the work undertaken by the charity during the past year which has been possible due to the continued commitment of its members and donors who have supported the charity through subscriptions, donations and legacies. This support is the very heart and life-blood of the charity and enables us to continue to strive for improvements in animal welfare – for which we thank you.

UFAW's vision is simple – to improve animals' lives through research, education, information and advice. It does this by:

- Promoting, funding and supporting animal welfare science and technology that underpins advances in animal welfare
- Promoting and supporting education in animal care and welfare
- Providing information, organising meetings and publishing books, articles, technical reports, information on its website and the journal *Animal Welfare*
- Providing expert advice to government departments and other bodies and helping to draft and amend laws and guidelines

If you no longer wish to receive information about the charity's activities or support, then please contact the UFAW office. (Members should be aware that notification of future Annual General Meetings is provided in the Annual Report).

Cover photos: L-R: Cow: Ulrike Leone Pixabay, Dog: Skitterphoto Pexels, Macaque: Antonio Doumas Pixabay, Atlantic Puffin: John Pexels.



Photo credit: Pixabay

One of the grants that UFAW awarded was to continue support of the Garden Wildlife Health Project

Welcome to the 2018–19 Annual Report for UFAW

“This year’s progress has been steady, though not spectacular” Those words were written in UFAW’s Annual Report 60 years ago, in 1959. A profound understatement, given that it was the year in which UFAW Research Fellow Dr William Russell and his assistant Rex Burch’s *Principles of Humane Experimental Technique* was published, which comprehensively set out the arguments that lay behind their ground-breaking concept of the 3Rs – Replacement, Reduction and Refinement. Concepts which have now been taken up around the world as fundamental guiding principles in laboratory animal welfare legislation and practice.

Fast forward 60 years and UFAW is still supporting and promoting animal welfare science which has the potential to change how we view the welfare and needs of animals. Projects such as the exploration of whether thermography can be used to monitor animal emotions remotely by Professors Mike Mendl, Becky Whay, Dr Elizabeth Paul and Helena Telkänranta of the University of Bristol. Helena presented the results at UFAW’s two-day symposium in Bruges in July and it is hoped that the detailed outcomes of the study will be published soon. Their main conclusions were that the results support the existence of thermal lateralisation, confirming it is a promising novel research avenue for animal welfare science.

A fine example of UFAW’s strapline, *science in the service of animal welfare*, is a study undertaken in the USA which looked at the welfare implications of hot-iron disbudding (a common procedure to prevent horn growth) in dairy calves. The UFAW-funded project has recently completed, with the findings indicating that recommended pain management practices are not enough and longer-term strategies are needed.

The charity has been involved in various initiatives to promote animal welfare in China in recent years. One of the activities this year was the support of the development of welfare guidelines in China through working with Chinese colleagues in Nanjing to produce an English translation of new Chinese guidelines on welfare and ethical review for lab animals. This will help to enable collaboration on animal welfare between China and the English-speaking world. You can read more about UFAW’s work in China on page 14.

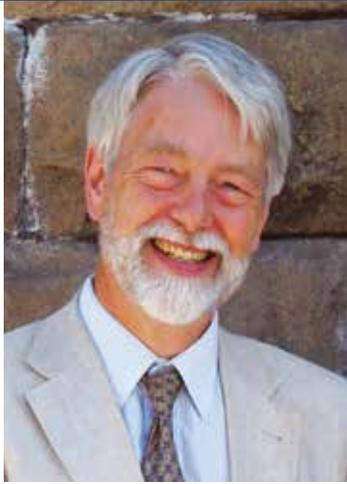
All of the “steady progress” outlined in this year’s annual report has been able to take place thanks to you – our members and supporters. Your ongoing and steadfast support has enabled the charity to continue in pursuit of its mission and vision to improve animals lives through research, education, information and advice. Thank you for supporting UFAW on this journey.



Alick Simmons BVMS MSc MRCVS
Chairman of Trustees



“Fast forward 60 years and UFAW is still supporting and promoting animal welfare science which has the potential to change how we view the welfare and needs of animals.”



“...animal welfare science is absolutely necessary to ensure that we really meet the needs of animals, avoiding the pitfalls that can occur with anthropomorphism.”

From its outset UFAW has adopted and promoted a scientific approach to advance animal welfare. UFAW's work is dependent on donations and particularly on legacies, but unlike some other charities, UFAW cannot rely on heart-warming stories to seek support. Instead, much of UFAW's work is about pushing the boundaries of our knowledge of animals and their needs because, as UFAW's founder, Charles Hume, recognised, animal welfare science is absolutely necessary to ensure that we really meet the needs of animals, avoiding the pitfalls that can occur with anthropomorphism. Current examples of UFAW's vital work to improve our ability to assess and improve animal welfare include funding of work on the implications of long-term exposure to stressors on primates, and research to develop new measures to assess cumulative chronic stress in poultry.

Funding research is important, but this also requires a cadre of well-trained scientists to design and carry out the work. For this reason, a major plank of UFAW's strategy to improve animals' welfare is building international capacity in animal welfare science through a variety of initiatives. UFAW's student scholarships help encourage young students world-wide to pursue a career in animal welfare science. Research training scholarships provide opportunities for young animal welfare scientists and UFAW provides the means to publish the outcomes of research, for example, on animals' needs, ethics, human

attitudes to animals and animal welfare through the journal *Animal Welfare* and through the UFAW/Wiley book series. Meetings and symposia are also vital to allow scientists to present their work and you can read more about these in this report. A new initiative in the past year has been a very successful regional meeting in Hong Kong and we hope to build on this with further meetings in other countries organised with the help of local animal welfare professionals.

