



[www.rspca.org.uk/sciencegroup](http://www.rspca.org.uk/sciencegroup)

# Science Group

**Review of 2016**

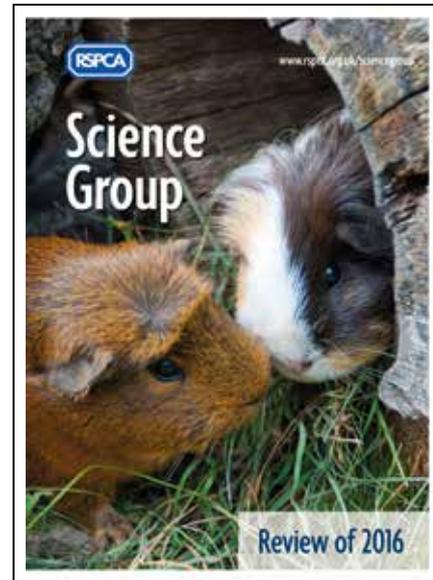
# Foreword

The work of the RSPCA Science Group in 2016 included a wide range of activities, applying many different approaches – all aimed at achieving positive changes for animals. The Group comprises four departments, dealing with companion, farm, research and wild animal welfare, with over 30 scientific, technical and field staff. Together we provide the RSPCA with a unique resource, equipping the Society to make sound, evidence-based decisions on how to address animal welfare issues most effectively.

Some of the areas in which we work can be especially challenging and present the RSPCA with difficult decisions and ethical dilemmas. We strive to find the best solutions from the animal's point of view by gathering, analysing and, where necessary, 'translating' scientific and practical information so that it can be used to inform, drive and support the RSPCA's many activities. As outlined in this latest edition of the Science Group Review, during 2016 we have helped both to underpin and to implement essential animal welfare work across the RSPCA, from our inspectorate and animal centres to campaigns and education.

The Science Group also ensures that the RSPCA is in a strong, credible position with key decision-makers who have both direct and indirect influence over the lives of animals. We have maintained our focus on achieving positive changes in attitudes and practices in the UK and overseas, by providing advice, support, practical solutions and formal submissions to a range of external sectors including industry, government, academia, the military and many individuals who have contact with and impact on the welfare of all kinds of animals.

If we are to remain at the forefront of improving animals' lives, the RSPCA needs to be aware of, and ready to apply, the latest information from animal welfare science and practical innovation. It is vital that the RSPCA is able to respond effectively and knowledgeably as new ethical and animal welfare issues come to light and existing concerns develop, including views and concerns held by the public. As I hope this Review will illustrate, the Science Group's work is helping to ensure that the RSPCA can achieve this, by maintaining and further developing its position as a challenging, constructive and effective advocate for animal welfare.



**Dr Julia Wrathall**  
Chief Scientific Officer

**“We have helped both to underpin and to implement essential animal welfare work across the RSPCA”.**

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## Highlights from 2016

### COMPANION ANIMALS

- Produced a [report](#) collating scientific evidence on dog bites, the welfare issues affecting dogs and the ethical issues imposed on those who enforce and have to comply with Breed Specific Legislation.
- Invited to sit on a cross-organisational working group set up to improve the welfare of brachycephalic dogs, and provided a large number of media statements on the significant issues associated with breeding these dogs.
- Invited to deliver a training workshop on minimising stress for dogs and cats during transportation and confinement to staff at Heathrow Animal Reception Centre. Presented on the same topic at the annual conference of the International Pet and Animal Transportation Association in Kuala Lumpur.

### FARM ANIMALS

- Published new versions of the RSPCA welfare standards for pigs and pullets, strengthening various provisions – including on minimum stocking densities, increased daytime lighting levels and environmental enrichment for pullets, and welfare outcome assessment, water quality testing and the showing of animals at agricultural shows for pigs.
- AssureWel – a collaborative project between the RSPCA, Soil Association and the University of Bristol – successfully continued into its final year with work to refine and finalise welfare outcome assessments for meat chickens, beef cattle and sheep.
- Continued to work positively with the farming industry to encourage improvements in farm animal welfare, including farmed fish welfare, improvements to the welfare of meat chickens at the time of killing and the development of new higher welfare meat chicken breeds.

### RESEARCH ANIMALS

- Held a major international conference: *Focus on severe suffering* – to help those involved in the regulation, use and care of animals in science ensure that every opportunity is taken to recognise and reduce, or ideally avoid, severe suffering.
- Convened the inaugural Animal Welfare and Ethical Review Bodies (AWERB-UK) event for ethics committee members.
- Invited to deliver a training workshop, promoting animal welfare, ethics and the 3Rs to scientists from across China.

### WILDLIFE

- Liaised with CEO of the League Against Cruel Sports to pursue collaborative working on possible changes to wildlife legislation.
- Participated in a roundtable discussion with the Department for Environment Food and Rural Affairs, the Humane Society UK, the British Pest Control Association and other industry stakeholders on the use of glue traps for vertebrate control.
- Delivered presentation on issues around exotic pet ownership at the first international conference on Human Behaviour Change for Animal Welfare.



The RSPCA Companion Animals Department comprises individuals with specialist scientific and technical knowledge, coupled with practical experience across a range of species and key welfare issues.

The vast majority of our work helps support and direct the RSPCA's work to protect and improve the welfare of pets, working animals and those used in sport. To do this we generate, collate, review and communicate science and good practice, engaging with internal stakeholders and providing them with advice and information, including on the RSPCA's policies and positions. We also engage with a variety of external stakeholders including governments, veterinarians, NGOs, enforcement bodies and industry to promote and protect companion animal welfare.

Each of our experts is responsible for specific initiatives to tackle individual welfare issues such as the responsible breeding of puppies, breed specific legislation and rabbits kept as pets. This review provides a selection of the work undertaken in our key areas during 2016.

# Companion animals

# HELPING THE RSPCA TO HELP ANIMALS

## Inspectorate advice

A large part of the role of RSPCA inspectors is to provide advice, guidance and support to people who need help in meeting the welfare needs of their animals.

To assist inspectors in this role, we have developed new resources on the welfare aspects of keeping

dogs outside, helping barking dogs and dogs in hot cars. These topics all relate to complaints commonly investigated by our inspectorate and can cause poor welfare and suffering.

For any advice and guidance disseminated by our inspectors to be useful, it must be clear and

easy to understand. We also ensure all resources are developed using up-to-date, scientifically informed, and evidence-based information and, where appropriate, refer to the Animal Welfare Act and supporting Codes of Practice.



## Licensing conditions for rabbits and small mammals

Every year considerable numbers of rabbits and rodents come into RSPCA animal centres. To help staff better provide for the needs of these animals, the Companion Animals Department has helped produce licensing conditions which ensure that rabbits in our care have their physical and psychological needs provided for. These are based on the most up-to-date scientific evidence available as well as information from close consultation with colleagues in our animal centres – making these documents both robust and practical. Looking ahead to 2017, similar documents will be produced for other small animal species, starting with guinea pigs and ferrets.



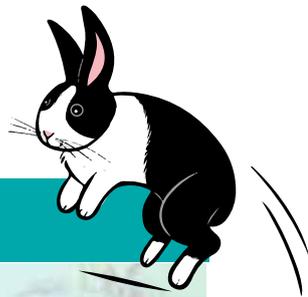
## Dogs at work

Many RSPCA staff have the wonderful privilege of being able to bring their dogs to work with them – something that can result in many benefits to humans and dogs alike. In order to ensure that having dogs in the workplace is a positive experience for everyone, during 2016 the RSPCA developed a new Dogs at Work Policy, setting out provisions to be followed by dogs, dog owners and other staff, whenever dogs are present in the workplace.

Accompanying guidance – informed by science, practical experience and understanding of the situations likely to be encountered by dogs and people in RSPCA workplaces – has been produced by the Companion Animals Department's dog welfare and behaviour specialists. It includes information on understanding dog behaviour; catering for dogs' physical and behavioural needs in the workplace; avoiding, managing and resolving issues; and how to adhere to the requirements to ensure dog (and human) welfare is safeguarded.

There is also an online learning package for staff to facilitate understanding of the purpose and content of the policy and aid implementation. It is hoped that other organisations and companies might consider allowing dogs in the workplace where this is of benefit both to staff and dogs and, where an appropriate policy is in place, to ensure that practices protect and enhance dog welfare.





# HELPING OWNERS TO CARE FOR THEIR PETS

## Educating current and future rabbit owners

Every year, Burgess Pet Care organises Rabbit Awareness Week (RAW), alongside several partner organisations including the RSPCA. As rabbits are a social species, and recent research shows that many pet rabbits still live alone<sup>1</sup>, the theme for 2016 was companionship. Many RSPCA animal centres, branches and hospitals offered free rabbit health checks and held open days. We highlighted the need for rabbits to have suitable companionship, with a popular social media hosted question and answer session on Facebook. New web material for owners was produced on bonding unfamiliar rabbits, emphasising the need to do this both carefully and gradually, to help avoid potential injury and stress to the rabbits.



2016 was also the 10th anniversary of RAW and, to mark this milestone, we developed new educational resources targeting the next generation of animal owners. Working with the [RSPCA's Education Department](#), we created a presentation aimed at primary school children to talk them through the welfare needs of rabbits and how to care for them properly. We linked the talk with aspects of the National Curriculum by including elements of science, English and citizenship. Using interactive props, the children were tasked with determining the daily hay intake of a rabbit and how to make their own enrichment toys. They were even taught to 'binky' – a behaviour rabbits only express when they are very happy!

These sessions were an overwhelming success and will be rolled out across the RSPCA's Volunteer Speaker scheme. Even more children will have the opportunity to learn about rabbit welfare and what rabbits need to be happy and healthy.



**Dr Jane Tyson**  
Scientific Officer



**“Talking to school children was a new and exciting opportunity for us to engage with, and influence, pet owners of the future; helping to promote good welfare for rabbits, both now and in years to come.”**

<sup>1</sup>Rooney, N.J., Blackwell, E.J., Mullan, S.M., Saunders, R., Baker, P.E., Hill, J.M., Sealey, C.E., Turner, M.J. and Held, S.D.E. (2014) **The current state of welfare, housing and husbandry of the English pet rabbit population.** BMC Research Notes, 7:942 and PDSA, (2015) PAW (PDSA Animal Wellbeing) Report, [www.pdsa.org.uk/get-involved/our-current-campaigns/pdsa-animal-wellbeing-report](http://www.pdsa.org.uk/get-involved/our-current-campaigns/pdsa-animal-wellbeing-report)

## Addressing fireworks fears

**Research suggests that 45 percent of dogs show signs of fear when they hear fireworks<sup>2</sup>. Other pets, such as cats, can also be scared by fireworks which can cause stress and anxiety.**

It is therefore important for owners to do as much as they can to help their pets cope with fireworks and reduce any distress they may experience. We provide information for owners to help their pets cope during the fireworks season, and advice on how they can teach their pets to learn to be less afraid of loud noises in the long term. This information is provided in several formats to make it as accessible to as many people as possible, including a leaflet, blogs and a web page. In 2016, we worked closely with the RSPCA's broadcast team to produce a friendly and informative fireworks [advice video](#) that was promoted on the RSPCA's YouTube channel and social media channels.

