The aim of the animal welfare science update is to keep you informed of developments in animal welfare science relating to the work of the RSPCA. The update provides summaries of the most relevant scientific papers and reports received by the RSPCA Australia office in the past quarter. Email science@rspca.org.au to subscribe.
IN CELEBRATION OF OUR 50TH EDITION

It was January 2002 when the first edition of RSPCA Australia’s Animal Welfare Science Update hit the photocopier. Back then the Science team - all two of us - were keen to find a way of helping to ensure that the research we were reading in the rapidly expanding animal welfare science literature could be better disseminated to a wider audience. In a field as diverse as this, our challenge was to help bridge the communication gap between the scientists who wrote these papers and the practitioners and policy makers who could apply their research to improve animal welfare on the ground. People who did not have the time, access or inclination to read science journals.

Our answer was to provide plain English summaries of the most interesting of these papers and make them freely available to whoever joined our subscription list. And so the Science Update was born. I still remember reading through some of the papers we covered in our first edition, which included the behavioural assessment of dogs prior to adoption, risk factors for dog bite, feather pecking in layer hens and pain relief for lambs prior to tail docking and castration - all issues that continue to be the subject of research to this day.

50 editions later and we now have a truly international readership coming from every aspect of animal use and management. As the animal welfare science literature has expanded, so have we – our keyword searches include all English language journals that publish in the field, and we now have specialists in farm animals, companion animals and wildlife to help us choose the papers we summarise. It’s great to know that we’ve been a part of the transfer of knowledge from researcher to the wider world – it’s all part of RSPCA Australia’s mission to provide evidence-based solutions to animal welfare problems. If you’d like to help us continue this important work into the future, check out the job ad on page 19 – it might just be the opportunity you’ve been waiting for.

Dr Bidda Jones
RSPCA Australia

RSPCA QLD World Farm Animal Day Symposium 2015
Back to the future: Welfare in animal production

The speakers at this year’s symposium will examine animal production from an animal welfare perspective, focusing on the changes that have occurred in recent years, whether these have led to improved welfare and what we still need to achieve in the future.

The symposium includes a great range of speakers from academia, industry and animal welfare organisations, all with a keen interest in improving the welfare of production animals. The presentations cover pigs, chicken meat and egg production, and the cattle, sheep and dairy industries. The day will close with a panel discussion.

Friday 9 October 2015 at RSPCA Queensland Wacol Animal Care Campus.

Find out more here.
Blood doping is an illegal and unacceptable way of enhancing the performance of both human and equine athletes. Currently used blood doping methods usually involve stimulating the production of red blood cells using the hormone erythropoietin (EPO) or its recombinant form which increases the oxygen carrying capacity of blood. There is some evidence that cobalt chloride salts are being used to attempt to stimulate EPO production, but, to date, there is no evidence to suggest that cobalt chloride can enhance either human or equine performance. Cobalt chloride is inexpensive and freely available for purchase commercially, and so ill-informed trainers have easy access to these salts for administration to horses. Regulatory bodies have recently implemented a urinary and plasma threshold for the control of cobalt abuse.

Aside from the lack of evidence for enhanced athletic performance in horses, one of the key concerns is the paucity of information about the long-term safety of cobalt chloride administration and toxicity, especially in vital organs. In the US there have been reports of unexplained deaths in horses that were found to have elevated blood levels of cobalt chloride. Cobalt can be highly toxic. It exerts well-known and well-documented neurotoxic effects in addition to its toxic actions on the thyroid, the heart and the blood system. The authors also comment that cobalt–drug interactions are unknown, which could be significant as racehorses commonly receive nonsteroidal anti-inflammatory drugs and, in some racing jurisdictions, can race on furosemide medication. The general public does not have access to detailed information about the potential risks associated with the use of cobalt salts. Unfortunately, the Internet is a source of inaccurate, conflicting and misleading information about cobalt and its salts.

The authors state that it is important that more advanced technologies are developed to detect and control the use of cobalt and other EPO stimulating agents in horses. If the trend of unexplained deaths of horses with high levels of cobalt in their blood continues, research should be directed to determine the full effects of cobalt chloride on the physiology of horses. In the meantime, the authors voice their concern that trainers will continue to use internet search engines as the source of information about using cobalt chloride in an attempt to enhance performance. The authors suggest that veterinarians working in the racing industry have a duty to ensure trainers are aware of the dangers associated with this potentially fatal compound.

The effect of different feeding regimes on pet rabbit behaviour and welfare

Rabbits living in the wild consume relatively large amounts of a high fibre diet with low nutritional quality which requires that they be grazing outside their burrow for a large amount of their time (between 30-70% of their day). Rabbits graze mainly during late afternoon and during the night, whilst they spend their daylight hours underground. Many domestic rabbits are subjected to a very different lifestyle and are housed in hutches, with limited opportunities to exercise. They are also often fed a diet consisting largely of concentrates such as muesli mixes (which is not recommended) and are not provided with access to hay or grass. However the ideal and recommended diet for pet rabbits is one of grasses, herbs, and leaves mimicking that of their wild counterparts. Hay is very important to meet rabbit behavioural and physical health needs and rabbits are able to maintain weight gain on forage only diets, however, studies suggest that at least 15-17% of pet rabbits do not have access to hay and 36-42% are not fed recommended amounts of hay.