2019 marks the 60th anniversary since the UFAW scholars, William Russell and Rex Burch, first put forward the 3R's and in this anniversary year UFAW continues work to advance these fundamental ethical principles regarding the use of animals in research, including the next edition of the UFAW handbook, funding of research to better assess welfare and guidance on overseas legislation.

UFAW may not be able to seek funds through stories of individual animals however, as this report demonstrates, UFAW's scientific approach to animal welfare continues to improve the welfare of millions of animals around the world. If you would like advice on supporting UFAW, and help make a long-term difference to the welfare of animals, please get in touch with us.

A handwritten signature in black ink, reading "Robert C Hubrecht". The signature is written in a cursive style with a long horizontal flourish extending to the right.

Robert C Hubrecht OBE
Chief Executive & Scientific Director



PROMOTING AND SUPPORTING ANIMAL WELFARE SCIENCE

It is widely accepted that many animals have the capacity to feel pain and distress and to experience suffering. Ensuring good welfare is about more than ensuring good health – it's about the quality of animals lives, understanding their needs and assessing their feelings. Gaining this knowledge is a huge challenge and key to advancing animal welfare is discovering and sharing the knowledge unlocked by science. UFAW therefore promotes and supports high quality science that will lead to substantial advances in animal welfare.

GRANTS

The charity provides both focussed and reactive funding of essential research and other projects through grants and scholarships, and UFAW is one of the very few organisations to fund research in this way world-wide.

Grants can range from small ones to support a student project, or travel to a conference to substantial support for multi-year research programmes. The charity makes regular large grants to enable scientific research to push forward the boundaries of animal welfare science, and over the last twelve months has awarded £64,000 in grants.

SUPPORTING RESEARCH TO BETTER UNDERSTAND ANIMALS NEEDS

Understanding the emotional state of animals to allow us to know whether or not they have good welfare is the 'holy grail' of animal welfare science. UFAW supported innovative research in animal welfare by Professors Mike Mendl, Becky Whay, Dr Elizabeth Paul and Helena Telkänranta of the University of Bristol with a grant. Their study, which has recently concluded, examined whether lateralisation of thermal responses in chickens and cows might offer a window into their emotional state. By measuring the temperature of various parts of the animal using thermal imaging cameras the scientists measured how temperature varies across the skin surface and how it changes when the animals

experience different emotions. In particular, they were interested in whether lateral differences in temperature might indicate different emotional states, as temperature on the skin surface may represent activity of different parts of the brain which may be activated in different emotional states.

The study showed that temperature does vary laterally in many cases, confirming it is a promising novel research avenue for animal welfare science that could in future allow better understanding of the emotional states of animals and allow us to identify poor welfare and ways to improve it. The investigators hope to publish the results of their study soon, and preliminary results were presented at the recent UFAW symposium in Bruges.

A number of projects are ongoing including a Research Training (PhD) Scholarship to Elena Armstrong at Newcastle University, for research on lifetime measures of welfare in farmed chickens and a grant to Professor Georgia Mason at the University of Guelph in Canada, who is currently studying the lifetime welfare of primates used in research using behavioural indicators. Using potential indicators of poor welfare such as stereotypic behaviour and self-injurious behaviour or depression-like inactivity, the study will assess what factors might underlie their development and ascertain whether there are types of rearing environment, temperament or housing that make monkeys more or less resilient to such effects.

The study should provide much-needed information on the effects of being kept captive in the lab on these monkeys and may identify ways to minimise such impacts.

UFAW also gives smaller awards to enable pilot studies and other small projects to benefit animal welfare. Two projects recently completed are an investigation as to whether hot iron disbudding leads to long-term pain in cows (Dr Sarah Adcock at UC Davis, California - see case study) and a study examining whether positive reward-based or negative reinforcement-based training methods in dogs affect the welfare of the dogs or the strength of the dog-owner bond. Dr Ana Caterina Viera de Castro from the University of

Porto, Portugal used a variety of tests to measure both the emotional state of dogs trained by different methods and to assess the strength of the bond between the dogs and their owners. Ana reports that her results indicate that positive reinforcement-based training is less stressful for the dog and results in a more secure attachment between owner and dog, adding further support for the use of non-aversive methods as the best way to train dogs. Ana was another presenter at UFAW's international symposium in Bruges where her results generated a great deal of interest from those attending the meeting.



Ana Catarina Viera de Castro presents her UFAW-funded study on dog training methods at the UFAW symposium in Bruges

Case study

THE WELFARE IMPLICATIONS OF HOT-IRON DISBUDDING IN DAIRY CALVES – SARAH ADCOCK

Hot-iron disbudding is a common procedure to prevent horn growth in dairy calves by applying intense heat to the horn bud. The procedure is acutely painful, but it is not known whether calves experience pain in the weeks that follow.

Conditioned place preference tests can unmask long-term pain. This test is based on the premise that injured, but not uninjured, animals will choose to spend more time with a stimulus previously paired with pain relief than another paired with no relief.

We evaluated whether a conditioned place preference test would reveal pain in calves three weeks after disbudding. Calves were trained to associate the effects of local anesthesia or a control injection (saline) with the location of a solid or striped board in their home pen. Non-disbudded calves spent more time with the saline versus anesthetic-paired stimulus, indicating that they found local anesthesia aversive, consistent with reports in humans that this drug is painful. Disbudded calves did not avoid the anesthetic-paired stimulus, suggesting that they traded off the short-term aversiveness of the drug to receive the longer-term benefits of pain relief. The disbudded calves' willingness to engage in this trade-off suggests they were in pain three weeks after the procedure. This finding indicates that recommended pain management practices are not enough, and longer-term strategies are needed.