<sup>2</sup>Blackwell, E., Casey, R., & Bradshaw, J. (2005). **Firework Fears and Phobias in the Domestic Dog.** Scientific Report for the RSPCA, University of Bristol, UK



## HELPING OTHERS TO PROTECT AND IMPROVE ANIMAL WELFARE

### Delivering seminars for local authorities and police

The Animal Welfare Act 2006 places a legal duty of care on those who are responsible for animals to ensure their welfare needs are met, whether on a temporary or permanent basis. Within local authorities, practitioners have responsibility for stray dogs, whereas the police have responsibility both for working dogs and those seized under legislation such as the Dangerous Dogs Act 1991.

To help ensure practitioners understand their responsibilities and can apply their understanding in such a way that a dog's welfare needs are met, the Companion Animals Department provided two seminars this autumn on meeting the welfare needs of kennelled dogs. In both sessions we ran workshops for practitioners. Small groups each considered a welfare need, identifying whether or not they actually provided for a dog's welfare needs and, if not, how they might be able to modify the care and management of the dogs accordingly.



### Developing model licensing conditions for dog boarding establishments

This year saw the launch of new Chartered Institute for Environmental Health (CIEH) model licensing conditions and guidance for dog boarding establishments to advise those tasked with inspecting, advising and licensing boarding establishments under the Animal Boarding Establishments Act 1963. These conditions and guidelines were produced by collaboration between a range of welfare and veterinary organisations, local authorities and relevant industry bodies and included the RSPCA. In contributing to the development of these types of documents our aim is to ensure they are evidence-based – using the most recent companion animal welfare science – and that they promote the physical and psychological needs of dogs.

The launch of conditions and guidance for home boarders as well as doggy day care facilities is planned for 2017, both types of businesses having increased considerably in number over recent years.



### Ensuring good welfare during transportation

Many pets are viewed as part of the family and consequently large numbers of cats and dogs are transported and relocated every year. Pets being transported may experience journeys which involve air, sea and ground travel, temporary housing in a boarding facility and time spent in quarantine or an animal reception centre.

Although more research is needed to better understand the impact of such journeys on pets, research which is available suggests confinement and transportation can be a significant cause of stress. Some examples of the challenges pets will face during transportation include separation from their owners, confinement to a crate, lack of choice and control, presence of unfamiliar people, animals, noises, smells and handling by pet shipping staff.

To help minimise stress for cats and dogs during transportation and confinement, we provided training to Heathrow Animal Reception Centre Staff on recognising and minimising acute stress. We also delivered a presentation on the subject at the annual International Pet and Animals Transportation Association (IPATA<sup>3</sup>) conference.

With more than 350 IPATA members in over 80 countries, this conference provided an excellent opportunity to help improve the welfare of pets being transported across the world.



<sup>3</sup>IPATA are a non-profit trade association of independent members who are dedicated to the safe and humane transports of pets and other animals.

## FOCUS ON GOVERNMENT

### COMPULSORY MICROCHIPPING FOR DOGS

This year saw the introduction of regulations<sup>4</sup> for the compulsory [microchipping](#) of dogs in England and Wales which makes it a requirement for all dogs and puppies over the age of eight weeks to be microchipped and registered to an approved database. A dog is only exempt from being microchipped if a vet certifies, in writing, that they cannot be microchipped for health reasons.

While the RSPCA believes that microchipping gives pets the best chance of being reunited with their owners if they are lost or stolen, it is only effective if owners keep their details up to date on the database. This is also now a legal requirement. In order to make owners aware of their new legal responsibilities, the RSPCA launched the #chipncheck campaign and wrote a factsheet to answer some common questions around compulsory microchipping. The companion animals team provided media interviews on the topic for many regional radio stations, national press and a television interview with The One Show.

<sup>4</sup>The Microchipping of Dogs (England) Regulations 2015 and The Microchipping of Dogs (Wales) Regulations 2015



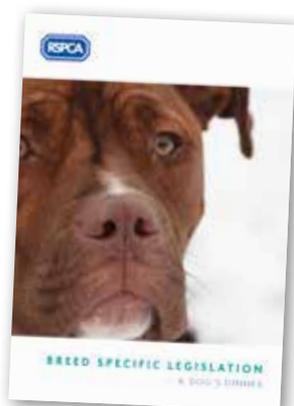
### Debunking Breed Specific Legislation

**Breed Specific Legislation (BSL) was first introduced in the UK in 1991 – as part of the Dangerous Dogs Act – and aimed to improve human safety by reducing dog bites and prohibiting four types of dog: pit bull terrier, Japanese Tosa, Dogo Argentino and Fila Brasileiro. Twenty-five years on, there is a wealth of scientific evidence to show that a breed specific approach to protecting public safety is ineffective. However, this evidence, along with the legislation’s impact on dog welfare, owner wellbeing and the thousands of dogs who have been euthanased as a result of this law, has not been acknowledged.**

To mark the 25th anniversary of BSL in the UK, we produced a [report](#) collating scientific evidence on dog bites, the welfare issues affecting dogs and the ethical issues imposed on those who enforce and have to comply with BSL. Having reviewed the evidence, we concluded that BSL in the UK had not achieved its objectives of reducing dog bites and has resulted in unintended negative consequences for dog welfare and people.

A [campaign](#) was also launched calling upon the UK Government to hold a parliamentary inquiry into the effectiveness of BSL, assess other options to improve human safety and ultimately repeal the breed specific part of the Dangerous Dogs Act 1991.

The report and campaign, generated huge media interest, leading to interviews with national television and both national and local radio stations. We hope this publicity and the compelling evidence-based information in the report will help to move this important issue forward in 2017 and beyond.



#### Dr Samantha Gaines

Head of Companion Animals Department

“We have shown that there is a lack of evidence to support breed specific laws. Dog bites have continued to rise year on year and hundreds of dogs suffer and are needlessly euthanased on an annual basis. A review of this unfit and draconian law is long overdue.”

### Improving dog welfare in Wales

In 2015, RSPCA Cymru was asked by the Welsh Government to lead a short review of responsible dog ownership in Wales. This involved a small core group of specialists engaging with a wider base of stakeholders to review and make recommendations about responsible dog ownership in Wales, including the relevant existing legislation. We were part of the core group of specialists, providing expertise on behaviour and welfare. Much of the review was focused on stakeholders’ written and verbal

evidence to a series of questions around the issue.

The final [report](#) presented a summary of these sessions along with an overview of the relevant responsible dog ownership legislation and enforcement; education and intervention; and data and research and evidence submitted by the stakeholders. The report was delivered to the Welsh Government in March 2016 with a range of recommendations to improve ownership of dogs in Wales and we are hoping to hear the outcome in 2017.

## TOPICAL WELFARE ISSUES

### Cat cafes

First popularised in Japan, a number of cat cafes now operate in the UK. These cafes are often home to a number of cats – typically around ten – who live in the cafe and are used as a source of entertainment and opportunities for interaction with visiting customers.

The RSPCA is concerned about the welfare implications for these cats, due primarily to the enforced proximity to other cats within a limited space and the frequent presence of – and potential handling by – unfamiliar visitors. This type of environment is unsuitable when considering the needs of the domestic cat, their origins as a solitary, territorial predator, and research on multi-cat environments. The RSPCA is also concerned where cat cafes are used for rehoming since this ever-changing population is likely to be a significant cause of stress.

This year has seen some new cat cafes open while others are proposed for 2017 and we have worked both proactively and reactively to influence existing and prospective cat cafe owners. Our aim is to dissuade new cafes from opening and to advise those already in operation of the appropriate and necessary steps that should be taken to minimise potential feline stress. We have also raised our concerns for the welfare of cats living in cat cafes through media opportunities.



**Alice Potter**  
Scientific officer

“Sometimes expectations of how cats should live and behave is not consistent with their natural behaviour and biology. We should understand and respect the needs of domestic cats so that we can have a healthy relationship with them in which their wellbeing, as well as ours, is a priority.”



### Urgent action for brachycephalic dogs

This year there has been increasing media attention around the significant welfare issues that affect brachycephalic dogs<sup>5</sup>. This is partly as a result of recent publications suggesting that not only do extreme brachycephalic dogs die at a significantly younger age than dogs without short, flat faces, but some breeds are also greatly lacking in genetic diversity – which may prevent breeders from breeding healthier animals using existing individuals within those breeds.

The RSPCA believes that there is an urgent need for more to be done to protect the future health of dogs and we have been particularly active around the issues relating to pedigree dogs since *Pedigree Dogs Exposed* was broadcast in 2008. For that reason, and to welcome the much needed support of the veterinary profession in highlighting the seriousness of this issue, we backed their petition calling for urgent action to address the growing number of dogs coming into veterinary clinics across the country with health issues resulting from their extreme conformation.

Following the petition, a working group has now been set up to look into tackling these issues and it is hoped that the group – which includes representatives of the RSPCA, the British Veterinary Association, the Kennel Club and the Dogs Trust – will lead to meaningful changes to ensure welfare is of primary concern to all dog breeders, buyers and show judges, and that future generations of dogs are happy and healthy.

As a result of significant media attention around brachycephalic dogs, the RSPCA was invited to provide a large number of statements to the media including The Huffington Post and several national newspapers including The Telegraph and the Daily Mirror.

<sup>5</sup>Dogs with short, broad skulls.

### Lisa Richards

Senior Scientific officer

“We believe there is still much to be done to protect the future welfare of brachycephalic dogs and we are very keen to work alongside the British Veterinary Association, The Kennel Club, Dogs Trust and others to make sure the necessary actions are taken forward.”



# Farm animals



The RSPCA works to improve the welfare of all farm animals at every stage of their lives. Hundreds of millions of animals are farmed in the UK each year. The Society is concerned that the majority are reared, transported and slaughtered/killed in ways that do not meet their behavioural and physical needs – although legally permitted.

