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.
A comparison of lip-twitching and ear-twitching in horses

Twitching is a method of restraining a horse for veterinary or other procedures, and involves tightly encircling the upper lip with a loop of rope (lip twitch) or twisting the ear (ear twitch). Previous research indicates that a lip twitch subdues the horse by stimulating endorphin release and causing an analgesic effect. The mechanism by which an ear twitch subdues the horse is not understood, but anecdotal reports of horses becoming head shy and more difficult to handle following an ear twitch suggest it does not stimulate an endorphin release like the lip twitch. This study investigated whether the ear twitch subdues horses by causing an analgesic effect, a distraction from the procedure being performed, or through pain.

This study was conducted on 12 geldings at an equestrian school in the USA. The horses were fitted with heart rate monitors, and had either the lip or ear twitch applied for 15 min. Salivary cortisol and heart rate were assessed pre-and post-treatment. The response of the horse to being touched on the area to be twitched (lip or ear) was assessed pre-treatment, 15 mins post-treatment, and 4 weeks post-treatment.

A clear difference was seen in the heart rate, stress response and behaviour of horses in the two treatment groups. Ear twitching resulted in an increased stress response and greater avoidance of being touched on the ear following treatment, even after 4 wks. In comparison, lip twitching resulted in a reduction in stress during the first 5 mins of the treatment, supporting the notion that lip twitches induce an analgesic effect. There were signs that stress began to increase after 5 mins of lip twitching, indicating that the analgesic effect did not persist beyond this duration, but this effect was not as aversive as the ear twitch as no changes in horse behaviour were observed following the lip twitch treatment. The authors conclude that ear twitching subdues horses through fear and/or pain, and should be actively discouraged from use. Lip twitching may be used for up to 5 mins, but chemical restraint should be considered for longer periods.


The use of nosebands in equitation

In July 2016, a group of dressage riders and equitation scientists met at Bristol University to discuss the use of restrictive nosebands, and the development of an equestrian welfare and safety committee. This article provides a summary of that meeting.

Nosebands on bridles are mandatory in dressage, and over-tightening the noseband results in short-term advantages to the rider by making the horse more responsive to rein signals, appearing more ‘submissive’, and preventing the horse from moving its mouth in a manner that may attract penalties. Recently there have been concerns for horse welfare in relation to noseband tightening, as soft facial tissue, blood vessels and nerves may be compressed by excessive pressure from the noseband. When noseband pressure was measured in performance horses while trotting, the peak pressures exceeded that of a tourniquet used to reduce arterial blood flow in human medicine. These pressures are reported to be painful in humans. A pain threshold study in horses found that horses experience pain along their back and neck at pressures of 6-16 kgf/cm², which are much greater than the 1.5kgf/cm² peak pressures exerted by the noseband. However, the authors argue that the behavioural restrictions and reduced blood flow caused by the over-tightened noseband may still pose risks of tissue damage, nerve damage and poor welfare in horses. More research in this area is needed so that industry bodies can make informed recommendations in relation to the use of nosebands.

The authors conclude by discussing the merits of an international equestrian welfare and safety committee. To improve the welfare and safety of both horses and riders, this committee would help equestrian sporting bodies to make decisions that are based on science, and that are proactive instead of reactive. This committee could include equitation scientists, veterinarians, members of the public and stakeholders in the equestrian sports industry. The lack of consensus on the use of nosebands provides evidence that just such a committee is necessary.

Development of an ethogram to describe facial expressions in ridden horses

Many ridden horses appear sound to their riders, but upon closer examination are found to be experiencing pain-related musculoskeletal problems. One study found that 47% of ‘sound’ sports horses had pain-related gait abnormalities. Unrecognised pain-related behaviours can be attributed by people to other factors, such as the effects of training, rider, or just ‘normal’ behaviour for that horse, and may go untreated. Improving pain recognition by horse professionals is thus a priority. The use of horse facial expressions to recognise pain is a promising new area, but these expressions have not been described for horses that are being ridden. This study investigated whether the facial expressions of ridden horses could be reliably assessed by a variety of horse professionals.

An ethogram was developed to assess the position and appearance of equine facial features, such as ear position, mouth position and tension in the eyes, nostrils and jaw. The ethogram was then used by 13 different horse professionals with varying levels of experience to assess still photographs of horses being ridden. Each photograph was taken from a lateral view, and only included the head. For each facial feature, the assessors were asked to score whether the feature was present, absent, or not visible. These results were compared for consistency between assessors.

The ethogram was found to be interpreted and applied with reasonable consistency, although observations relating to the eye and muzzle were found to vary the most between the assessors. Future versions of this assessment will include photographs from different angles, and use video recordings of the whole body movement of the ridden horse. Separate studies are being conducted to determine whether this ethogram can be used to detect changes in the facial expressions of horses due to pain, and what other horse behaviours may be useful to include. It is anticipated that this ethogram will be able to be used in the future to assess pain in ridden horses in real time.

The pre-purchase motivations and behaviour of brachycephalic dog owners

There are approximately 10.5 million dogs in the UK, with 75-80% of these being purebred. A number of purebred dog breeds experience health problems due to human selection for extreme physical traits, with brachycephalic dogs being of particular concern due to the severe and chronic health issues they face. This study investigated differences in the characteristics, motivations and purchasing behaviours of dog owners that acquired either brachycephalic or non-brachycephalic dog breeds.