OTHER FUNDING TO FACILITATE KNOWLEDGE TRANSFER AND DEVELOP BEST PRACTICE

UFAW recently made a number of small grants including providing funds for presenters to attend and present their findings at the UFAW two-day international symposium in Bruges as well as at various other animal welfare meetings around the world.

UFAW also funded Prof Claire Gibson at the University of Nottingham to purchase and study the effectiveness of 'playpens' for lab rodents, providing large environmentally enriched and more complex areas for rodents to interact with one another, which is thought to be highly beneficial to their welfare.

Another recent grant was to Laura Webb at Wageningen University who is investigating whether the ultrasonic vocalisations produced by rats can be used to measure whether they are experiencing generally positive emotions or vice-versa. Rats produce different types of ultrasonic (high frequency) vocalisations depending on their affective state, including calls which may be specific to negative states and happiness. Recording these calls (which are inaudible to humans) requires specialist equipment and differentiating the calls is time consuming. Laura's project aims to develop an automated process system to monitor the affective state of rats in a laboratory cage and which could be used to evaluate whether certain housing conditions, such as those with environmental enrichment, really do improve the welfare of the animals.



Photo credit: University of Ulster/
Understanding Animals In Research

GARDEN WILDLIFE HEALTH PROJECT UPDATE

In 2003, UFAW set up a working group (the Garden Bird Health Initiative) to conduct an ongoing surveillance and research programme investigating garden bird diseases, ways to minimise the risk of their occurrence and to advise on best practice for feeding garden birds. The project was extremely successful, making it possible to learn a great deal about garden bird diseases and to identify practical measures that may help prevent or control outbreaks. In 2013, the Garden Bird Health Initiative expanded its remit to include other garden wildlife and became the Garden Wildlife Health (GWH) project.

In 2016, UFAW agreed to support the Garden Wildlife Health (GWH) Project by providing a grant over three years to enable the GWH to develop website tools to better collect and analyse vital data on the health of wildlife populations from sightings provided by the public of sick or dead wildlife. Since 2016, the Garden Wildlife Health team has continued to investigate disease threats (some of which may turn out to be influenced by human activities) to British wild animal health and welfare. The team is led by vets at the Zoological Society of London, who work in collaboration with scientists from the British Trust for Ornithology, Froglife and the Royal Society for the Protection of Birds. Over the past year, 3,500 disease incident reports were received from members of the public and post-mortem examinations were conducted on around 200 wild animals to determine their cause of death. Since June 2018, the team has co-authored nine scientific publications on a range of conditions affecting multiple species, including herpes viruses, *Erinaceus coronavirus* and *Listeria monocytogenes* infection in hedgehogs; proliferative leg skin lesions in finches, salmonellosis in great spotted woodpeckers, rapid herpes virus skin disease in common frogs, phaeohyphomycosis in a common toad and the apparent absence of *salamander chytrid* in British wild newts. In order to share findings, GWH vets have given multiple conference presentations, participated in public outreach events and provided undergraduate and postgraduate teaching in wildlife health. New disease factsheets were produced based on their scientific findings and are available to download from www.gardenwildlifehealth.org; a biannual e-newsletter has been circulated to more than 1500 reporters and social media platforms have been used to share best practice guidance for garden habitat management.

UFAW SUPPORTS NETWORK FOR ANIMAL WELFARE RESEARCHERS

The Animal Welfare Research Network (AWRN) brings together the UK animal welfare research community with researchers in related disciplines and stakeholders with a professional interest in animal welfare issues. It enhances communication and collaboration and promotes high quality animal welfare research and its implementation. Since the AWRN was founded in 2016 it has recruited over 500 members, held three annual meetings, organised an animal welfare policy workshop for Defra, funded and facilitated eight member-led workshops, established an informative website which benefits both members and the general public, sent out monthly newsletters to members and worked with funding bodies to ensure animal welfare research remains high on the agenda. AWRN meetings have led to new collaborations and grant submissions and the training opportunities have boosted the confidence of Early Career Researchers in the field of animal welfare. Funding from UFAW has enabled the AWRN to continue these activities and also to increase its impact on a global scale. It has also recently appointed two Internationalisation Officers and is working towards forming links with animal welfare networks around the world.

RECOGNITION FOR OUTSTANDING CONTRIBUTIONS TO BENEFIT ANIMAL WELFARE

UFAW Medal

The UFAW Medal for Outstanding Contributions to Animal Welfare Science is awarded to individuals, anywhere in the world, whose research, teaching, service and advocacy has significantly benefited animals. It recognises the exceptional achievement of scientists who have made fundamental contributions to the advancement of animal welfare over a number of years.

The 2019 medal was awarded to Professor Paul Hemsworth of the Animal Welfare Science Centre at the University of Melbourne, Australia. For almost four decades Professor Hemsworth pioneered and led internationally acclaimed research on the role of human-animal interactions on the welfare and productivity of farm livestock.

His research (over 500 publications and 200 peer reviewed papers) has shown how human characteristics, such as attitudes and behaviour towards farm animals, affect their fear and acute and chronic stress responses - seriously limiting both farm animal welfare and productivity. By understanding the influence of human attitudes and behaviour on animal fear, stress, productivity and welfare, this research underpinned the development and application of purpose-designed training programmes in the dairy, pig and poultry industries.