The Farm Animals Department works directly with a range of stakeholders to support and drive positive changes in practices and attitudes towards farm animal welfare in all sectors of the food chain,

including via encouraging application of the RSPCA welfare standards for farm animals. We provide support and information on farm animal issues to other sections within the RSPCA, including communications, campaigns, corporate engagement and fundraising. We also give practical advice to field operations activities including RSPCA Inspectorate, animal centres, and the RSPCA farm assurance and food labelling scheme, RSPCA Assured (formerly Freedom Food), whose farm, haulier and abattoir members are monitored by the department's Farm Livestock Officers.

# SETTING STANDARDS

## Standards development

We have been developing [RSPCA welfare standards for farm animals](#) for over 20 years and now have 12 sets of standards covering all the main species of farm animals reared in the UK. The welfare standards cover an animal's entire life from birth/hatching through to killing, aiming to represent good practice in all aspects of care and welfare. The standards go above and beyond typical industry practice and legislation in the UK in a number of key areas, and are primarily implemented through the RSPCA's own farm assurance and food labelling scheme, [RSPCA Assured \(formerly Freedom Food\)](#). They also have a much wider impact on farm animal welfare, having influenced laws and government codes, and informed the production standards set by many retailers, various assurance schemes and some farming companies in the UK and overseas.

To ensure the standards have a positive impact on farm animal welfare, we use a robust and well-considered evidence base to inform their development. This involves sourcing and analysing scientific evidence, using practical experience and consulting with key specialist stakeholders in the food and farming industries and academia. We regularly review and revise our standards to help ensure they continue to be at the forefront of improving livestock welfare while still being achievable in terms of animal husbandry and commercial viability. Details of the revisions to the standards in 2016 are below.

## RSPCA welfare standards for pullets (laying hens)

An updated version of the [RSPCA welfare standards for pullets](#) was published in August 2016. The revised standards included strengthened requirements concerning minimum stocking densities, increased minimum daytime lighting levels and a new section on environmental enrichment.

This new section requires pullet rearers to provide their birds with environmental enrichment in the form of pecking and/or foraging objects. Research has shown that enrichment items, such as straw bales, suspended hay nets and pecking blocks, all help to promote positive pecking behaviours from an early age and can help prevent abnormal pecking behaviour later in life.

## RSPCA welfare standards for pigs

This year has seen a number of changes to the [RSPCA Welfare Standards for Pigs](#). In April, new supplementary standards were published to require on-farm welfare outcome assessments to be carried out on RSPCA Assured members' pigs by RSPCA Assured assessors as part of their regular scheme assessment visit. The welfare outcome assessment protocol for pigs was developed by the AssureWel project (see page 15 for further information).

In November, a fully revised version of the RSPCA welfare standards for pigs was published. The revised standards include new requirements for water quality testing and concerning the showing of pigs at agricultural shows. RSPCA Assured producers wishing to show pigs must now seek permission from the RSPCA Farm Animals Department and provide information about how the welfare of their pigs will be safeguarded while travelling to and from the show and while at the showground. This includes providing details regarding procedures for ensuring thermal comfort and that biosecurity measures are employed. The health and welfare planning section has also been updated to require a contingency plan for a notifiable disease outbreak and a written hygiene policy.



## Carbon dioxide gas killing review for broilers

The use of carbon dioxide-only gas systems for the killing of chickens has become increasingly popular since a recent change to legislation, which now permits the use of such systems in the UK (The Welfare of Animals at the Time of Killing (England) Regulations 2015). During 2016, a comprehensive review of the scientific literature relating to the use of carbon dioxide gas for the killing of meat chickens was undertaken by the Farm Animals Department, in addition to visits to see – in operation – the various systems available for use across the world.

Following the literature review, and taking into account direct personal experiences of the different gas killing systems, the view was taken that carbon dioxide-only gas killing can be considered acceptable from a welfare perspective, providing the systems used are operated and managed appropriately.

Systems that gradually increase the concentration of carbon dioxide – starting from a low level – are considered to result in a smoother transition to unconsciousness and are therefore considered more humane. Further, systems should be designed and managed to have a high level of control over the gas within the system.

Consultation is now underway on draft RSPCA standards concerning the gas killing of chickens, which include a number of detailed and strict requirements relating to carbon dioxide-only gas killing. The aim is to finalise these standards in 2017 for inclusion in a revised edition of the RSPCA welfare standards for chickens.



### Siân Phillips

Scientific Officer – Poultry

“The use of gas under controlled conditions for the killing of poultry can have many welfare benefits, including reduced manual handling of the birds. However, compared to other methods, carbon dioxide gas – which is commonly used – is known to be aversive at high concentrations. It is therefore vital that birds are not exposed to high concentrations of this gas before losing consciousness and that gas systems are designed, operated and managed correctly to safeguard bird welfare.”

## New farm animal licensing conditions and advice for RSPCA centres

While the majority of the animals that the RSPCA takes into its care are companion animal species, a significant number of farm animals are rehomed through our centres each year, particularly poultry species. Others, such as pigs, are often difficult to rehome due to their specific and specialist needs and can spend many months awaiting rehoming.

The Farm Animals Department has been working with colleagues across the wider RSPCA to develop licensing conditions for pigs and chickens for those centres that are able to take in these species for rehoming. These new conditions help ensure that the animals' welfare needs are met to the extent required by good practice, underpinned by the most recent scientific evidence.

Further – and more detailed – guidance on how to care for pigs, chickens, sheep and goats, when kept as companion animals (pets) has also been developed for use by RSPCA centres. These guides cover all aspects of care, including any legal obligations associated with the keeping of these animals, the need for appropriate company from their own species (where applicable), normal/abnormal behaviour, what constitutes a suitable diet and environment, and common health issues, including signs of disease, injury and distress.

## INDUSTRY ENGAGEMENT

### Improvements to the welfare of meat chickens at the time of killing

The Farm Animals Department works with livestock equipment manufacturers to provide advice and recommendations on developments that could be made to their equipment to help improve animal welfare.

This year, we were invited to assess the operation and management of a new chicken gas killing system, which had been developed by a global poultry processing equipment manufacturer.

Following the assessment, we wrote a full report and listed a number of recommendations relating to further development of the system. The manufacturer later reported they had implemented the majority of these recommendations, which will affect all current and future systems sold. These developments will directly improve the welfare of billions of broilers worldwide annually.

During 2016, we also conducted a full literature review of the gas killing of chickens using carbon dioxide-only gas systems. See the section on page 12 for further details.



### AQUACULTURE UK EXHIBITION

In May, three members of the Farm Animals Department, along with staff from RSPCA Assured, exhibited at Aquaculture UK – the leading business event for the aquaculture industry in the UK. The two-day event in Scotland enabled us to hold discussions with members of the aquaculture industry and answer and clarify any queries they had relating to the RSPCA farmed fish welfare standards. This opportunity was invaluable as a means of direct communication with RSPCA Assured scheme members, researchers and policy makers. The information relating to many of the issues under discussion will be used to inform future editions of the *RSPCA welfare standards for farmed Atlantic salmon*.

### Fish fungus workshop

In May 2016, the Farm Animals Department organised a fish welfare workshop for the aquaculture industry. The aim of the workshop was to discuss and review the issues relating to *Saprolegnia* (a fish fungus) infections of freshwater Atlantic salmon, and to determine what further research is required to help improve our understanding of the condition, and the health and welfare of the fish.

The meeting was well attended, with representatives from all of the major salmon farming companies, research scientists and fish vets. It was very productive and served as a catalyst for the submission of a Biotechnology and Biological Sciences Research Council (BBSRC)-LINK research bid for a project focussing on risk factors for escalating *Saprolegnia* outbreaks in salmon farms. The RSPCA has been asked to be one of the partners in the project, details of which should be agreed in early 2017.

#### Eoina Rodgers

Scientific Officer – Aquaculture

“Over the last two years, *Saprolegnia* infections of farmed fish have become an increasing health and welfare challenge. Through a big data approach, we hope to determine the risk factors associated with these infections. The results from this research could inform best practice and ultimately improve the health and welfare of farmed salmon.”



### Online farmed fish welfare course

In April 2016, the Scottish Aquaculture 2030 Vision for Growth Group launched a strategy in a bid to double the size of the Scottish aquaculture industry in the next 15 years. This is an ambitious target and the RSPCA is strongly of the view that processes need to be in place to ensure the growth of the industry is not at the expense of maintaining good fish welfare.

As an aid to ensuring fish welfare remains a priority, the Farm Animals Department has developed an online farmed fish welfare course setting out the main principles underpinning the issues relating to fish welfare. This course will be offered to salmon farming companies as a training aid. It is already a requirement under the RSPCA standards that stockpersons must have attended a recognised animal welfare course. This RSPCA course will provide an important useful addition to those third party courses that are already in use.

## Information sheets on key issues in aquaculture

The department produces information sheets to provide more detailed information on particular farm animal-related topics – for example, on the production and welfare of the main farm animal species reared within the UK. In 2016, three new information sheets were developed to cover fish farming, predator control in aquaculture, and methods to control sea lice numbers in farmed salmon.

The aim of these new resources is to help explain, expand on and clarify some of the main issues of current concern within the aquaculture industry. Areas of concern, such as the management of sea lice and predator control, are not only important welfare topics but they also frequently attract media coverage. This has, on occasion, led to inaccurate reporting and we hope that these information sheets will help provide a more informed and accurate understanding of these issues.

The information sheets have been informed by a strong evidence base of scientific research, in addition to information gathered during industry discussions and from visits to aquaculture sites. Further information sheets are being planned covering topics including the use of Cleanerfish as a biological control of sea lice, and the slaughter of farmed fish.



**In September, the Farm Animals Department participated in a pig industry summit organised by the National Pig Association. The summit brought together stakeholders from across the pig supply chain – including government, retailers, processors and producers. Discussions covered the major issues facing the sector and the future direction of the UK pig industry, with the aim of informing the development of a new strategy for the industry in the coming years.**

A wide range of topics was debated during the day-long event, including the need to respond to consumer demands (both domestic and international), and the implications and opportunities afforded by the UK referendum vote to leave the European Union, such as new trade agreements and access to labour. With regard to pig welfare, there was debate on production efficiency versus welfare and whether these drivers are always antagonistic or whether progress can be made with respect to both. The advantages of farm assurance and how to derive the maximum benefit from it, including the extent to which scheme standards should be raised, was also debated. We look forward to seeing the outcome and conclusions of the summit when the strategy is finalised, whilst encouraging the industry to ensure that due consideration be given to initiatives that progress with pig welfare.

## New higher welfare chicken breeds

**The Farm Animals Department has been working with one of the largest global chicken breeding companies regarding the development of new breeds of higher welfare chicken specifically for use under the RSPCA Welfare Standards for Meat Chickens.**

For breeds to be considered acceptable for use under our Standards they must be assessed according to the RSPCA's [strict protocol](#) at an RSPCA designated Welfare Assessment Centre. In 2016, the company developed two new breeds. These were assessed and the results were very positive. The company has plans to develop a third breed, which will be assessed during 2017.