This United Kingdom study aimed to assess the effect of feeding different diets on the feeding behaviour and time budgets of pet rabbits. Thirty-two rabbits were fed for 17 months on either 1) ad libitum Timothy hay only (HO); 2) Extruded diet (50g per rabbit) and ad libitum hay (EH); 3) Muesli (60g per rabbit) and ad libitum hay (MH) or 4) ad libitum Muesli only (MO). It was found that the amount of time spent feeding was highest in the Hay only (HO) group. Increased time spent feeding was observed in all of the groups fed ad libitum hay (HO, EH, MH) when compared to the Muesli only (MO) group. There was also a corresponding high level of inactivity observed in the MO group compared to the rabbits receiving hay. The rabbits were provided with their hay in hayracks and preferred to consume it in a natural posture and so would either pull the hay provided out of the hayracks or sit in the hayracks so that they were able to eat it with their head facing downwards in a normal position.

This study highlights the effect of forage on behaviour in pet rabbits. The increased inactivity and reduction in time spent eating in rabbits on the muesli only diet indicates an impact on welfare through the inability to express normal foraging behaviour (evidenced by misdirected chewing of rubber matting and consumption of bedding), in addition to the development of obesity in the MO rabbits through reduced activity levels. The higher activity levels and absence of abnormal behaviours when hay was fed support recommendations that forage should form a significant portion of the diet for domestic rabbits. Provision of forage is essential to promote welfare of rabbits.

A survey of eye disorders in pugs

The pug appears to be increasing in popularity and with its small stocky body, round face and large prominent eyes, a high prevalence of disease has been reported. A number of eye disorders have been described in the pug some of which are related to the physical anatomy of the breed. In recent years an increase in the number of pugs presented for eye problems has been noted. This study attempted to report the types and frequencies of ophthalmic disorders in pugs and relate these disorders to factors that may influence their development.

Case records of all pugs (130 pugs and 258 eyes in total) presented to the ophthalmology unit at the Veterinary University in Vienna between 2001 and 2012 were reviewed. It was found that the mean age of the dogs being presented with eye disorders was 2.8 years of age. A large range of ocular abnormalities were identified including dry eye (n =39 eyes), an abnormally large eyelid opening that left the cornea exposed (n=258 eyes), inward folding eyelids (n=258 eyes), in-growing eyelashes (n=56 eyes), eyelashes erupting from the inside of the eyelid that rub against the eyeball (n=8 eyes), inflammation of the conjunctiva (n=88 eyes), abnormal pigmentation of the cornea (n=101 eyes), an opaque eye (n=63 eyes), ulceration (n=46 eyes), vascularisation (n=35 eyes), strands of abnormal tissue that reached from one iris to the other (n=21 eyes) and cataracts (n=18 eyes). Dry eye was significantly associated with the presence of corneal pigmentation, however corneal pigmentation pigment was also identified in pugs without dry eye. There was a significant influence of ectopic cilia (eyelashes erupting from inside the eyelid) on corneal ulceration and younger dogs were significantly more affected by in-growing eyelashes.

This study demonstrates a high prevalence of pugs with eye abnormalities at an early age. The authors note the high number of cases of corneal pigmentation without dry eye which suggests that there may be additional yet undetermined factors involved in the development of corneal pigmentation in pugs.


Brachycephalic problems in pugs

Short-muzzled dogs, such as pugs, are popular household dogs, however, the excessive breeding to obtain the short muzzle on these dogs has resulted in physiological abnormalities that affect the entire upper respiratory tract and result in serious welfare problems. These increasing problems in pugs are related to Brachycephalic airway syndrome (BAS) which is a combination of upper respiratory tract disorders in breeds with short muzzles. BAS symptoms include noisy and laboured breathing, snoring, coughing, suffocation, loss of consciousness, problems eating, over-heating, difficulty sleeping and an intolerance to exercise, which in severe cases can result in the dog collapsing as a result of not being able to obtain sufficient oxygen. The severity of symptoms related to BAS seems to have increased considerably over the last few years.

The German Pug Club has developed a test that requires dogs to have returned to normalised heart and respiratory rates 15 minutes after having walked or run a distance of 1km in a maximum of 11 minutes, and only if individual pugs can pass this test should they be considered for breeding. It is considered that this level of exertion should be relatively easy for any healthy dog to achieve. This study, performed in Germany, used this stress test to examine the degree of BAS in pug and retropug (crossbreed of pugs with a slightly longer muzzle) dogs. 42 pug and 7 retropug dogs underwent a stress test where they walked a distance of between 990 and 1003m in 11 minutes. The dog was monitored and its temperature, respiratory and heart rate were recorded 15 minutes after the stress test had been completed. It was found that 14 (33.3%) of the pugs failed the test and when the heart and respiratory rates of all pugs were assessed following exercise, which the researchers predicted would be associated with BAS, 21 (50%) of the 42 pugs failed. All of the 7 retropugs tested passed the stress test and BAS levels were found to be
The shape of the skull of dogs has been modified over many generations as a result of selective breeding, which has led to the diversity of dog head shapes observed today. Brachycephalic dogs are increasingly common. These dogs have short muzzles, which have been associated with upper respiratory tract (URT) disorders. Brachycephaly has been reported to reduce general quality of life by decreasing exercise tolerance, increasing recovery time after physical exercise and from associations with a variety of sleep problems and breathlessness. This study used veterinary clinic data from the VetCompass programme, which collates electronic patient data from selected veterinary practices in the UK. This study compared URT disorders in three extreme brachycephalic dogs (the Bulldog, French Bulldog and Pug) with URT in three other commonly owned breeds (Yorkshire Terrier (moderately brachycephalic), and Border Terrier and West Highland White Terriers (non-brachycephalic). The authors also wished to identify risk factors associated with URT diagnosis in all the breeds assessed.