The commemorative medal and certificate were presented to Professor Paul Hemsworth at UFAW's 2019 International Symposium in Bruges, Belgium on the 4th of July. UFAW's Chief Executive Dr Robert Hubrecht, who presented the award, said: *"Professor Hemsworth has led the field in the area of human-animal interaction research, with outstanding results that have benefitted farm animals worldwide and laid foundations for the next generation of animal welfare scientists to continue. His exceptional body of work over 40 years has been truly outstanding."*

UFAW 2019 Young Animal Welfare Scientist of the Year

UFAW makes this award to recognise the achievements of young scientists who have made significant contributions to improving the welfare of animals. The award is open to postgraduate students, anywhere in the world, who are currently studying for a doctoral degree or who are in postdoctoral work within six years of their PhD.

The Young Animal Welfare Scientist of the Year 2019 was awarded to Dr Marisa Erasmus, Assistant Professor of Animal Sciences at Purdue University, Indiana, USA.

During her graduate training and early career as a scientist, Marisa demonstrated independent, scientific excellence, contributed important new knowledge to improve the welfare of a species, and a keen aptitude for research in her discipline of applied ethology.

Dr Erasmus has contributed significantly to the scientific literature on the behaviour and welfare of the domestic turkey, making her one of the few experts in this field, and has published the first and only book chapter on turkey welfare. Her research was the first to validate fear tests for turkeys and to examine the link between fearfulness and its impact on the quality of turkey meat. Dr Erasmus was presented with her award at UFAW's international symposium in Bruges, Belgium, on the 4th of July by UFAW's CEO Dr Robert Hubrecht.



Photo credit: UFAW

ANIMAL WELFARE ACROSS BORDERS - A MEETING TO BRIDGE CULTURAL GAPS TO ADVANCE ANIMAL WELFARE WORLDWIDE

In October 2018 UFAW supported a two-day international conference in Hong Kong as part of its activities worldwide to promote animal welfare. The meeting brought together scientists and others with an interest in animal welfare from all around the world to hear a range of excellent talks and posters. Talks focussed on animal welfare issues experienced across the globe, from attitudes to pig welfare within the Chinese pig industry to differences in the regulations governing the use of animals in research around the world.

The meeting was a huge success, attended by almost 250 delegates, representing countries from around the world and there are now plans afoot to share the outcomes of the meeting with the OIE (World Organisation for Animal Health) Regional Welfare Strategy for Asia, the Far East and Oceania and the OIE Collaborating Centre for Animal Welfare Science and Bioethical Analysis to inform their work programmes.

SPECIAL EDITION OF UFAW'S JOURNAL *ANIMAL WELFARE* PUBLISHED

The February 2019 issue of *Animal Welfare* – 28(1), was a special one, entitled *Animal Welfare Reconsidered*, which originated from a workshop held at the Wissenschaftskolleg zu Berlin in December 2017. The 11 papers covered a wide range of topics and the special issue was published as a compilation of open access papers to enable the volume to reach as wide an audience as possible.

UFAW'S CHRONICLE UPDATED

In 2001 a chronicle of UFAW's history covering the first 75 years since the charity was founded in 1926 was published. This first edition proved very popular and it was updated (to 2005) and reprinted in 2007. Over the last twelve months, work has been ongoing to bring the chronicle right up to date and it is hoped that an online version will be available soon.

EDUCATION IN ANIMAL CARE AND WELFARE



EDUCATING TOMORROW'S ANIMAL WELFARE ADVOCATES

UFAW promotes education in animal welfare – particularly at the university and college level – in a variety of ways.

In September 2018, the Chief Executive lectured at St Catharine's College Cambridge on the Cambridge Animal Welfare Science Ethics and Law Course. This course provides continuing professional development in animal welfare ethics and law for researchers, animal care staff, legislators and regulators working with animals.

Engaging with staff and students at universities and research institutions and encouraging interest in the science of animal welfare is an important UFAW activity. The UFAW LINK scheme is an outreach initiative that aims to achieve this by providing support for novel animal welfare focussed activities at universities that are part of the scheme. To date, over 110 institutions from 39 countries are part of the network.

Examples of some of the activities supported via the LINK scheme over the past year are given in this report.

Animal Welfare Judging and Assessment Contest, Colorado State University, Fort Collins, USA in November 2018 *Atlantic Veterinary College, University of Prince Edward Island, Canada (Professor Mike Cockram)*

In November 2018, the LINK scheme helped support the attendance of three students from Atlantic Veterinary College to participate in the veterinary division of the Animal Welfare Assessment Contest held at Colorado State University, Fort Collins, USA – the 18th of these annual events.

The contest was attended by a record number of participants - 145 from 22 universities from the United States, Canada and Italy. It teaches undergraduates, graduate and veterinary students to assess the welfare of animals in a variety of settings using science-based methods and reasoning and using live and computer-based assessments. Participants are evaluated on their decisions and by how well they presented and justified their positions to a team of judges.

Animal welfare seminar series *Unitec Institute of Technology, New Zealand (LINK Dr Kris Descovich / Caralyn Kemp)*

In 2018 with support from the UFAW LINK scheme, Unitec ran the first of what they intend to be a series of animal welfare seminars. These seminars gave students the opportunity to hear about a range of animal welfare research and initiatives being conducted in New Zealand and were well attended.

The seminars covered:

- *Marine mammal strandings: Welfare and conservation*
- *Behaviour matters: Understanding the importance of behaviour in assessing and assuring companion animal welfare*
- *Potty training cows. The future of dairy farming?*

Dr Descovich thanked UFAW for supporting this initiative, which she said '*...has allowed us to extend our student's knowledge of animal welfare science and strengthened our relationships with animal welfare scientists within New Zealand.*'

Seminar Series: Priorities in Animal Welfare *Plumpton College, UK (LINK: Dr Amber de Vere)*

This year the UFAW LINK scheme supported the visit of two speakers to Plumpton College in order to present their research on animal welfare topics to the undergraduate students.