These developments could have a very far reaching positive impact, improving the welfare of huge numbers of broilers reared both within and beyond the RSPCA Assured scheme for many years to come.

## Food and Veterinary Office (FVO) inspection of the UK dairy industry

**The Farm Animals Department was invited to be the only animal welfare stakeholder to provide evidence to the EU FVO during their inspection of the UK dairy industry.**

The scope of their audit included examining the welfare conditions of dairy cows and calves, national policy and legislation on animal welfare, market led initiatives that promote animal welfare – such as RSPCA Assured – and mechanisms for supporting change to husbandry systems, such as funding, communication, training and education.

The report of the visit will be passed to the Department for Environment Food & Rural Affairs (Defra), who will liaise with stakeholders and then help coordinate and implement the recommendations made within the report. The RSPCA will contribute to the recommendations concerning animal welfare through its membership of the England Cattle Health and Welfare Group.

## Teagasc visit

In February, the Farm Animals Department hosted a farm visit for Assistant Professor Joanna Marchewka from the Polish Academy of Science, who was previously a post-doctoral researcher at the Agriculture and Food Development Authority for Ireland (Teagasc). She was interested to learn more about the *RSPCA welfare standards for dairy cattle* and the visit had a particular focus on welfare outcome assessments in dairy cattle. Our visitor collected information during the visit, which will be used to help inform the direction of future studies.

## WELFARE OUTCOME ASSESSMENT

**AssureWel** is a collaborative project between the RSPCA, the Soil Association and the University of Bristol. The project started in 2010 and its primary aim has been to improve the welfare of farm animals via the development of Welfare Outcome Assessment (WOA) protocols that can be used within farm assurance scheme audits.

Prior to the AssureWel Project, scheme audits focused generally on welfare 'inputs', i.e. the resources producers provide to their animals, such as food, water, space and light. Although it is important to assess welfare inputs, scheme audits also need to include an assessment of the animals' welfare 'outcomes', which refer to characteristics of the

animals themselves, such as their health and behaviour. This type of assessment provides schemes with a more direct, and therefore more valid, assessment of the level of welfare being achieved on-farm.

The AssureWel project set out to develop WOA protocols for laying hens, dairy cattle, pigs, meat chickens, beef cattle and sheep, and to implement these protocols into the on-farm audits undertaken by RSPCA Assured – the RSPCA's farm assurance and food labelling scheme – and Soil Association Certification, as well as other schemes, such as Red Tractor Assurance. Progress during 2016 is outlined below.

### WOA protocols developed for meat chickens, beef cattle and sheep

The final year of the AssureWel Project has seen the refinement and finalisation of WOA protocols for the final three species covered under the project: meat chickens, beef cattle and sheep. The development process has involved reviewing the existing research regarding the welfare assessment of these species, undertaking both small and large scale on-farm pilots to trial the protocols, and extensive consultation with researchers, veterinarians and representatives from the farming industry. The WOA protocols developed for these three species will start to be used by both RSPCA Assured and Soil Association Certification in early 2017.



### AssureWel International 2016

AssureWel hosted its third international meeting in September 2016 in Germany in collaboration with the Thünen Institute of Organic Farming. The AssureWel International meetings are an opportunity for like-minded farm assurance schemes and other interested organisations to come together to learn about the AssureWel Project and to share best practice in relation to using welfare outcome assessment to improve farm animal welfare.

Delegates received an update on the development of the AssureWel protocols for meat chickens, beef cattle and sheep, and discussed how farm assurance schemes can use the data collected through welfare outcome assessments to improve animal welfare at both the individual farm and whole scheme level. Although the AssureWel Project comes to a close at the end of 2016, further AssureWel International meetings are planned for 2017 and beyond to support the continued use and growth of welfare outcome assessment within farm assurance.

### Scientific paper on laying hen welfare

A paper, co-authored by the RSPCA's Dr Marc Cooper and Dr Julia Wrathall: *Animal welfare initiatives improve feather cover of cage-free laying hens in the UK*<sup>1</sup> was published in the scientific journal *Animal Welfare*. The paper reviews the significant improvement in the feather cover of laying hens reared under the RSPCA Assured scheme since the formal implementation of laying hen WOAs into the scheme in September 2011. Welfare Outcome Assessment focuses on the health, physical condition and behaviour of the animals. As outlined in the 'AssureWel' section above, WOAs are developed to offer a practical and scientifically informed method of assessment that aims to provide a more objective, accurate and direct picture of animal welfare.

<sup>1</sup>Mullan S, Szmargd C, Cooper MD, Wrathall JHM, Jamieson J, Bond A, Atkinson C, and Main, DCJ (2016). *Animal welfare initiatives improve feather cover of cage-free laying hens in the UK*. *Animal Welfare* 25(2), p243-253

### Farm animal welfare and Brexit

The RSPCA Farm Animal Department and the Public Affairs team were asked by Defra to provide thoughts on areas of farm animal welfare legislation that could be improved post-Brexit (i.e. when the UK no longer has to follow EU-based Directives and Regulations). We provided input on a number of areas, including the use of subsidies to improve farm animal welfare, improvements to legislation regarding farm animal transport and slaughter, and better labelling of food products according to method of production and whether animals were stunned prior to killing.



**Dr Sophie Collins**

Scientific Officer – Ruminants

**“The AssureWel project's lasting legacy is that welfare outcome assessment will become an integral part of how farm assurance schemes function and will be seen as part of the normal process rather than an additional entity.”**

# Research animals



Animals are used for many different purposes in research and testing, and each area of use raises specific ethical, animal welfare and scientific issues. The RSPCA adopts a constructive, practical approach, aimed at developing more effective processes of ethical review and fuller implementation of the 3Rs\*.

Our primary aim is the replacement of animal experiments with humane alternatives. Until this can be achieved, we work to help ensure that the minimum numbers of animals are used and

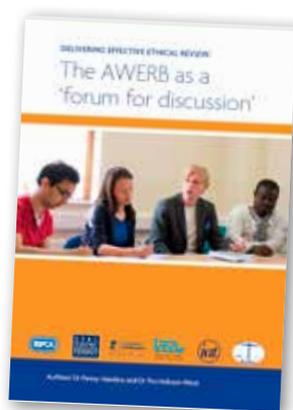
that suffering is reduced or avoided altogether. In addition to the specific initiatives highlighted in this section, we have a high level of ongoing liaison with those involved in the regulation, care and use of animals in science, including senior officials within the European Commission, and the Home Office Animals in Science Regulation Unit.

\*The 3Rs are: replacement of animals with humane alternatives, reductions in animal numbers to the minimum necessary to answer the scientific question, and refinement of husbandry and procedures to reduce suffering and improve welfare throughout the animals' lives.

## PROMOTING EFFECTIVE ETHICAL REVIEW

Helping to ensure robust [ethical review](#) of animal use is a critically important area of work for the RSPCA. The Research Animals Department made good progress throughout 2016 with our initiatives to support Animal Welfare and Ethical Review Bodies ([AWERBs](#)) – local committees that aim to ensure all use of animals at their respective establishments is carefully considered and justified, and that animals are replaced with humane alternatives wherever possible, animal numbers and suffering are minimised, and welfare is improved. AWERBs have important responsibilities with respect to developing and implementing each establishment's local 'Culture of Care' and providing opportunities for staff with different roles to raise and discuss ethical issues.

# Working together



Towards the end of 2015, the RSPCA reached out to other organisations that are actively working to support and promote the AWERB, including the Laboratory Animal Science Association (LASA), Institute of Animal Technology (IAT), Laboratory Animal Veterinary Association (LAVA), Animals in Science Regulation Unit (ASRU), Animals in Science Committee (ASC), Universities Federation for Animal Welfare (UFAW), the Boyd Group, and training organisations. We met to share information about our ongoing activities and carry out a 'gap analysis' to see where we could better work together and focus our collective efforts with respect to AWERBs.

This led to the first AWERB-UK meeting, which was jointly convened by RSPCA, LASA, LAVA and IAT and held in London in May. The event brought together over 100 AWERB members with different roles including animal technologists, lab animal vets, AWERB chairs, establishment licence holders, lay members and scientists. All of the presentations from the day, plus reports from workshops focusing on AWERB tasks and the contributions that can be made by different 'types' of member, are available [online](#). The event was very well received and a similar day will be held in 2017. A second outcome from the AWERB-UK meeting was a booklet on the 'forum for discussion' function, with guidance and action points, which was supported by the University of Nottingham Economic and Social Research Council Impact Leaders Programme.

The RSPCA and other AWERB stakeholder organisations plan to meet regularly to co-ordinate our activities and will also liaise with the [ASC](#) to ensure that there is no duplication of effort.



**Dr Penny Hawkins** –  
Head of RSPCA Research Animals Department

“We’ve been helping local ethics committees do even more to challenge and reduce animal use, and to ensure that animal welfare is given the priority it deserves”.

## Other activities and events

Laboratory animal research, breeding and supply establishments in other European Union Member States are required to have Animal Welfare Bodies (AWBs), which are similar to the AWERB in the UK but have reduced functions and membership. We are keen to promote the UK approach to local ethical review in other countries, so with LASA we jointly convened a session on Animal Welfare Bodies at the Federation of European Laboratory Animal Science Associations (FELASA) Congress in June. This provided an opportunity for speakers and delegates to compare how the AWB was progressing in their own countries, and gather information to help inform good practice, and we also gave a presentation on the UK AWERB and its tasks. Over 200 people attended from throughout the EU and we received very positive feedback.

It is especially important for researchers to participate in and support their local AWERB's activities, and to view their local committee as an asset that will help them to improve their science as well as animal welfare. In July, we held a workshop on 'engaging with ethical review' as part of a Society for Experimental Biology meeting to promote the 3Rs in basic biology research. This was an opportunity to ask scientists from both within and outside the UK for their views on their own local ethical review bodies, as well as to promote all the benefits of involvement in local review. We plan to continue our work on engaging scientists with the AWERB throughout 2017.

The annual [RSPCA Lay Members Forum](#) was held in London in December, and was attended by over 80 delegates from over 40 establishments. Presentations addressed a range of topics including reviewing and developing the AWERB, fulfilling the task of supporting staff and training, implementing the 3Rs in pain research and creating a 'caring culture'. The Home Office presented a talk on dealing with projects that raise 'societal concerns' and the final talk and discussion session focussed on 'putting Ethics into the AWERB'. Participants' feedback indicated that the day was extremely useful and we will continue to run the forum in addition to the broader AWERB-UK meetings.