170,812 dogs were assessed in this study, from 96 primary care veterinary clinics between September 2009 to March 2014. 83 of the dogs examined during the study died during the time period assessed. It was found that those dogs with extreme brachycephaly had an average life span of 8.6 years and died significantly younger than those in the moderate and non-brachycephalic groups (12.7 years). The proportion of dogs with at least one URT disorder in the extreme brachycephalic group was higher than in the moderate and non-brachycephalic group (22% vs 9.7%) and also varied between breeds; Bulldogs (19.5%), French Bulldogs (20.0%), Pugs (26.5%), Border Terriers (9.0%), West Highland White Terriers (7.0%) and Yorkshire Terriers (13.0%). After accounting for the effects of age, bodyweight, sex, neutering and insurance, extreme brachycephalic dogs were 3.5 times more likely to have at least one URT disorder compared with the moderate and non-brachycephalic group.

This study reports that the three extreme brachycephalic breed types (Bulldog, French Bulldog and Pug) were relatively short-lived and predisposed to URT disorders compared with three other small-to-medium sized breed types that are commonly owned (moderate brachycephalic: Yorkshire Terrier and non-brachycephalic: Border Terrier and WHWT). The results suggest that owners and veterinarians should be more vigilant for URT disorders and also that breeders should select against extreme body conformations in predisposed breeds.


Brachycephaly (short muzzle) and upper respiratory tract disorders in dogs

normal after exercise, although the authors do note that only a small sample of retropugs were tested.

This study suggests that the welfare of many brachycephalic dogs is compromised and pugs that exhibit an excessively short muzzle should be excluded from breeding to promote healthier offspring.

Crossbreeding of pug dogs with another breed with a well-formed muzzle may be a method of minimising the occurrence of BAS and its related disorders.


FREE PUBLIC LECTURE

Why animals have become a social issue

James A. Serpell, PhD.
Professor of Ethics & Animal Welfare, School of Veterinary Medicine, University of Pennsylvania, Philadelphia, USA.

Ethical concerns about the exploitation and welfare of nonhuman animals have been a recurring preoccupation throughout human history. Different societies and cultures have resolved these concerns in different ways, sometimes through radical change, but more often by adopting novel exonerative belief systems that absolve humans from responsibility. The current resurgence of interest in animal welfare and rights in developed countries appears to have been promoted by multiple factors including urbanization and the decline in rural attitudes, and the increasing use of some animals as quasi-family members and social support providers. Using some recent examples, this presentation will explore the curious ways in which these cultural and demographic changes are playing out in the theatre of public opinion.

Tuesday 3 November 2015 at The University of Sydney. Find out more here.
Evaluation of the B.A.R.K behavioural assessment tool for rehoming dogs

It is common practice for animal welfare shelters to assess the behaviour of dogs in their care prior to offering dogs for adoption, to determine whether or not they are suitable for rehoming. The assessment consists of a series of stimuli that is intended to replicate real world situations, in order to determine how the dog may respond to a similar situation after being rehomed, and to determine the traits of each dog in order to make the best match between dog and potential adoptee. It is important that these tests are reliable and produce valid and feasible results, as assessments that don’t meet these criteria increase the chances that the dog may be wrongly euthanased, or placed in homes to which they are unsuited. The Behavioural Assessment for Rehoming K9s (B.A.R.K) protocol is a standardised shelter dog behaviour assessment that was developed in Australia. This study aims to report on the predictive validity of the B.A.R.K protocol by investigating the ability of this tool to predict a range of post-adoption behaviours in dogs.

74 dogs (>1 year of age) housed in one of five different animal shelters in Australia were assessed using the B.A.R.K protocol prior to being adopted out. After adoption, the new owners of the dog completed a survey which contained questions about the dog’s behaviour in their new home, adopter satisfaction with their new dog, the adoption process and the process adopters used to select their new dog. This survey was completed 2-8 months (average of 4 months) following adoption of the dog. It was found that the B.A.R.K protocol performed while the dog was in the animal shelter did predict ‘fearful/inappropriate toileting behaviours’ and ‘anxiety’ in the dog’s new home, but overall, the predictability of behaviour post-adoption using this tool was relatively poor. Almost 25% of adopters said that their dog had ‘growled, snapped at, or attempted to bite a person’ and almost 75% indicated that their dog had exhibited behaviour that the owners would change if they could. However 57% of owners said that they were happy with the behaviour of their dog and 71% said that the dog met their expectations.

The problems in predicting behaviour post-adoption may lie with the B.A.R.K tool, or they may lie with assessing future behaviour of any dog in a highly stressful environment in the absence of a stable human-canine bond. The authors suggest that more research is needed to assess the predictive nature of these tests or whether an alternative approach to assessing shelter dog behaviour, such as longer-term foster care programmes, may be more applicable for determining future behaviour of dogs.

Effects of social environment and enrichment on housecats in a novel environment

The popularity of the domestic cat is increasing worldwide, as is the concern for the welfare of these cats when they are housed in boarding kennels and catteries, with the associated potential that housing under these challenging conditions causes them psychological distress. There is a need to develop appropriate strategies to reduce the effects of stress, but at the present time, there is only limited available knowledge of which types of enrichment can improve the welfare of cats housed under these conditions. This study, performed in Australia, aimed to firstly, determine how cats used the space within their enclosure, secondly, investigate the relationship between space use, behaviour and stress and finally, investigate whether extended human interaction, as well as individual attributes including temperament, age, sex and breed, would influence stress during confinement.