In January, Dr Isabella Clegg visited the Plumpton College undergraduate animal students to present her research on dolphin welfare. Dr Clegg's research includes the development of a standardised and easy-to-implement welfare assessment for use in zoos and aquariums, which she is also extending to assess the welfare of wild dolphins. Dr Clegg is involved in a variety of international projects, including the Icelandic beluga whale sea sanctuary. She discussed the utility of validating practical welfare assessments that can be conducted by animal care staff, and the potential scope for such assessments to be applied to wild animals.

For March's International Women's Day, Dr Liz Paul travelled from the University of Bristol, where she is a senior research fellow, to speak to undergraduate animal, veterinary nursing, and equine students. Dr Paul has researched animal welfare and emotions for over 20 years, spanning species including chickens, dogs, rats, and pigs. Students heard Dr Paul discuss what cognitive bias tests can reveal about affective states given the great range of species to which they have been successfully applied, including invertebrates such as bees.

Marine Mammal Medic Training Course *Plumpton College, UK (LINK: Dr Amber de Vere)*

In February, the British Divers Marine Life Rescue (BDMLR) delivered a Marine Mammal Medic Training Course at the college. Undergraduate animal students were taught how to identify the various seal, dolphin, and whale species that can be found in UK waters, as well as learning about the problems that can be faced during marine mammal rescues. Students also learnt about the practical skills required to rescue seals, dolphins, and large whales stranded on land. The techniques includes a system of inflatable posts for large whales, as these animals can weigh over 1,000 kilos! All students who undertook the day's training were successful in achieving medic certificates, which qualifies them to participate in BDMLR-run marine mammal rescue operations nationwide for the next year.



Photo credit: Dr Amber de Vere, Plumpton College

Animal Welfare Student Scholarships 2019

This year, UFAW awarded eleven Animal Welfare Student Scholarships to the following students:

Tasha Cadman, University of Edinburgh, UK: *Social bonds in pigs and their effect on health and welfare.*

Veronique de Caestecker, University of Reading, UK: *Pre-purchase motivations of dog owners and those who have had to relinquish their dog.*

Benjamin Cargill, University of Bristol, UK: *The impact of husbandry and housing on pet snake welfare using survey-based assessment.*

Erika Feilberg, University of Edinburgh, UK: *To determine current implementation of stress reducing practices during the consulting experience for UK canine and feline veterinary outpatients.*

Jillian Gordon, University of Edinburgh, UK: *The relationship between grimace expressions of dairy cattle and post-mortem dental health, and its implications for welfare production.*

Isabel Izquierdo-Hall, The Royal Veterinary College, UK: *Do laying hens exhibit greater comfort behaviour in cage-free barns compared to colony cages?*

Sarah McMahon, University of Edinburgh, UK: *Validating heart rate variability and behavioural changes as an indicator of affective state using the judgement bias test in dairy cattle.*

Ria Mehul Popat, The Royal Veterinary College, UK: *Laboratory mouse shelters: is a tunnel enough?*

Valerie Monckton, University of Guelph, Canada: *The perceived value of soiled litter compared to alternatives in poultry.*

Pia Niewind, University of Bonn, Germany: *To range or not to range – Exploratory behaviour in chickens.*

Johanna Piibor, Estonian University of Life Sciences, Estonia: *Comparing health and welfare of pigs farmed in conventional systems and in organic systems with no access to outdoors.*

Seminar on using non-invasive thermography to measure stress in birds

University of Liverpool, UK (LINK: Dr Lynne Sneddon)

Dr Lynne Sneddon ran a UFAW Animal Welfare event at the University of Liverpool on 1st May 2019. This meeting was well attended by staff and students from the Veterinary Institute and School of Life Sciences. Invited speaker Dr Dorothy McKeegan from the University of Glasgow spoke about her recent innovative work using non-invasive thermography to measure stress in birds. Dorothy outlined the utility of infra-red thermography in understanding the welfare of animals and how they respond to a variety of situations. This useful tool is being implemented in the assessment of welfare in farmed poultry.

1999-2019 TWENTY YEARS OF THE UFAW WILEY BLACKWELL ANIMAL WELFARE SERIES

2019 saw 20 years since UFAW entered into an agreement with Blackwell Science (later to become Wiley Blackwell) to commission a book series on a wide range of animal welfare issues and animal welfare science. There are now 12 volumes in the series (13 if the 8th edition of the *UFAW Handbook on the Care and Management of Laboratory and Other Research Animals* is included) and more are planned.

The *UFAW Farm Handbook* has been a standard text for many generations of veterinary students in the UK, and the 5th edition was published in the UFAW/Wiley series. Other volumes have covered species issues, ethics or aspects of animal use, such as in research. Most recently, *Companion Animal Care and Welfare*, a handbook on the care of companion animals has been produced and was published in February this year to complement the farm and laboratory handbooks.

20TH UFAW ANIMAL WELFARE STUDENT SCHOLARSHIP MEETING, UNIVERSITY OF GLASGOW

The 20th scholarship meeting was held at the School of Veterinary Medicine at the University of Glasgow on 12th December 2018. The audience of staff and students from Glasgow, Myerscough College and elsewhere listened to talks on a range of subjects

from attempts to better understand and increase the use of the creep area in piglets, the insights gained from the use of infrared thermography on footpad dermatitis in broilers to how drugs used to treat epilepsy in dogs impacted on their food-motivation and could lead to issues with obesity and investigating depression in horses.