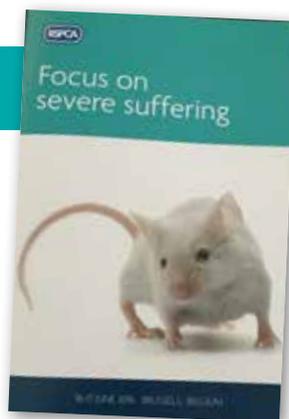
## FOCUS ON SEVERE SUFFERING

### Major international meeting

Around 850,000 to one million animals used in research and testing across the EU experience 'severe' suffering each year.

The Research Animals Department has been working since 2010 on a major initiative to develop and promote practical steps to help [end severe suffering](#). Last year, a generous RSPCA supporter pledged to provide funds to enable an ambitious new international element to our initiative. It would, for the first time, bring together people involved in the regulation, care and use of research animals from across Europe specifically to discuss how to tackle severe suffering.

This unique [event](#), bringing together 150 participants from 24 countries including representatives of governments, regulatory bodies, industry, academia, national committees and local Animal Welfare Bodies, took place in Brussels in June. The meeting aimed to help those involved in the regulation, use and care of animals in science ensure that every opportunity is taken to recognise and reduce, or ideally avoid, severe suffering. A summary report is [available](#) and the presentations from the event can be requested by emailing: [research.animals@rspca.org.uk](mailto:research.animals@rspca.org.uk).



**Dr Elliot Lilley** –  
Senior scientific officer

“We continue to push for an end to severe suffering for all laboratory animals. Our ground-breaking ‘Focus on severe suffering’ conference showcased, on the international stage, our work towards achieving this goal”.

## Expert working groups

Alongside our [Focus on severe suffering website](#), which we jointly developed with LASA, LAVA and the IAT, the Research Animals Department has convened a series of [expert working groups](#) that address specific procedures which have the potential to cause severe suffering.

Four reports making recommendations to help avoid or reduce severe suffering have already been produced, focusing on seizures, convulsions and epilepsy; the Experimental Autoimmune Encephalomyelitis (EAE) ‘model’ of multiple sclerosis; rheumatoid arthritis research; and sepsis. These have all been very well received by scientists, animal technologists, lab animal vets and the Home Office, which has used the sepsis report to review UK sepsis research. The fifth expert working group is addressing spinal cord injury research and made good progress in 2016.





## ON THE INTERNATIONAL STAGE

A key element of our outreach and impact is through our work with colleagues in [RSPCA International](#) and [Eurogroup for Animals](#), to promote robust regulation of animal experiments, effective ethical review, and fuller implementation of the 3Rs internationally. Our activities during 2016 included:

- Responding to the European Commission's questionnaire for key stakeholders as part of the EC's work [reviewing the implementation and impact of Directive 2010/63/EU](#) on the protection of animals used for scientific purposes. Our submission emphasised the critical importance of effective implementation of the Directive's requirements in all Member States, and identified various aspects where more can and should be done.
 

These, and other concerns of Eurogroup's member organisations, were also set out during a presentation (given by the Research Animals Department's Barney Reed in his capacity as Chair of Eurogroup's Working Group on Research Animals) at the November [meeting](#) of the European Parliament's Intergroup on the Conservation and Welfare of Animals.
- The Directive requires that the Commission's review 'should take into account advancements in the development of alternative methods not entailing the use of animals, in particular of non-human primates'. As a result, the European Commission [tasked](#) its Scientific Committee on Health, Environmental and Emerging Risks (SCHEER) to update its 2002 'opinion' on the need for non-human primates in biomedical research, production and testing of products and devices.
 

We submitted our views on this to SCHEER in June, following a call for information. The panel is expected to report by May 2017.
- We also responded to a public [survey](#) from [EURL-ECVAM](#) on how knowledge on the 3Rs is currently shared, highlighting areas where this could be improved.
- In December, we participated as an invited panelist at the European Commission's [Scientific Conference on Non-animal approaches – the way forward](#).
- At the start of October, we accepted an invitation from the Chinese Association for Laboratory Animal Science (CALAS) to deliver a one-day workshop in Nanning, promoting animal welfare, ethics and the 3Rs to scientists from across China. We were additionally invited to participate in the CALAS Annual Congress and give a keynote presentation on the importance of good animal welfare and robust regulation of animal use. This important work further builds upon activities that the RSPCA Research Animals Department and RSPCA International have been engaged in since 2007 – working alongside key partner organisations in China, to help the country develop its first laws governing the use of animals in science, and to provide practical guidance on implementing regulations, applying the 3Rs and reducing lab animal use and suffering – all of which improves the quality of the science.
- We have also provided further assistance to the South African Association for Laboratory Animals Science (SAALAS) in its work to identify, and provide for, the training needs of members of institutional Animals Ethics Committees (AECs).



## Aspects of UK regulation

Throughout the year we have continued to liaise, and discuss key aspects of regulation, with the Home Office [Animals in Science Regulation Unit \(ASRU\)](#). This has included attending regular stakeholder meetings with senior ASRU officials, and providing comment on draft guidance documents and advisory notes. We also attended the end of year annual [Animals in Science Meeting](#) jointly convened by the Royal Society of Biology and Home Office.

In September, Barney Reed was appointed (in a personal capacity) to the [Animals in Science Committee \(ASC\)](#) – the public body established to provide impartial, balanced and objective advice to the Secretary of State on all matters concerning the use of animals in scientific procedures. Dr Penny Hawkins, who previously served on the ASC, has been co-opted onto its AWERB sub-committee until September 2017.

There has also obviously been a lot of interest and intense discussion across a variety of fora around what UK animal welfare legislation might and should look like ‘post-Brexit’. We responded in February to a consultation from the Parliamentary Science and Technology Committee on [EU regulation of the life sciences](#), and in November we participated in a meeting of animal welfare and protection organisations convened by the Association of Lawyers for Animal Welfare to consider the animal welfare challenges and opportunities presented by Brexit. We will continue to actively monitor developments, and in particular will work to ensure that there is no dilution or weakening of the UK’s regulatory controls – or standards of animal welfare – as it positions itself outside of the European Union.



**Barney Reed –**  
Senior Scientific Officer

“By working with our international partners we’ve taken our messages promoting the importance of effective regulation, ethical review and the 3Rs to even more scientists, regulators and animal care staff worldwide.”

## Focus on... wild animals used in research

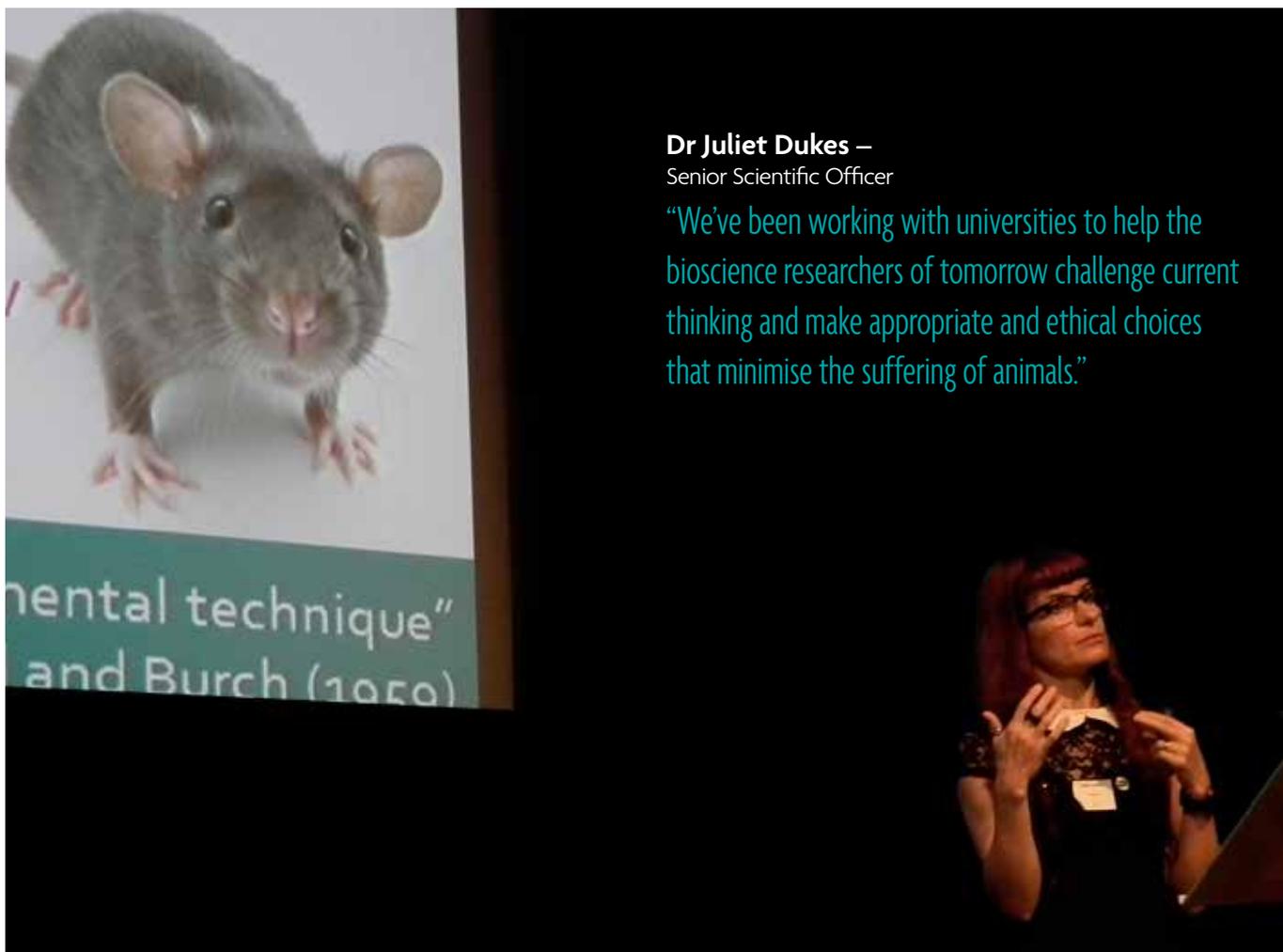
In September 2016, and in conjunction with the Animal and Plant Health Agency ([APHA](#)), we convened the second *Welfare of wild animals used in research* meeting. Sixty delegates involved in regulation, or the use or care of wild animals – from bats to badgers, and seals to seabirds – gathered to discuss key welfare issues around capture, trapping and tagging, and refining housing and care in captivity, as well as ethical review. A third meeting will be held in 2017.