Twenty cats were studied, and one week prior to the trial, were assessed in their home environment and assigned a feline temperament profile score depending on the friendliness, playfulness, aggressiveness and level of fear displayed. The experimental phase involved placing them in a temporary boarding set-up where they stayed for 2 days, and received either one (standard interaction) or three (extended interaction) 20 minute sessions of social interaction per day. It was found that cats with the highest behavioural stress scores spent less than half as much time in open areas as cats with the lowest stress scores, spent 10% of time more in passive behaviours, suppressed essential maintenance behaviours and exhibited approximately half the number of different behaviours compared with the cats with the lowest stress scores. Extended social interaction with carers reduced behavioural stress scores from day 1 to day 2. Individual characteristics of cats affected stress, as cats with no previous experience in confinement, older cats and male cats were more stressed.

The study indicates that cats with particular attributes may be more prone to becoming stressed in confinement, but the stress levels can be reduced by extended interactions with carers, the inclusion of varying physical enrichment, and the provision of hiding spots and vertical climbing structures.


Companion rabbit and bird management practices in Australia

It is generally presumed that companion animals have better welfare than production animals as they live in human homes and are considered members of the family, however there is little information currently available about the different environmental, dietary, behavioural, social and health management practices that caregivers use when caring for their companion. The appropriate use of animal management practices can greatly affect the welfare of a companion animal, and so research into the different practices used when keeping companion animals is of great value. This study aimed to collect data relating to management practices for birds and rabbits in Victoria, Australia, using a survey.

A representative sample of rabbit guardians (n=93) and bird guardians (n=203) completed an online survey about their companion animals that covered the five distinct domains of the five freedoms. The areas covered in the survey were based on the Victorian Codes of Practice together with discussion with animal experts such as veterinarians, animal behaviourists, and animal welfare researchers. The survey also solicited demographic information from participants. It was found that guardians sometimes meet their companion animals’ welfare needs, but they do not always engage in best practice. 79% of bird guardians stated that they interacted with their birds daily, but only 68% of rabbit guardians did the same. It was also found that 32% of rabbit guardians and 55% of bird guardians never had their animals vaccinated against common illnesses.

The information generated in this study could be used by veterinarians, animal trainers and behaviourists wanting to inform their clients about appropriate management practices and providing targeted information appropriate to different demographic groups based on their guardianship practices.

FARM ANIMALS

The effects of toe trimming on the welfare of tom turkeys

Toe trimming is regularly used in the turkey industry and consists of removing or reducing the claws of the three forward facing toes on each foot to prevent turkeys scratching each other. The procedure can be performed using a Microwave Claw Processor (MCP), which destroys the tips of the toes by exposing them to microwaves, causing the tip to fall off within 1-3 weeks following treatment. In Canada, the code of practice that covers surgical alterations, including toe trimming, requires that toe trimming “should be avoided except when it is necessary to prevent either self-inflicted injury or injuries to others in later stages”. With heightened consumer concern for animal welfare, it is important to re-examine toe trimming as a procedure and assess its effect on the welfare of the birds.

306 turkeys were allocated to either a treatment group (toe trimmed using MCP) or non-treatment group (sham trimmed but toes remained intact), and randomly assigned to 3x3m floor pens within a common barn. The behaviour of the turkeys was observed on days 1, 3, 5 and 133 following treatment. Toe length, bird mobility (using a five point gait score) and bird stance was assessed on days 55, 84, 119 and 139 after treatment. Cross sections of the toes of euthanased birds were taken every second day for 14 days after treatment to examine the healing process.

It was found that for the first 5 days following treatment, those turkeys that had been toe trimmed performed fewer active behaviours such as feeding, standing, walking and running, which suggests that the procedure causes the turkeys short-term pain. At day 133, the treated turkeys still stood more and walked less than non-treated turkeys. Gait score and bird stance were not found to be affected by treatment. Trimmed toes were an average of 91.9% the length of those on non-treated turkeys and examination of treated toes showed that the skin had grown completely back over the toe by day 14. The study found that toe trimming causes the turkeys short-term pain and can affect the behaviour of the birds in the long-term, and so should not be a recommended procedure for the industry.


Royal Zoological Society of New South Wales - Annual Forum

Zoology on the table: the science, sustainability and politics of eating animals

Terms such as carnivore and predation are well established in zoology and ecology as they relate to animals eating other animals. The study of predator-prey interactions has a long and deep-rooted lineage within zoology and forms some of the core principles within many ecological studies. When humans are the predator, however, the language used can change and many important and controversial social and political questions are brought to the fore.

Saturday 7 November 2015 at the Australian Museum, College Street, Sydney.

Find out more here.
Causes of keel bone damage in laying hens

The high frequency of damage seen in the keel bone of laying hens is one of the largest problems facing the industry. Beyond the welfare issue of skeletal deformity, there are significant concerns that keel deformities cause the hens pain. One type of keel bone damage, a keel fracture, is a break in the bone that causes unnatural bending of the bone. The problem of keel bone damage is widespread across countries and genetic lines. To identify critical areas where research is needed to improve this welfare problem, the International Keel Bone Damage Workshop was organised by the University of Bern in 2014 and this paper presents the key highlights and recommendations to address keel bone damage.

The nine key recommendations identified at the workshop were that research should investigate 1) a uniform method (including severity grading) for evaluating keel bone damage to ensure reliability of results; 2) the impact of low energy, non-collision events as a source of keel fracture (such as collisions with perches and other elements of the housing); 3) the relationship between deviations in the keel and keel fracture; 4) the role of bird development and the rearing system used in causing keel bone damage; 5) the role of escape reactions in response to panic as a source of keel fracture; 6) the genetic capacity to reduce keel bone damage by selection of specific traits in birds; 7) housing adaptations that affect the frequency of keel bone damage, in particular the different types of perches available; 8) nutritional solutions to reduce keel bone damage, such as the provision of calcium to strengthen the bones; and 9) quantify keel bone damage and its effect on production losses to encourage producers to take steps to address this welfare issue.