At the meeting, in addition to giving a talk on her research, UFAW Student Scholar Freija Maulbetsch (University of Natural Resources and Life Sciences, Vienna) was awarded the Farm Animal Care Trust (FACT) scholarship, given in memory of Ruth Harrison, for her project *Chilled or bored? Inactivity in fattening cattle*. Freija was presented with a copy of Ruth Harrison's seminal work *Animal Machines*.

ADVANCING ANIMAL WELFARE SCIENCE: HOW DO WE GET THERE? – WHO IS IT GOOD FOR?, BEAUTIFUL BRUGES AND A STIMULATING AND SUCCESSFUL SYMPOSIUM

On 3rd – 4th July 2019, UFAW welcomed over 165 delegates from 25 countries to Bruges, Belgium for the latest in an on-going programme of international symposia, the first of which was held in 1957. Attending were leading scientists, veterinary surgeons and policy makers and others interested in animals and their welfare.

Over the two days of the symposium, a range of speakers considered whether and how animal welfare science is used to make progress in our understanding of animals' needs or how to assess animal welfare or sentience and the interplay and relationship between animal and human welfare.

The first speaker of the symposium – Dr Joseph Garner (Stanford University) – set the standard of scientific inquiry in his keynote speech *From expediency to necessity: Why science without welfare thinking isn't science worth doing*. In a forceful and hard-hitting talk, Dr Garner argued that, for laboratory animals in particular, improvements to animal welfare were more likely to come from making the case against bad welfare rather than for good welfare. Using numerous examples, he showed that bad welfare was not only bad for the animals but was also bad for science, public health and ethical grounds. He explored some of the reasons for the high failure rate in translating biomedical research findings

from animals to humans and explained why he believed we are at a point where there is a move towards treating animals used in research as individuals.

The symposium then went on to consider the benefits of animal welfare science and what animal welfare issues in farm, companion and wild animals were considered priorities by experts in the field – of which lack of knowledge of welfare needs of species and poor recognition and treatment of pain were two cross discipline areas.

Subsequent talks explored new technologies, such as the use of thermal image analysis, functional near-infrared spectroscopy and sound analysis and considered welfare in species such as fish, dogs, penguins, dairy cows and others.

On the second day Dr Helena Telkänranta (University of Finland) presented a first report of the positive findings of her UFAW supported work on the novel use of thermographic methods to measure emotions. Working with Professor Mike Mendl (University of Bristol) her work has found evidence of detectable lateral differences in eye and nostril temperature in cattle that potentially reflect emotional/affective state. A more complete report on her work appears elsewhere in this report.

In addition to these fascinating and stimulating talks, there were over 65 poster-presentations that further explored issues related to the symposium themes.

LASA/UFAW MEETING ON THE WELFARE OF ANIMALS USED IN RESEARCH

In September 2018 UFAW organised a meeting for animal care professionals with the Laboratory Animal Science Association (LASA), on *Embedding the 3Rs philosophy when breeding laboratory animals*. The programme began with a presentation from a Home Office Inspector on the development of guidance and advice on the use of ageing mice (these are increasingly being used with the growth of interest in geriatric medicine), and the presentation focussed on how to set thresholds based on either age or frailty when advanced monitoring would be needed. Another presentation was on providing high quality housing for breeding minipigs, including the provision of food-balls, pellets in bedding to encourage foraging, ice blocks and other toys. It turns out that food-balls are

not very effective for young pigs but breeding boars love them! Two other presentations drew attention to the needs of fish and amphibians, for both of which there is a need to reduce numbers used, while amphibians pose special challenges, because a healthy and very ill frog can look much the same. We also heard about new ways of monitoring primates and mice and primates. UFAW is very grateful to GSK for hosting the meeting and to the speakers for their excellent and useful presentations.

LASA Winter meeting

In November 2018 UFAW staff were involved in organising and running a session on the 3Rs at the annual LASA Winter meeting. This featured papers on work on replacements to the use of animals in research for studies on cancer, aneurysms and filariasis. Other speakers spoke on signs of poor welfare, the refinement of blood sampling from rodents, and a method of obtaining gastrointestinal samples using a swallowable 'pill'.

Rodent and Rabbit Welfare

On the 30th October 2018 the RSPCA, with UFAW, organised a meeting at the Francis Crick Institute on the welfare of rodents and rabbits used in research. The meeting began with a presentation by Professor Robin Lovell-Badge, of the Crick Institute, who spoke about advances in welfare and technology over the last 25 years. This was replied to by a joint presentation by UFAW's Chief Executive and Senior Scientific Programme Manager on challenges and opportunities for animal welfare in the future. Other speakers addressed topics that included: how to improve the husbandry of rabbits and rats, the opportunities provided by modern imaging techniques, and the welfare impact of different marking methods for mice. To help promote the ideas presented at these meetings, reports are produced and the report of the 2017 meeting has been published.

PROVIDING EXPERT ADVICE



UFAW provides information and advice on aspects of biology, management, health, behaviour and ethics relating to the welfare of domestic and wild animals to government departments, non-governmental organisations, universities and others. The charity is also consulted on draft legislation, guidelines and codes of practice relating to animal welfare.

Over the last year UFAW staff have continued to provide confidential animal welfare advice to the general public and to organisations whose work involves animals. In some cases staff provide such advice formally, by sitting on internal advisory committees, or by working as members of ethics panels or by visiting and lecturing. Some examples are provided below:

REPLACING CARBON DIOXIDE FOR HUMANE KILLING OF LABORATORY RODENTS

UFAW staff attended and spoke at a meeting held by the Swiss Federal Food Safety and Veterinary office on 5th June 2019 entitled “*Alternatives to CO₂*”. UFAW’s Senior Scientific Programme Manager (SSPM) is a member of a group developing a Swiss Government research strategy aimed at developing and validating more humane alternatives to CO₂ for humane killing of animals used in research as well as those slaughtered for food.