## Focus on... rodents and rabbits

The 23rd annual [Rodent Welfare Group Meeting](#), which we convened jointly with the Universities Federation for Animal Welfare ([UFAW](#)), was held in Edinburgh in 2016. This was the first time we had held the meeting in Scotland and we were delighted to welcome around 70 delegates from universities and pharmaceutical companies, mostly located in Scotland although some English facilities were also represented. A report of the meeting will be submitted to *Animal Technology and Welfare*.





**Dr Juliet Dukes –**  
Senior Scientific Officer

“We’ve been working with universities to help the bioscience researchers of tomorrow challenge current thinking and make appropriate and ethical choices that minimise the suffering of animals.”

## 16+ education in ethical human-animal interactions

**During 2016, we have been reaching out to the university community to identify what the RSPCA can do to help the bioscience researchers of tomorrow to think more critically and reflectively about the potential use of animals in their research.**

We have spoken to the leaders of doctoral schools at universities across the country and we are now helping some of these to develop courses in animal welfare, ethics and humane science for students who are using, or may go on to use, animals in their work.

Alongside the RSPCA's Education Department, Inspectorate, Animal Centre Management, and the other departments in

the Science Group, the Research Animals Department has also been liaising with land-based colleges throughout England and Wales to assist them with the animal welfare and ethics content of their courses, including providing projects for students studying animal welfare, and delivering lectures and workshops.

2016 also gave us an opportunity to help inform the content of the National Curriculum for Key Stage 1-4, and the content of GCSE and A-level Biology courses in England and Wales. It is particularly important to address learning at this level, as for many it will be the last formal education they receive about how humans interact

with animals. We took part in the [Royal Society of Biology](#) workshop to determine what GCSE and A-level students should be learning and how we can help those who then go on to study biology-related subjects at university.

In September we attended and participated in the first international conference on [Human Behavioural Change for Animal Welfare](#), presenting our work with universities to promote the inclusion of ethics, the 3Rs and animal welfare on postgraduate programmes. We formed new relationships with other organisations working towards the same animal welfare goals and we will continue to work alongside our external

partners, developing community resources and a 'Think Tank' to encourage positive behaviour change towards the care and use of animals.

In December, *The Guardian* published the Research Animals Department's opinion piece calling for education in ethics and animal welfare, under the title: [‘We are getting animal research wrong – only education can fix it’](#). We hope this message reaches a wide audience and inspires change in the way the bioscience researchers of tomorrow are taught, increasing the quality of science and minimising the suffering of animals.

# Wildlife



Despite growing public concern, the appreciation of the welfare needs of wild animals is often inadequate. The RSPCA's Wildlife Department seeks to improve the welfare of both captive and free-living wild animals through research, promoting awareness of the welfare requirements of wild animals, and an emphasis on a precautionary and humane approach to human interactions with wild animals.

Our work is wide ranging and includes: meeting with government officials and politicians to encourage improvements in wildlife laws and policies, such as banning wild animals in circuses; responding to

government consultations, such as a review of animal establishments licensing in England; working with universities and other institutions involved in the study of wild animals; and collaborating with other organisations to end some of the more cruel aspects of our relationship with wild animals, such as working to stop the sale of glue traps.

During 2016 the four RSPCA wildlife centres took in 17,202 injured, sick or orphaned wild animals for rehabilitation; 6,184 of which we were able to be successfully released. These admissions consisted mainly of birds (12,714) and mammals (4,409) with intake peaking between May and August.

## WILDLIFE IN THE WILD

### Workshop on improving wildlife legislation in China

In April 2016, the RSPCA's Wildlife and International departments teamed up with the Zoological Society of London to host a workshop at London Zoo for a delegation of wildlife law experts from China. This delegation was researching wildlife legislation in other countries in order to review and amend Chinese legislation relating to the protection of wildlife and animal welfare.

The workshop's aim was to introduce the principles supporting wildlife legislation in the UK, what legislation exists, how it works, how it is enforced and how international legislation is incorporated in the UK. There were a number of speakers from different organisations who have experience of working with the legislation through enforcement, or by using it to gain better protection for certain habitats or species of wild animals or plants. They also gave their organisation's view of the current legislation and described how it worked, along with its advantages and disadvantages. The visiting delegates presented the rationale for updating China's wildlife law and on the complexity of the competing interests involved in the revision process. The revised law will come into effect in January 2017.

The workshop was well received by the delegates and we hope it will be instrumental in leading to better wildlife protection in China.

#### Adam Grogan

Head of Wildlife Department

“The visiting delegates presented on the rationale for updating China's wildlife law and on the complexity of the competing interests involved in the revision process.”



### European oiled wildlife – response training modules

Previous RSPCA Science Group Reviews have reported on the collaborative work that we have been conducting with other groups in developing better standards and training for oiled wildlife response in Europe and further afield.

One of the main outcomes of this work was realised in 2016 with the first delivery of modules designed to train volunteers and staff in the various processes of oiled wildlife rescue and rehabilitation. These modules are designed for different personnel – for example, the advanced responder course included training on search and collection, initial assessment of casualties, washing and post-wash care. Other modules include one for veterinarians on oiled wildlife treatment; a module for rehabilitation centre managers; and a module for training advanced responders in certain specialist areas where more detailed knowledge or skills are required.

This training – the development of which was made possible through grant funding from the European Commission – was put together using the most relevant and up-to-date scientific knowledge available, ensuring it is as efficient as possible in protecting the welfare of oiled wildlife. Over the next couple of years, we hope to establish a way of delivering this training to a wider audience.



# Living with wildlife

As part of the RSPCA's ongoing commitment to public engagement and the provision of sound, scientifically supported information and advice, our *Living with wildlife* series of guides has been further extended to include *Living with bats*, and *Living with rats and mice*. These guides, underpinned by scientific and practical information, already cover badgers, foxes, grey squirrels, hedgehogs, moles, deer, reptiles, amphibians, nesting birds, pigeons, gulls and Canada geese. The factsheets provide guidance to those people living in proximity to wildlife species and promote non-harmful, humane deterrents in situations where wildlife may be perceived as a problem.

In producing these guides, we had input from organisations such as the Bat Conservation Trust – establishing what key issues are faced by the public when living alongside specific wild species. Guidance also includes up-to-date information on legislation as it relates to these species, allowing readers to be reassured they are acting within the law at all times. As well as providing information on deterrence and problem-management, these guides also contain general ecological information on the species and advice on encouraging wildlife into gardens and what to do when encountering a wild animal apparently in need of help.



## Llewelyn Lowen

Scientific Information Officer

**“The guides provide useful information for those people living in proximity to wildlife species, promoting non-harmful, humane deterrents in situations where wildlife may be perceived as a problem.”**



Pet corn snake caught in a glue trap – October 2015

## WILD ANIMALS AND GLUE TRAPS

**The RSPCA is opposed to the manufacture, sale and use of any glue-type trap because they cause unacceptable suffering and are, by their nature, indiscriminate.**

In 2014 the RSPCA launched the *Wild animals and glue traps* project; asking retailers of vertebrate glue traps to take more responsibility for their actions. Retailers were urged to follow the *Pest Management Alliance Code of Best Practice* by ensuring they only sell to pest control technicians trained and competent in the application, maintenance and disposal of the traps (including the humane euthanasia of the target species and safe removal of non-target species).

2016 has seen a number of developments and significant progress in limiting the use of glue traps by unqualified members of the public. Early in 2016, we made Amazon UK aware

of the sale of rodent glue traps on their site and – in line with their pre-existing policy against such traps – they promptly had the items removed. Additionally, in June 2016, the RSPCA – alongside representatives from the Humane Society International, the Pest Management Alliance and others from the pest control industry – met with Defra for a roundtable discussion on the issue.

There was general agreement and shared concern over the availability of glue traps to the public, as well as the public's lack of knowledge regarding how or when to use glue traps and their legal responsibility for the welfare of trapped animals. We hope to maintain a productive dialogue with the pest control industry and will continue advising the public and others about the welfare implications of using glue traps whilst working towards a ban.

# Wildlife as pets

## Selling animals as pets

The RSPCA responded to Westminster government proposals<sup>1</sup> to overhaul pet sales legislation in England that could affect hundreds of thousands, if not millions, of animals being sold in pet shops, including exotics such as reptiles and amphibians.

An estimated 2,300<sup>1</sup> pet shops are licensed in England, although many more 'pet vending' businesses are thought to operate, particularly over the internet. A lack of clarity on who should be licensed is one of many problems with the current, outdated, pet shop legislation – the Pet Animals Act 1951.

Replacing this, and other 'animal establishment' legislation (covering dog breeding, cat and dog boarding and riding establishments) with a single piece of secondary legislation under the Animal Welfare Act 2006 was one of the main proposals – a change that we, and most other respondents, welcomed. This should simplify enforcement and open the door for long-awaited improvements. For example, we want to see the whole supply chain licensed, not just 'shop front' businesses.

Requiring commercial pet sellers to provide written care information is another positive proposal, and something we have advocated for years. Quality is key, both for care information and standards used by licensing officers ('model standards') and it is vital these reflect current scientific knowledge and good practice.

We rejected the Department for Environment Food and Rural Affairs' (Defra) proposal to exempt sellers who are members of an accredited body from licensing, as did most local authorities<sup>2</sup>. We believe that creating a two-tier system, and removing powers from local authorities, would be confusing and damaging to animal welfare.

Defra also suggested repealing performing animal regulations – a proposal that we, and the majority of respondents, rejected. Instead we, and many others, called for more, not less, regulation and urged performing animals to be brought into the licensing scheme.

Our other recommendations included: to create a centralised enforcement body, similar to the one we have for farm and research animals; to create a central, publicly available, register of licence holders, including internet sellers/advertisers; and to restrict the sale of some exotics as pets, such as primates, at a national level, on the grounds that they are totally unsuited to being kept in a household. We will be contributing to discussions about how to take proposals further – expected 2017/2018.

<sup>1</sup>Defra (2015) [Consultation on the review of animal establishments licensing in England](#). December 2015. ran from December 2015 to March 2016. [www.gov.uk/defra](http://www.gov.uk/defra)

<sup>2</sup>Defra (2016) [The review of animal establishments licensing in England. A summary of responses](#). September 2016. [www.gov.uk/defra](http://www.gov.uk/defra)



## Concern about exotics kept as pets

**Exotic pets like reptiles can be difficult to care for properly and prove too much of a commitment for many owners, as they can be challenging and expensive to look after. The animal may grow very large, live for a long time, become aggressive or require a licence or other paperwork to be legally kept or sold. They have the same needs as in the wild, which must be met in captivity by law under the Animal Welfare Act 2006.**

We have seen a worrying trend in 2016 for abandoning reptiles; 1,670<sup>3</sup> were collected by the RSPCA Inspectorate, of which 391 were 'abandoned' and 755 classed as 'strays' (presumed escaped or deliberately released/dumped). This was an increase of five percent from 1,584 collected in 2015. In 2016 the number of calls we received about reptiles has again increased, with 6,780 calls made to the RSPCA Cruelty Line<sup>4</sup>.