This paper may encourage the adoption of methods to improve the accuracy and reliability of reporting of keel bone damage and provide technical changes that could be adopted by producers.


Rearing-related factors affecting the welfare of laying hens

There is an increasing trend for consumers to demand that their food is produced with high welfare standards. The poultry industries have made significant improvements in recent years, with the use of conventional cages to house laying hens banned in the European Union in 2012. However, a large proportion of welfare problems in laying hens are influenced by the rearing facility and the method by which pullets are reared. Pullets are housed in the rearing facility from when they are hatched until 15 to 18 weeks of age, after which they are moved to the laying facility. It is well known that early experience has long-term effects on the development of behaviour, and the development of welfare problems during rearing may be indicative of welfare problems during lay.

The authors of this review paper summarise existing knowledge about rearing-related risk factors that influence the welfare of pullets and laying hens and describe the effects on welfare around of beak trimming, housing type, furnishing, enrichment, feeding, stocking density, flock size, sound and light levels, concentration of gasses, transition from rearing to production facilities, competence of staff and interactions between breed and environment. The authors also make recommendations for better rearing of pullets, and identify those topics that are not well understood.

The authors conclude that attempts should be made to select birds that are most adaptable to the laying system in which they are housed and that beak trimming, which is used to reduce injury between birds in the occurrence of feather pecking, is limited where possible. In addition, the rearing system should provide appropriate substrate, perches, and mashed feed that is similar to that used in the laying system, and young birds should be moved to the production facilities before 16 weeks of age. The recommendations outlined in this review can be used to improve the welfare of pullets and adult hens in rearing and laying systems.

A 3-point gait score to assess lameness in ducks

Lameness is a cause of concern in duck production, as well as more broadly across the production of meat poultry. Ducks with moderate to severe walking problems are often culled from the flock as this level of lameness is thought to cause pain, leading to production losses. To gain a better understanding of the impacts of altered walking on duck production, and to identify those factors that affect its development, an accurate measure of walking ability needs to firstly be defined. This study used a 3-point gait score system to characterise the walking abilities of Pekin ducks. As bird age has been shown to impact gait score in other poultry species, three ages of ducks were included in these assessments.

The walking ability of 960 commercial Pekin ducks in Michigan was assessed. Ducks were videotaped and assessed on 13 to 14 (14d; n=248 ducks), 20-21 (21 d; n=350 ducks) and 30 to 32 days (31d; n=368) days of age. Ducks were assessed as they crossed a Tekscan® gait analysis system and a walking score of ‘0’ (best gait) was assigned to any ducks that waddled without obvious impairment; ducks scoring ‘1’ (moderate gait) were deemed to have a laboured walk or a slight limp; and those ducks that were reluctant to walk scored a ‘2’ (poor gait). The most prominent differences were seen at 21 and 31 days of age between ducks having a gait score ‘0’ and ‘2’, with those scoring ‘2’ walking a shorter total distance, having greater differences in the amount of pressure applied to the right versus the left leg and the amount of time spent standing on two feet between steps. Inter-rater reliability (the same scores noted for two or more different gait scorers) was lowest for 14 day old ducks and best for the 32 day old ducks, but was high overall.

The study provides initial support for the validity and reliability of the 3-point gait score system for use with ducks over 21 days of age, and could be used to guide future work when developing assessment systems to assess the relationship between gait score and duck health and welfare.


Effects of anti-gonadotropin-releasing factor vaccine on the welfare of castrated beef cattle

There is an increasing level of public concern with the amount of pain that cattle experience during and following surgical castration methods. Immunisation against gonadotropin-releasing factor (GnRF) has been proposed as an animal welfare-friendly alternative to reduce sexual and aggressive behaviour in intact bulls. Bulls vaccinated with anti-GnRF produce antibodies against GnRH resulting in reductions in both testosterone and physical activity, making them unable to breed and reduces unwanted behaviour such as aggression in management systems. This study aimed to compare the physiological and behavioural effects of an anti-GnRF vaccine and band castration on 60 Angus and Angus crossbred bulls in Canada.

The bulls used in this study were an average of 257 days of age and were assigned to one of three treatments: 1) intact bulls, 2) band-castrated without pain relief (castrated), 3) immune vaccinated with anti-GnRF vaccine (vaccinated). The behaviour of the bulls following treatment was recorded using radio frequency ear tags and production and physiological factors were assessed.

It was found that vaccinated calves had a reduced average daily growth and feed intake during the first week after vaccination, but band castrated calves had reduced average daily growth and intake until the end of the study (day 56). Salivary cortisol concentrations, measurements of behavioural responses indicative of pain and distress and active behaviour were all greater in calves that were band castrated in the first few days following treatment, compared with vaccinated calves and bulls, suggesting that the former treatment group experienced acute pain or discomfort following castration. Sexual and aggressive behaviour was also reduced in vaccinated calves, compared with bulls. The results of this study demonstrate that immunocastration with anti-GnRF can be used as a welfare friendly alternative to band castration in beef calves.

Social stress as a cause of diseases in farm animals

An outbreak of disease in intensively housed animals can severely affect production and is a major concern for animal welfare. Extensive research in humans has determined that social factors play a key role in mediating disease risk. Similarly to humans, animals used for food production originated from social species and have adapted to living in complex social networks. Farm animals are often housed intensively, at least for part of their lives, where group dynamics can be highly variable depending on the management and housing practices used on the farm. This paper argues that some management practices act as social stressors for farm animals and the review describes the supporting evidence that social stress also plays a critical role in farm animal disease prevention.