The SSPM also spoke about the need to replace CO₂ for rodent euthanasia wherever possible at the recent Federation for European Laboratory Animal Science Associations (FELASA) meeting held in Prague where he laid out the evidence that CO₂ cannot be used to kill animals without inducing some suffering and is therefore not the ideal way to kill rodents.

UFAW SUPPORTS THE DEVELOPMENT OF WELFARE GUIDELINES IN CHINA

In previous years UFAW has worked with Chinese experts to develop guidelines to better implement the 3Rs and ethical review of the use of animals in research in China. In May 2019, UFAW’s SSPM spent two weeks in China representing UFAW and its sister charity the Humane Slaughter Association at two meetings and a workshop, all with the aim of sharing knowledge with Chinese colleagues with an interest in animal welfare.

The first of these was the Sixth UK-China Seminar on Research Animal Welfare and Ethics. This annual meeting aims to share knowledge between British experts in laboratory animal welfare and their colleagues working with research animals in China. Over 300 people travelled from around China to attend the two-day meeting which included talks on various aspects of laboratory animal welfare as well as interactive workshops on the implementation of humane endpoints in animal research and dealing with resistance to change in implementing refinements. The SSPM gave talks on humane euthanasia methods for laboratory rodents and on environmental enrichment for laboratory animals. He also co-facilitated a workshop on the use of humane endpoints alongside colleagues from the RSPCA and Astra-Zeneca.

A workshop held prior to the main meeting brought together senior members of the Chinese laboratory animal welfare community and their colleagues from the UK and US to interpret a newly produced English translation of China’s new *Guidelines on Welfare and Ethical Review for Laboratory Animals*, produced by the Standardisation Administration of the Peoples’ Republic of China. Although a literal translation of the document exists, it is very important for non-Chinese speakers to understand the nuances of the document and to ensure that scientific, legal and technical terms mean exactly the same thing in both versions. The workshop allowed the two groups to work together to agree a definitive translation of the guidelines. The finalised translation will be made publicly available for all who wish to consult it, enabling non-Chinese experts to engage with colleagues in China with a full understanding of the regulatory framework under which animals are used for research in China, hopefully enabling greater co-operation and sharing of the latest animal welfare information between China and other countries.

The SSPM also attended the World Scientific Conference on Animal Welfare in Chengdu from 29th May - 30th May, 2019 where he gave a keynote lecture on *Humane Slaughter Techniques: an Animal Welfare Perspective* at the World Scientific Conference on Animal Welfare organised by the China Animal Health and Food Safety Alliance. During his talk he discussed current thinking on humane slaughter techniques, with a particular emphasis on the slaughter of pigs, given that China is the largest producer of pork in the world. The meeting was attended by a broad range of academics, representatives of Chinese

official bodies, animal welfare organisations and the food industry who discussed aspects of the welfare of animals farmed for food in China. There was considerable interest from many who attended in working to improve animal welfare alongside extensive discussion of the differences between the food-supply chain in China compared to the west and the challenges and opportunities that this presents when attempting to promote higher standards of animal welfare.

UFAW has been involved in various initiatives to promote animal welfare in China in recent years and hopes to continue to be engaged with this work over the coming years. The charity has also recently provided partial funding for a series of meetings organised by the UFAW Link at Jiangnan University, with the theme of *Animal Welfare - the link between food safety and public health*.

ANIMAL WELFARE CONSULTATIONS

UFAW has responded to consultations on animal welfare issues from, in the UK: Defra, The House of Commons Environment, Food and Rural Affairs Committee; and also the Canadian Council on Animal Care.

THE CARE AND MANAGEMENT OF ANIMALS USED IN RESEARCH

In 1947 UFAW produced the first handbook to encourage high standards of care of animals used in research. As Professor Ian Kimber wrote in the foreword to the 8th edition, this was hugely influential and provided a template for best practice. The last edition was published in 2010 but research practices and species have changed, as has our knowledge of ways to implement the 3Rs and so improve animal welfare. UFAW staff are, therefore, working with experts around the world to update and generate new chapters for the 9th edition. This is a significant project due to the size of the handbook but, thanks to the hard work of the authors and the editorial team, progress has been good with authors for 52 of the chapters signed up; 22 chapters received in draft; and four completed. Work will continue on this project over the next couple of years.



Photo credit: Understanding Animals in Research

ADMINISTRATION AND FINANCE



Finance and Accounts

The following summarised accounts have been extracted from the full accounts and have been prepared in accordance with the Companies Act 2006, which were approved by the Directors/Council and signed on its behalf on 17th July 2019.

The full accounts have been audited and the auditors' opinion was without qualification. The accounts will be filed with the Companies Registry and the Charity Commission after the Annual General Meeting on 17th October 2019.

Full accounts, and the audit report can be obtained from the Charity Secretary, The Old School, Brewhouse Hill, Wheathampstead, Herts AL4 8AN.

Independent Auditors' Statement to the Council of the Universities Federation for Animal Welfare

We have examined the summarised financial statements that comprise the summary statement of financial activities and summary balance sheet.

Respective Responsibilities of the Council and Auditors: You are responsible as the Council for the preparation of the summarised financial statements. We have agreed to report to you our opinion on the summarised financial statements' consistency with the financial statements, on which we reported to you on 17th July 2019.

Basis of Opinion: We have carried out the procedures we consider necessary to ascertain whether the summarised financial statements are consistent with the full financial statements from which they have been prepared.

Opinion: In our opinion the summarised financial statements are consistent with the full financial statements for the year ended 31st March 2019.