The wildlife team assists colleagues with incidents involving exotic animals by providing expertise on species identification, advice about legislation and care information, plus giving media interviews.

We provided care information to officers dealing with incidents on skunks, a range of captive 'pet' bird species, boa constrictors, marmosets, African pygmy hedgehogs, giant African land snails, map turtles, a sugar glider, a horned frog, raccoon dogs, a fennec fox, a corsac fox, an Arctic fox and many different species of reptile! This illustrates the worrying diversity of species the RSPCA are currently faced with, as they are being kept as pets by members of the public.

In August we advised colleagues in the field on the newly published list of 'species of Union concern', which are now regulated by the EU Invasive Alien Species (IAS) Regulation (1143/2014). Concerted action across the European Union is required to manage the potential adverse impacts of these species. Some species included in the list are known to be kept as pets – for example, pallas squirrel, small Indian mongoose, American bullfrog, South American coati, raccoon, fox squirrel, Siberian chipmunk and red-eared/yellow-bellied terrapin (*Trachemys scripta* spp).

<sup>3</sup>RSPCA data (Cognos report from TAILS TC25), collections up to 19th December 2016.

<sup>4</sup>RSPCA data (Cognos report from TAILS TC60a), advice, collection and complaint calls up to 19th December 2016.

# Wildlife casualties

## RSPCA MALLYDAMS WOOD WILDLIFE CENTRE Red-footed Booby

On 4 September 2016, RSPCA Mallydams Wood Wildlife Centre received an unusual bird that had landed on a pebble beach at St Leonards-on-Sea, Hastings – brought to the centre by East Sussex Wildlife Rescue Ambulance Service (WRAS). The bird was a red-footed booby (*Sula sula*), a large seabird found in tropical habitats (from the Pacific and Indian Oceans to the Caribbean and South-West Atlantic Ocean) and never before reported wild in the UK.

The bird was extremely weak, dehydrated and thin, weighing just 900g on arrival at the centre. After an initial assessment the bird was moved to intensive care where efforts were made to stabilise him as quickly as possible. Heat lamps were provided, given the climates the booby was accustomed to living in, and the bird was initially fed on a piscivore critical care solution (Emeraid LLC) and Zoolyte. This treatment provided the bird with an easily absorbable and highly digestible blend of purified amino acids, hydrolyzed proteins, stabilized vitamins, dietary nucleotides to provide DNA and RNA precursors, plus simple carbohydrates for energy. The booby responded very well to the initial treatment and within a few weeks he was able to be hand-fed sprats and rapidly put on weight.

Release proved a big issue with the red-footed booby – the RSPCA always aims to release wild animals back to where they were found, but what to do with an animal that has travelled an estimated 4,000 miles?

We explored various options to return the bird to his usual habitat and the decision was made to transport the bird to a nature reserve in the Cayman Islands. With much help from the Specialist Wildlife Services (SWS) the paperwork was completed for the bird's departure on December the 15th, with his safe arrival on the 16th – thanks to British Airways and IAG Cargo. Just how this bird ended up so very far from home is, and will likely remain, a mystery.



## RSPCA EAST WINCH WILDLIFE CENTRE Twin seals

Staff at RSPCA East Winch Wildlife Centre helped to rear the world's first recorded wild-born grey seal twins. After four months in care they were both successfully released on the 22 March 2016 – off the Norfolk coast at Horsey Beach – where they were originally found abandoned by their mother, following a suspected disturbance.

The rescue followed as a result of concerns that the mother had not been back to feed them for 24 hours. Despite this lack of feeding, the pups (just ten days old) weighed a healthy 24kg and 22kg when they arrived; suggesting that up until being scared off, the mother had been doing a good job at feeding the pups. Upon arrival the pups were fed a "fish soup" mixture every three hours by stomach tube, achieving weights of 41kg and 44kg at the time of release.

Although there were suspicions that the pups were twins (as the mother fed both the pups and stayed with the pair at a significant distance from the other seals on the beach), samples were taken for DNA testing, consisting of blood taken from the birthplace scene and hair follicles collected at RSPCA East Winch. These samples were sent to the Institute of Marine Research in Bergen in Norway, who confirmed that the seals were fraternal twins – a world-first recording in the wild.

## Conjunctival flora of healthy and diseased eyes of grey seals: implications for treatment

Grey seals are a commonly and regularly admitted species at wildlife centres – RSPCA East Winch Wildlife Centre assesses and cares for an average of 50-60 individual seals every year. Amongst those seals undergoing care, ocular pathology is a common problem and while some are brought in with pre-existing conditions (generally attributed to trauma), other seals develop ocular issues after being brought into captivity – particularly ulcerative keratitis. Even after treatment, these ulcerations can become 'melting' ulcers, often leading to a perforated cornea and permanent loss of vision in the eye.

Between November 2012 and February 2014, 32 grey seals (of ages between approximately two days to four months old) had conjunctival swabs taken on admission to the centre, for the purposes of identifying ocular bacterial flora present. A further nine seals with confirmed ocular pathology were also swabbed.

The study successfully identified a range of bacteria on admission, most commonly *Gemella haemolysans*, *Escherichia coli* and *Clostridium perfringens*. Discussions on the presence of these bacteria suggest no relationship between the isolates and the type of pathology and, coupled with the finding that most of the bacteria were also found in healthy eyes, suggests that these are opportunistic pathogens and that the cause is likely traumatic, rather than infectious.

The one exception was in 'melting' ulcers, all of which were associated with *Pseudomonas aeruginosa*; suggesting a significance in the development of stomal ulceration in captive seals. Implications for the treatment of 'melting' ulcers were discussed and included preparatory antibiotics (from a family with recognised activity against *Pseudomonas*), topical eye treatments (particularly fluoroquinolones and aminoglycosides) and other medical or surgical measures (e.g. autologous serum administration, subpalpebral lavage systems, subconjunctival injections of antibiotics, systemic antibiotics and surgery).

## RSPCA WEST HATCH WILDLIFE CENTRE

### Veterinary treatment of fox casualties

The red fox (*Vulpes vulpes*) is a widespread and relatively common species throughout Britain and their generalist, opportunistic nature has allowed them to populate urban habitats across the country. This success, particularly in urban environments, also makes them a common wildlife casualty brought in to both wildlife centres and private veterinary practices.

Problems can arise in veterinary practices that have little or no experience in dealing with wild animals, with many practising vets treating casualty foxes in the same way as they would domestic dogs. Whilst foxes can be medically or surgically treated in much the same way as a domestic dog, many aspects of their behaviour and ecology differ greatly. These differences need to be incorporated by veterinary practices in order to protect the welfare of the fox and improve the chances of successful rehabilitation. Vets at RSPCA West Hatch and RSPCA East Winch wildlife centres co-authored an article published in 2016 in the journal *In Practice* aimed at identifying key aspects of handling and treating fox casualties presented at practices.

It is important that foxes are housed appropriately for their needs – as wild animals they need to be kept in as quiet an area as possible, with cover provided to allow hiding. Contact with humans should be minimised (to avoid ‘taming’ cubs) and avoided altogether with other species (particularly domestic dogs, which are perceived as predators). Whilst standard pet carriers/kennels and roofed walk-in kennels (for cubs and adults respectively) are appropriate for short-term treatment, long-term rehabilitation will require more specialist, outside runs or pens.

The collection of an accurate history, including the place where the animal was found, is critical; some symptoms may be difficult to assess once in captivity (for example, a limp may have been visible in the wild but not once captive) and adult foxes will need to be returned to their original territory. Foxes can act as wildlife reservoirs for zoonoses (like sarcoptic mange and leptospirosis) and can bite on occasion, so appropriate personal protective equipment (PPE) and handling techniques should be employed. During the initial assessment, euthanasia will need to be considered if the fox is not fit to survive when put back into the wild.

As well as addressing the use of first aid, anaesthesia, analgesia and therapeutics in wild foxes, the paper goes on to outline the specific approaches practising veterinarians should take when dealing with trauma, poisoning, contamination, hydrocephalus, infectious diseases (viral, bacterial and parasites) and orphaned or abandoned cubs.



## RSPCA STAPELEY GRANGE WILDLIFE CENTRE

### The university of wildlife

Injured and sick wild animals, are most commonly picked up by members of the public and taken to a vet practice. However, many vets in practice have very little experience working with British wildlife species, and the prospect of being responsible for their care can be rather daunting. The RSPCA picks up thousands of wild animals from veterinary practices every year and sadly, all too often, their injuries and illnesses have not been detected, and they have not received the right treatment – not for a lack of caring, but for a lack of general understanding in wildlife medicine. This stems from the shortage of training in these areas at veterinary degree level.

Since April 2014, RSPCA Stapeley has been working in partnership with the University of Liverpool School of Veterinary Science. Their students now spend a week with the wildlife vets at Stapeley, building their confidence and skills with a huge range of wildlife and exotic species. Prior to this arrangement, students had very limited exotics and wildlife training, meaning that many of their graduates felt much less confident with some of these less familiar species.

Their week with us includes small group seminars, interactive case studies and lectures to practical training sessions both with cadavers and clinical cases. They cover topics such as species identification, anatomy, triage, diagnostics, common conditions and the health and safety implications of working with wildlife and exotic animals. The students spend much of the week working alongside the vets in the hospital learning important skills such as x-ray, anaesthesia and surgery and learning how to do simple but invaluable laboratory diagnostics.

Students are feeding back to us that they are feeling infinitely more confident and better equipped to deal with the range of species they may be required to see in practice. They feel that this experience, albeit only one week, will stand them in really good stead for treating wildlife casualties as qualified vets.

In addition to introducing wildlife training to the undergraduate curriculum, RSPCA Stapeley Grange also supports qualified vets who have a particular interest in British wildlife medicine. We run an internship programme, which is for qualified vets, from the UK and overseas. This is a year-long training programme which gives vets access to a wide-ranging caseload of British wildlife as well as training from experienced wildlife vets and staff. For more information on internships please contact: [bev.panto@rspca.org.uk](mailto:bev.panto@rspca.org.uk)



# Responses to consultations

## European Commission

- Review of Directive 2010/63/EU on the protection of animals used for scientific purposes: Questionnaire for stakeholder organisations interested in the care and use of animals for scientific purposes.
- Scientific Committee on Health, Environmental and Emerging Risks (SCHEER) – Call for information regarding the ‘Request for an update to the scientific opinion on the need for non-human primates in biomedical research, production and testing of products and devices’.
- EURL-ECVAM – Public survey on ‘Accelerating progress in the Replacement, Reduction and Refinement of animal testing through better knowledge sharing’.
- European Commission consultation on REFIT evaluation of EU Zoos Directive.