The review firstly defines social stress and reports on social factors that influence the physiological and behavioural indicators of stress in farm animals including deprivation of social contact (social isolation), reduced space allowance (crowding) and the disturbance of social order (social instability). The authors note that there is less research that directly links the experience of social stress with a higher disease risk however.

Recommendations are made for reducing the negative effects of social isolation in different species of animal (e.g. pair housing), crowding (increasing feeding; lying; physical space or increasing feed availability) and social instability (keeping animals at a lower stocking density; providing an area where animals are able to retreat or providing enrichment or mixing animals early in life). The authors also recommend that animals are not exposed to multiple stressors at the same time. Establishing clearer linkages between social stress and incidence of disease remains an area to direct research with an aim of reducing disease and improving welfare for farm animals.


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**EcoCPD: Welfare + Ethics Symposium**

**Veterinarians taking the lead on animal welfare and ethics**

Animal welfare concerns us all.

This seminar is a unique opportunity to hear from an exceptional line-up of professional leaders and teachers in animal welfare. Featuring Prof John Webster, the vet credited with the Five Freedoms approach to animal welfare, this program will show how veterinarians are taking leadership roles in the ever-growing animal welfare debate and how the next generation of our profession is being trained to think about the ethics of animal use and the science of animal welfare.

**Wednesday 2 December 2015 at The University of Sydney.**

Download the program or find out more [here](#).
Effects of group housing on sow welfare

With increasing societal pressure to reduce confinement of sows, many countries have moved to group-housing systems for most of the gestation period. However, group housing can cause the pigs to behave aggressively towards one another, which may affect sow welfare and cause fear, injury, pain and stress. This review aims to provide a comprehensive discussion around the factors that can affect aggression, injuries and stress in sows in group housing, from weaning and after insemination.

The greatest influence that affects the amount of aggression that sows show towards each other appears to be the space allowance provided for each sow, but in addition to this, the sows also need access to key resources such as feed, water and lying space. They need the space therefore to access these resources, but also to distance themselves from others when necessary. The quality of space is also shown to be important and spatial separation in the form of visual or physical barriers can allow pigs to separate themselves and remove themselves from potential aggressive encounters as necessary. The paper suggests the use of a mixing pen immediately after mixing, when the potential for aggression is particularly high, although the authors also suggest further research be performed into the specific features that would make a mixing pen most effective. The provision of additional fibre in the feed should be examined as a potential route to reduce feeding competition and aggression. Mixing sows that have been housed together in the previous gestation can be used to reduce aggression, as can exposing juvenile gilts to sows to socialise them. Genetic selection against aggression, and selection for desirable behaviours can also be used to reduce aggression.

This paper provides a comprehensive overview of various techniques to reduce aggression in gestating sows which is of importance as the industry continues to move away from the use of stalls and towards group housing for these sows.

HUMANE KILLING

Welfare in rodent trapping

Many millions of brown rats (Rattus norvegicus) and house mice (Mus musculus) are killed globally every year. ‘Remarkable paradoxes’ have been described in the way society treats different types of animal, with wild rats and mice being subject to more cruelty in pest control than other species. A wide range of traps are available in the United Kingdom for killing both rats and mice, including ‘spring-traps’ (including ‘snap-traps’ or ‘break back’ traps), glueboard traps and electronic traps. The spring traps display a wide variation in the mechanical performance, raising concerns about the effect that they have on the welfare of the animals caught in them.

New novel designs for mice have recently appeared on the market, which consist of a sealed plastic housing container comprising a mouse-killing device and an indicator which shows the user when the trap has been triggered. These traps are designed to be disposed of with the trapped mouse inside, and marketed so that household users do not have to touch or see a trapped animal. The authors of this letter argue that the use of these traps is unacceptable from a welfare point of view as they cannot be opened to determine if the trapped mouse is dead, and if necessary dispatch it quickly and humanely. The authors examined and dismantled five types of disposable killing trap that are directly available in the United Kingdom and outline their concerns about the ability of these traps to cause a rapid and humane death. They argue that, if the mice are not killed outright when trapped, then they are likely to experience a significant degree of pain or distress when confined in the trap and when the trap is disposed of with the mouse still inside. In this way, the trap that fails to kill the mouse effectively is no more humane than a glueboard trap.

The authors state that, should user’s sensitivities need to be protected, then there are reusable, covered break-back traps from which trapped mice can easily be removed, and if children or pets need to be securely excluded, then lockable reusable types of traps exist, or standard break-back traps could be placed in lockable housing. They note that any of these reusable models could be thrown away (if desired) after confirming that any trapped mice are dead, so there is no need to produce sealed units. They also recommend that manufacturers of all disposable killing mouse traps develop them so that they can be easily opened by an adult, so that the mouse can be inspected to ensure they are dead or dispatched humanely if it has not been killed by the trap mechanism. They also recommend manufacturers use a conventional break-back trap design inside the housing and improve the instructions they provide with the trap about how frequently to check the trap and how to humanely dispatch mice that are still alive. Advice on rodent-proofing and practising good food hygiene to minimise the need for trap use in the first place would also be desirable.

Use of nitrous oxide as a humane method for piglet euthanasia

There are concerns that current methods to euthanase piglets, such as blunt force trauma (applying a sharp blow to the head resulting in severe brain damage), are not optimal as people can find it emotionally disturbing and visually difficult to accept. Carbon dioxide (CO\(_2\)) gas in chambers has also been used as an alternative, but there is evidence that this gas is aversive to pigs, and so there is a search for a humane, practical alternative that is economically and socially acceptable. This study aimed to test the effectiveness and humaneness of inhaling nitrous oxide (N\(_2\)O) for euthanasia in piglets using electroencephalography (EEG) recordings.