17th July 2019

S Munday FCA

(Senior Statutory Auditor)

for and on behalf of UHY Hacker Young (East Limited) is eligible for appointment as auditor by virtue of its eligibility for appointment as auditor of a company under section 1212 of the Companies Act 2006

UFAW Summary of Financial Activity Year Ended 31st March 2019

	2018/19 £	2017/18 £
Incoming Resources		
Voluntary Income	63,433	281,373
Charitable Activities	110,336	212,299
Investment Income	215,917	213,578
Total Incoming Resources	389,686	707,250
Resources Expended		
Costs of Generating Funds	100,735	84,440
Charitable Activities	331,471	475,125
Other Resources Expended	171,259	150,991
Total Resources Expended	603,465	710,556
Operational (Outgoing)/Incoming Resources for the Year	(213,779)	(3,306)
Other Recognised Gains & Losses		
Net Realised Gain/(Losses) on Investments	420,514	299,069
Net Unrealised Gains/Losses on Market Value of Investments	(92,633)	(250,800)
Net Movement of Funds	114,102	44,963
Balance Brought Forward	8,353,194	8,308,231
Balances Carried Forward	8,467,296	8,353,194

The summarised accounts were approved by Council and signed on their behalf on 17 July 2019.



A G Simmons BVMS MSc MRCVS
Chairman

UFAW Balance Sheet Year Ended 31st March 2019

	2018/19 £	2017/18 £
Fixed Assets		
Tangible Fixed Assets	364,841	372,002
Investments	7,882,067	7,711,696
	8,246,908	8,083,698
Current Assets		
Debtors	37,225	88,268
Money Market & Deposit Accounts	287,060	390,200
Cash at Bank and in Hand	32,631	20,748
	356,916	499,216
Current Liabilities		
Creditors: Amounts Falling Due within One Year	(130,996)	(204,156)
Net Current Assets	225,920	295,060
Total Assets less Current Liabilities	8,472,828	8,378,758
Creditors: Amounts Falling Due after More than One Year	(5,532)	(25,564)
Net Assets	8,467,296	8,353,194
Funds		
Unrestricted	7,850,494	7,741,222
Restricted	616,802	611,972
	8,467,296	8,353,194



C L McCann BSc ACA
Hon Treasurer

Annual General Meeting 2018

The AGM was held at the Old School, Brewhouse Hill, Wheathampstead on the 17th October 2018. As in previous years this was held in conjunction with the Annual General Meeting of the Humane Slaughter Association. The members of UFAW Council also act as Trustees for the HSA. Joint meetings are held to save time and money.

The notice convening the meeting had been sent to all subscribers and was taken as read. The meeting agreed the Minutes of the AGM of 2017 and resolved to receive the Accounts and Auditor's Report for the year ended 31st March 2018. Questions on the Report of the year's work were answered by the officials present and the meeting resolved that the Report and Accounts be received.

It was resolved that UHY Hacker Young, Registered Auditors, be appointed as auditors to UFAW and its associated Trusts and their remuneration should be fixed by Council.

Ms C McCann, and Mr D Pritchard, stood down under the rules regarding rotation, both offered themselves for re-election, and were re-elected. Following the resignation of Dr J Bradshaw, Dr S Abeyesinghe a new candidate was proposed, her nomination had the full support of Council, and she was duly elected.

Notice of Annual General Meeting 2019

The Annual General Meeting of the Universities Federation for Animal Welfare will be held at 12.30pm on Wednesday 16th October 2019 at The Old School, Brewhouse Hill, Wheathampstead. The formal notice and agenda have been sent to all members and are available from the Secretary at the registered office.



LEGAL AND ADMINISTRATIVE INFORMATION

Vice-Presidents

Professor R S Anderson BVMS PhD MRCVS
Professor P M Biggs CBE DSc DVM FRCPATH FRSB FRS FRCVS
L A Brown MBE BVSc BA PhD FRSB MBA FRCVS
Professor P H Holmes OBE BVMS PhD FRCVS FRSE
B Howard BVMS PhD FRCVS
J H Pratt BVM&S DVSM FRCVS
G D Sales BSc PhD AKC MRSB DipTCDHE

Council (who are the Directors of the Limited Company)

Chairman

A G Simmons BVMS MSc MRCVS ¹²³

Vice Chairman

M Radford OBE LLB ¹

Honorary Treasurer

C L McCann BSc ACA ¹³

Members

S Abeyesinghe BSc MSc PhD PGCertEd FHEA
Professor R M Bennett BSc MSc PhD ¹²
J Downs BVSc MRCVS
Professor A Nolan OBE MVB DipECVA DipECVPT DVA MRCVS
B North MBA MSc PhD ¹
A Olsson MSc PhD ³
D Pritchard BSc BVetMed MPH MRCVS ²
C Reid ²
D R Sargan MA PhD ²³

Staff

Chief Executive & Scientific Director
Robert C Hubrecht OBE BSc PhD FRSB

Senior Scientific Programme Manager
Huw Golledge BSc PhD

Scientific Officer
Elizabeth Carter BSc MSc

Development Officer
Stephen M Wickens BSc PhD

Editorial Assistant
Steven Weddell BSc BVSc MRCVS HND

Sub Editor
Claire Richardson BSc(Hons), BVM&S, CertLAS, MA (ODE) (Open), PhD, FHEA, MRCVS

Fundraising/Communications Manager
Tracey Woods MCIPR

Secretary
Jane Moorman

Office staff
Samantha Griffin
Wendy L Goodwin
Tina Langford

¹ Member of the Finance Panel

² Member of the Fundraising Panel

³ Member of the Grant Panel

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Santander UK plc, Bridle Road, Bootle L30 4GB

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