## Home Office

- Animals in Science Regulation Unit (ASRU) document on interpreting the Code of Practice for housing chickens in the laboratory in conjunction with the RSPCA Farm Animals Department.

## Law Commission

- 13th programme of reform.

## Local government

- Wrexham Council Dog Control and Dog Fouling Proposed Public Spaces Protection Notice.
- Ceredigion County Council Dog Home Boarding Establishments Licence Conditions and Guidance.
- Caerphilly Council Dog Consultation.

## Department for Environment Food & Rural Affairs (Defra)

- Review of animal establishments licensing in England. in conjunction with the RSPCA Wildlife Department.
- Enhanced bovine TB surveillance and controls in the High Risk and Edge Areas of England.
- Bovine TB: A call for views on the potential improvement and simplification of the TB testing regime in the High Risk Area of England.
- Bovine TB: Tackling infection in pigs, sheep, goats, captive deer and South American camelids .

## Welsh Assembly Government

- Code of Practice for the Welfare of Dogs.
- Code of Practice for the Welfare of Cats.
- Code of Practice for the Welfare of Equines.
- The Introduction of Quarantine Units (QUs) to replace the 6 day standstill period in Wales.
- Code of Recommendations for the Welfare of Livestock, including meat chickens, breeding chickens and pigs .

## World organisation for animal health (OIE)

- OIE Guiding principles for the use of animal-based measures.
- Chapter of the Terrestrial Animal Code (TAHC) on the on-farm welfare of pigs (joint response from ICFAW).
- OIE DRAFT CODES – Animal Welfare and Pig Production Systems.
- OIE Guiding principles for the use of animal-based measures.

## Others

- Red Tractor Standards Consultations, including meat processing, poultry (broiler) welfare, chicken catching, livestock transport and pigs.
- House of Commons Science and Technology Committee – Inquiry: EU regulation of the life sciences.
- Consultations on Codes of Practice for management of invasive non-native species, for both England (through W&C LINK) and Wales.
- Government of Ireland’s consultation on draft Irish Standards of Modern Zoo Practice (ISMZP).

Companion animals Farm animals Research animals Wildlife

# Publications

## Companion Animals Department

- Potter A, Yeates J and Gaines S (2015) *Diagnosis and reporting of antifreeze poisoning*. Veterinary Record 177, p630.
- Lead author of [Breed Specific Legislation – A Dog's Dinner](#). RSPCA report.

## Farm Animals Department

- Mullan S, Szymaragd C, Cooper MD, Wrathall JHM, Jamieson J, Bond A, Atkinson C, and Main DCJ (2016). *Animal welfare initiatives improve feather cover of cage-free laying hens in the UK*. Animal Welfare 25(2), p243-253.
- RSPCA Welfare Standards for Pullets – revised 2016
- RSPCA Welfare Standards for Pigs – revised 2016

## Research Animals Department

- Hawkins P & Hobson-West P (2016). *Delivering Effective Ethical Review: The AWERB as a 'Forum for Discussion'*. RSPCA, Southwater, ISBN 978-0-901098-09-2.
- Hawkins P, Prescott MJ, Carbone L, Dennison N, Johnson C, Makowska IJ, Marquardt N, Readman G, Weary DM & Golledge HDR (2016). *A Good Death? Report of the Second Newcastle Meeting on Laboratory Animal Euthanasia*. Animals 6(9), p50. doi:10.3390/ani6090050.
- Osborne N, Paull G, Grierson A, Dunford K, Busch-Nentwich EM, Sneddon LU, Wren N, Higgins J & Hawkins P (2016). *Report of a Meeting on Contemporary Topics in Zebrafish Husbandry and Care*. Zebrafish 13(6), p584-589. doi.org/10.1089/zeb.2016.1324.
- Davies GF, Greenhough BJ, Hobson-West P, Kirk RGW, Applebee K, Bellingan LC, Berdoy M, Buller H, Cassaday HJ, Davies K, Diefenbacher D, Druglitrø T, Escobar MP, Friese C, Herrmann K, Hinterberger A, Jarrett WJ, Jayne K, Johnson AM, Johnson ER, Konold T, Leach MC, Leonelli S, Lewis DI, Lilley EJ, Longridge ER, McLeod CM, Miele M, Nelson NC, Ormandy EH, Pallett H, Poort L, Pound P, Ramsden E, Roe E, Scalway H, Schrader A, Scotton CJ, Scudamore CL, Smith JA, Whitfield L & Wolfensohn S (2016). *Developing a Collaborative Agenda for Humanities and Social Scientific Research on Laboratory Animal Science and Welfare*. PLoS ONE 11(7): e0158791. doi.org/10.1371/journal.pone.0158791.
- Lilley EJ (2016). *Leading the way in raising publication standards*. *Pharmacology Matters* 9(2), p18.
- Hawkins P & Littlefair P (2016). *China's primates: EU can't have it all ways*. Nature 534, p179.
- Hawkins P, Atkinson J, Birt R, Cruden J, Duran A, Herrmann K, Leach M, Lopez-Salesansky N, McBride A, Paiba G, Roughan J & Golledge H (2016). *Report of the 2015 RSPCA/UFAW rodent and rabbit welfare group meeting*. Animal Technology and Welfare 15(1), p9-22.
- Jennings M & Hawkins P (2016). *Public expectations of the NVS. Conference paper, Laboratory Animal Veterinary Association Annual Conference 2015*. doi.org/10.13140/RG.2.1.2635.6087.
- Hawkins P (2016). *Birds in research and testing*. AV Magazine 2016 (1), p4-5. ISSN 0274-7774.
- Smith AJ & Hawkins P (2016). *Good Science, Good Sense and Good Sensibilities: The Three Ss of Carol Newton*. Animals 6(11), p70. doi: 10.3390/ani6110070.
- Hawkins P (2016). *The RSPCA focus on severe suffering project*. *Animal Technology and Welfare* 15(2), p89-92.

## Wildlife Department

- Kroshko J, Clubb R, Harper L, Mellor E, Moehrensclager A and Mason G (2016). *Stereotypic route tracing in captive Carnivora is predicted by species-typical home range sizes and hunting styles*. Animal Behaviour 117, pp197-209.
- Tolhurst B, Grogan A, Hughes H and Scott D (2016). *Effects of temporary captivity on ranging behaviour in urban red foxes*. Applied Animal Behaviour Science 181, p182-190. <http://dx.doi.org/10.1016/j.applanim.2016.05.004>
- Couper D and Bexton S (2016). *Veterinary treatment of fox casualties*. In Practice 38, p130-138.
- Fleming F and Bexton S (2016). *Conjunctival flora of healthy and diseased eyes of grey seals (Halichoerus grypus): implications for treatment*. Veterinary Record 179, p99. doi: 10.1136/vr.103690.
- Baker S, Ellwood S, Johnson P and Macdonald D (2016). *Moles and mole control on British farms, amenities and gardens after strychnine withdrawal*. Animals 6(6), 39. doi:10.3390/ani6060039.
- Authored chapters in Poisson K, Weiss R (2016). *Wildlife Rehabilitation – A Comprehensive Approach*. The IWRC, Eugene (OR).
- Chapter 9: Euthanasia.
- Chapter 20: Post release monitoring.
- Chapter 21: Research.

## BLOGS

### RSPCA Science Group

16 of our biggest achievements in 2016!

### Companion Animals Department

[Why it pays to spay your kitten.](#)

[Open letter to Crufts 2016 Dog owners out and about at Easter.](#)

[Crucifixion of dog on Marcella.](#)

[Overcoming separation anxiety - Flo's story.](#)

[14 tips for keeping "cool cats" in hot weather.](#)

[Get fit with your dog!](#)

[Firework season: Remember, remember your pet's this November!](#)

[Quirky kitties: investigating your cat's most curious behaviour.](#)

### Farm Animals Department

[Dog owners out and about at Easter.](#)

[The Pig Issue.](#)

Raising the issue of humane killing in light of the BVA call for CCTV footage to be stored and available on-site for viewing by official veterinarians.

### Research Animals Department

[We are getting animal research wrong – only education can fix it.](#)

### Wildlife Department

[The problems with glue traps.](#)

[Bearded dragon: food and nutrition guide.](#)

[Environmental enrichment for Phoenix the Corn Snake!](#)

[TB or not TB? That is not the question!](#)

[Leopard geckos: humidity and shedding.](#)

# The RSPCA Science Group

## Chief Scientific Officer

Julia Wrathall BSc MSc PhD ChMIAACE

## Companion Animals Department

Samantha Gaines BSc MSc PhD

Lisa Richards BSc

Alice Potter BSc MSc

Jane Tyson BSc MSc PhD

## Farm Animals Department

Marc Cooper BSc MSc PhD

John Avizienius BA MSc

Kate Parkes MA MSc

Mia Fernyhough BSc MSc PGCE

Siân Phillips BSc

Sophie Elwes MA MSc

Emily Coughlan BA BVetMed (Cantab) MRCVS

Sconaid Wastie BSc MSc

Sophie Collins BSc MSc PhD

Eoina Rodgers BSc BA

Luisa Dormer BSc MSc

Belinda De Lara

## Regionally based field staff

Allan Pearson OND

Charlotte Thomas BSc

Phil McCarthy

Emilie Wix BSc

Ian Michie BA NSch

Rob Howorth

Grace Harris-Bridge BSc MSc

## Research Animals Department

Penny Hawkins BSc PhD

Barney Reed BSc MSc

Elliot Lilley FBPhS BSc PhD

Juliet Dukes FRSB BSc MSc PhD

Maria McGrath (also covers Companion Animals)

## Wildlife Department

Adam Grogan BSc

Ros Clubb BSc DPhil

Nicola White BSc MSc PGDip

Llewelyn Lowen BSc MSc

Alexandra Jones BSc MSc (until 1.7.16)

Sue Gallagher

Evangeline Button BA (volunteer from 11.08.16)

## RSPCA Wildlife Centre Managers

Alison Charles VN

Bel Deering BSc DPhil

Lee Stewart BSc MSc

Simon Fathers BSc



Helping animals through welfare science

[www.rspca.org.uk/sciencegroup](http://www.rspca.org.uk/sciencegroup)



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