The gas mixtures tested were N\(_2\)O and air (90%, 10% ‘90N’), N\(_2\)O, oxygen and air (60%, 30%, 10% ‘60N’) and CO\(_2\) and air (90%, 10%, ‘90C’). Experiment 1 allowed a piglet to move between one chamber filled with air and another filled with 60N or 90N. All the piglets that were exposed to 60N lasted for the ten minutes duration of the experiment, whereas the ones exposed to 90N had to be removed from the chambers after 5 minutes as they fell unresponsive and then started to flail. In experiment 2, the same set up was used, except the gas chamber held N\(_2\)O prefilled at 25%, 50% or 75% or CO\(_2\) prefilled at 7%, 14% or 21%. This test was stopped quickly at higher concentrations due to the piglets’ responses. Loss of coordination of the muscles was greater in the middle concentration percentages and flailing behaviour tended to increase as concentrations of CO\(_2\) increased, but not N\(_2\)O. Experiment 3 showed that there were different effects on the brain upon exposure to the three gas mixtures with both 90N and 90C inducing EEG waveform in 71 and 59 seconds respectively which showed that the animals were unconscious, whereas 60N didn’t induce this state in the 15 minutes tested.

These studies indicate that exposure of N\(_2\)O is much less aversive in comparison to CO\(_2\) and the use of N\(_2\)O at a 90% concentration may be a useful method for the humane euthanasia of piglets.


Behavourial indicators to assess unconsciousness in sheep

European legislation requires that, during commercial slaughter of animals, there is a need to determine that the animal is unconsciousness before it is released from restraint. Unconsciousness is generally determined by assessing the absence of reflexes in combination with indicators such as loss of posture, vocalisations and rhythmic breathing, however, there is substantial debate on the indicators that most effectively assess unconsciousness at slaughter. The use of recorded brain activity (electroencephalogram or EEG) is currently accepted as the ‘gold standard’ for this purpose, with the onset of unconsciousness causing changes in the electrical activity in the brain. Anaesthetic agents can be used to induce different levels of unconsciousness, and allow for recovery, whereas stunning and bleeding out of an animal will lead to a rapid and irreversible death.

This study aimed to assess the absence and presence of the eyelid reflex (blinking when the eyelid was gently touched), withdrawal reflex (withdrawing the head when the tip of the ear is pinched), threat reflex (blinking reaction to an abrupt movement of the index finger towards the eyeball) and rhythmic breathing in 22 sheep in relation to unconsciousness by monitoring changes in EEG activity during anaesthesia with propofol, or during non-stunned slaughter.

It was found that the threat reflex and rhythmic breathing correlated with EEG activity during propofol anaesthesia, whilst the absence of non-rhythmic breathing or threat reflex indicated unconsciousness. None of the behavioural indicators were found to correlate with EEG activity during non-stunned slaughter. Absence of regular breathing and eyelid reflex was observed an average of 27 and 59 seconds after animals were rendered unconscious. The authors state that, in general, the pharmacological aspects of the anaesthesia or aspects of the slaughter method should be taken into account when assessing indicators for unconsciousness as the reliability of the indicators may vary between the methods used.

The use of firearms for euthanasing stranded small cetaceans

The incidence of cetaceans (including dolphins and whales) stranding themselves on land is becoming more frequent, and in this case euthanasia is considered the most positive welfare outcome if the animal cannot be released. However, methods for euthanasing stranded cetaceans remain highly variable. Acceptable methods must offer high safety levels for personnel in the vicinity, be publically acceptable, cost effective and must be humane, offering the most rapid death possible. The two key features for the assessment of a humane killing technique is the duration and intensity of suffering induced before the animal becomes permanently insensible. This paper attempts to scientifically validate the efficacy of .30 calibre firearms to euthanase small (<6 metres in length) cetaceans. This was performed by mimicking the euthanasia of cadavers of ten stranded dolphins and whales in Australia and assessing the cranial pathology caused by the firearm euthanasia in post-mortem examinations.

Post-mortem data showed that 100% of bullet wound tracts fully penetrated the skulls of shot animals, with associated extensive cranial trauma including indirect skull fracturing, secondary bone missiles and brain nervous tissue laceration. The results of this study suggest that the shooting approach outlined in this paper is a highly reliable and humane method for euthanasing cetaceans under 6 metres in length which was associated with low operator and ecotoxicity risks. The paper states that in comparison to alternative methods for the euthanasia of smaller stranded cetaceans, the use of appropriate firearms is associated with superior animal welfare outcomes, public safety levels and accessibility.

Assessing the humaneness of shooting terrestrial wildlife

The shooting of wildlife using firearms is a common management activity, particularly for those species considered overabundant. However, there are concerns about the animal welfare outcomes or ‘humaneness’ of wildlife shooting programs, and wildlife management agencies must ensure that shooting programs are humane or future options for shooting will be restricted. To be humane, the duration and intensity of suffering experienced by the animals must be minimised. The European rabbit has a wide global distribution and is commonly controlled by shooting. A national Australian standard operating procedure for shooting rabbits states that they should be shot, with the aid of a spotlight, in the cranium (head) or thorax (chest) with a rifle of a minimum of .22 calibre at distances not exceeding 80m. If any rabbit is wounded after the initial shooting, then repeat shooting should be carried out until the animal is dead. This study had two objectives, firstly to apply an animal welfare assessment to a European rabbit shooting program in South-East Australia, and secondly, to identify factors contributing to rabbits being wounded rather than killed.

The shooting program was performed over 4 nights and in April-May 2012 and rabbits fired at using a .22 rifle when they were within 80m of the experienced shooter. Ante mortem observations were made by an observer who stood beside the shooter and recorded the distance, timing and outcome of each shot fired, which were used to estimate wounding rate and apparent time to death of the animal.

It was found that the mean shooting distance was 28m, the mean number of shots fired at the rabbits was 1.5, but a large proportion of rabbits were killed with one shot, and in the appropriate bodily area (cranium or thorax). It was found that the proportion of rabbits wounded and missed increased with shooting distance, and so reducing shooting distance would increase the humaneness of European rabbit shooting programs.


Ethical issues in media broadcasts of animal cruelty

Undercover filming is used to expose animal cruelty in settings such as farms, abattoirs, laboratories, zoos, rodeos and circuses with this footage depicting animals often in states of extreme suffering. The screening of this footage in the media often causes public outrage, as a result of its shocking visual effect. In May 2011, the Australian Broadcasting Corporation broadcast an investigation into the treatment of Australian cattle exported for slaughter in Indonesia. The footage was graphic and depicted cattle being treated in an extremely inhumane manner prior to and during slaughter. This footage was picked up and then screened by other media sources and continued in newspapers, on television, on radio and internet news for approximately one week. The long-term effect that seeing footage such as this has on members of the public, however, is little discussed, and the authors of this paper explore this further.

This study involved interviewing 15 people who had been exposed to the footage of the cattle in Indonesian abattoirs at the time that it was broadcast, to determine the effects that it had on them 12 months after the initial viewing. Nearly all participants recalled their strong reaction to the footage and approximately one half of the participants reported that their emotional response to the footage was still strong one year later, although some participants had managed to internalise their feelings. Approximately half of the respondents were unaware of continued, but less frequent, live export trade exposés.

Despite the strong feelings that the footage had elicited from participants, however, most said that they would choose to watch another broadcast of animal cruelty and nearly all supported investigations as a means of revealing this cruelty. This result indicates that the footage of animal cruelty footage does affect people on a long-term basis, but they would prefer to be informed of the issues, rather than be protected from them. The authors suggest that interspersing this type of footage with stories of animal rescue and hope, and ways in which viewers can participate to help, may help to leave the audience empowered, rather than leaving them with feelings of helplessness around animal welfare issues.

WILD ANIMALS

Responses of zoo visitors on little penguins

Penguins are a charismatic group of animals that draw large crowds of tourists both at zoos and in the wild, which has led to the development of penguin-watching as a source of eco-tourism in some regions. Concerns have been raised however, as to the impact that the human tourists have on the wild penguin populations, and also on groups of penguins held in zoos. This study, performed in Melbourne Zoo, Australia, attempted to investigate the impact of visitor presence on the behaviour of 25 little penguins (*Eudyptula minor*) in their enriched enclosure at this zoo. The enclosure design provided visitor access adjacent to the pool that the penguins were able to swim in, and it was thought that visitor presence might influence penguin behaviour.

Two treatments were imposed for this experiment 1) no visitor contact where the penguin exhibit was closed to the public or 2) exposure to visitors, and the exhibit open as usual, where each treatment was a day in length (10 study days in total). It was found that, when visitors were excluded from the exhibit, the penguins showed less avoidance of the visitor viewing area (both in distance from the viewing area and amount of time positioned behind enclosure features). The penguins also spent more time swimming in the pool adjacent to the visitor area. When visitors were present in the exhibit, the penguins showed more vigilance behaviour and reduced social proximity, suggestive of an elevated state of alertness. They also showed higher levels of aggression and more huddling within close proximity to other penguins.

The study provides behavioural evidence of increased avoidance of the visitor viewing area by little penguins and suggests that the presence of visitors or some aspect of visitor behaviour may have been fear-provoking for the study penguins.

SCIENCE UPDATE

Exciting opportunity to use your science skills to improve animal welfare

SCIENTIFIC OFFICERS – ANIMAL WELFARE

RSPCA Australia is seeking two experienced, dynamic and highly motivated scientists to join the RSPCA science and policy team, based in the federal office in Canberra.

The successful applicants will contribute to the expanding work of RSPCA Australia in providing high-quality science-based advice to support policy, outreach and campaign-related activities.

Two positions are available:

- A full-time Scientific Officer position focusing on farm animal welfare
- A part-time Scientific Officer position (2 days/week)

Key activities include:

- Researching and preparing science-based information on animal welfare issues for a wide range of audiences
- Supporting national animal welfare campaigns and communication activities on key issues
- Establishing and maintaining collaborative relationships with government, industry and RSPCA member societies to promote RSPCA Australia policies through the use of science
- Representing RSPCA Australia on relevant national working groups involved in the setting of animal welfare legislation, strategies and related plans and documents

The ideal applicants will have tertiary qualifications in an animal welfare related discipline, preferably at a post-graduate level, experience in scientific research in a relevant field and excellent verbal and written communication skills.

To be successful in this role you will need a proven interest in animal welfare, well-developed research and management skills and the enthusiasm and confidence to represent RSPCA policy at a national level. The ability to communicate effectively to both a scientific and lay audience is an essential attribute.

A salary package will be negotiated in the range $56-75K plus superannuation (pro-rata) based upon experience and qualifications.

Further details and selection criteria that MUST be addressed are available at www.rspca.org.au, by phoning 02 6282 8300 or emailing rspca@rspca.org.au.

Applications close 5:00pm EST, Friday 30 October.
ANIMALS USED FOR SPORT, ENTERTAINMENT, RECREATION AND WORK


COMPANION ANIMALS


FARM ANIMALS

Aquaculture


Cattle


### Pigs


**Poultry**


**Rabbits**


**Sheep**


**General**


**HUMANE KILLING**


**MISCELLANEOUS**


TRANSPORTATION OF ANIMALS