An online survey was conducted in the UK, targeting owners of the ten most popular breeds of dog (3 brachycephalic breeds and 7 non-brachycephalic breeds). Participants were recruited through dog-related online forums and social media, and 1427 valid responses were obtained. If participants owned more than one dog, they were asked to complete the survey in relation to the most recent acquisition. The survey contained questions relating to owner demographics, dog characteristics, pre-purchase motivations and knowledge, purchasing behaviours and post-purchase attitudes.

Dog owners who had most recently purchased a brachycephalic breed tended to be younger, have children, be buying this breed for the first time and living in an apartment. In comparison, owners of non-brachycephalic breeds were more likely to purchase a breed that was considered ‘generally healthy’ and would promote exercise. It appears owners of brachycephalic breeds are selecting these breeds based on their current ‘fashionability’ and appearance, with little concern for the health and longevity of the dog being purchased. These owners also exhibit fewer responsible dog-owner behaviours, such as not querying the health of the dog or its parents at purchase, and not getting the dog neutered. The authors conclude that while positive emotions in animals usually include behaviours such as play, affiliative interactions and general interest in the environment, however little research is available for determining specific indicators for horses. One promising option is assessing facial expressions, although much more work is needed in this area.

The discipline of horse welfare is trailing behind that of farm, companion and laboratory species, however the field of equitation science is attempting to address this disparity. Equitation science promotes objective, evidence-based methods of training horses for competition or performance work, with the intent of improving the welfare of these horses. Performance horses may experience challenges to their welfare due to the intensive nature of their management, training and handling, as well as the physical demands placed on them by competing in events. This review examines the indicators that may be used to assess the welfare of horses while under saddle.

Useful animal-based welfare indicators for horses that are being ridden should relate to both positive and negative experiences, and include measurements of behaviour, physiology, health and neurological function. There has been little research in this area, and so thresholds for these indicators have not yet been defined. However, some promising indicators of pain in horses are changes in posture, general demeanour, reactivity and facial expression. Fear and stress may be indicated by behaviour (e.g. flight responses, ear positions, etc) and physiological changes, such as increases in heart rate, eye temperature and cortisol concentrations. Indicators of positive emotions in animals usually include behaviours such as play, affiliative interactions and general interest in the environment, however little research is available for determining specific indicators for horses. One promising option is assessing facial expressions, although much more work is needed in this area.

Technological indicators of welfare include measuring the degree of pressure exerted by the rider, saddle and bridle, as well as remotely sensing the body temperature of the horse. Recent behavioural based methods include testing the cognitive bias of horses in different situations and conducting qualitative behavioural analysis to obtain a subjective score of the horse’s body language. Finally, employment of a management system that identifies critical points in the horses husbandry, training and performance where the risks to welfare are high can be used to then set acceptable thresholds for horse welfare at each of these points. Regular auditing during the horse’s husbandry, training and performance will also help to improve horse welfare.

The attitudes and experiences of US veterinarians with animal abuse encounters

Animal abuse is of concern not only for the welfare of the animal being abused, but also due to the established link between animal abuse and other forms of violence toward people. In the USA, animal abuse has been recently upgraded to a Category A offence, and the FBI have begun tracking animal cruelty crimes. However, due to a lack of a national tracking system it is difficult to determine exact statistics for these crimes. Veterinarians are in a position to identify and report cases of animal abuse to authorities and provide a source of this data, however many are unsure of the legal requirements to do so, or the potential ramification of making an incorrect accusation. This study investigated the perceptions and experiences of veterinarians with cases of suspected animal abuse and related laws.

An anonymous online survey was distributed to currently practicing veterinarians in the USA. The survey collected information on demographics, as well as the experiences of the practitioners regarding encounters with cases of suspected or confirmed animal abuse, and the laws surrounding the reporting of suspected animal abuse. The survey was completed by 1155 participants.

The majority of respondents were unsure whether their state laws required mandatory reporting of animal abuse, and whether there was an immunity law to protect them from prosecution if their accusation of animal abuse was incorrect. The majority of respondents (87%) had also encountered at least one case of animal abuse, and 56% had reported at least one case of abuse. The main reason cited for choosing to report a suspected case of abuse was wanting to protect the animal and other people, while the main reason cited for not reporting a suspected case of abuse was uncertainty about whether abuse was occurring, and a desire to educate the client rather than report them. The authors recommend that more information about state laws should be provided to veterinarians, and emphasise that it is not the responsibility of the veterinarians to prove that animal abuse is occurring when they report a case, only that they suspect abuse may be occurring.

Why do people buy purebred dogs with potential welfare problems?

Many purebred dog breeds have been purposely selected for physical features that are neotenic or ‘cute’, such as small body size, a flattened face (brachycephaly) and wide protruding eyes. These extreme physical features are often associated with poor health and welfare. For example, brachycephalic breeds such as French Bulldogs suffer from obstructed airways and corneal trauma due to their protruding eyes. Other breeds may not exhibit extreme physical features but suffer inherited disorders as a result of severe inbreeding. For example, the primary cause of death in Cavalier King Charles Spaniels is congenital heart disease. This study investigated why these breeds of dog were increasing in popularity despite being at high risk of health problems.

A survey of 846 Danish dog owners was conducted, recruiting registered owners of four specific dog breeds: two breeds that exhibit extreme physical features (Chihuahuas and French Bulldogs); one breed that exhibits serious congenital diseases but no extreme features (Cavalier King Charles Spaniel), and a control breed that does not exhibit extreme features or significant congenital disease (Cairn Terrier). The survey contained questions relating to owner demographics, motivation for purchasing the dog’s breed, health and behaviour of the dog, level of attachment to the dog, and the intention to acquire another dog of the same breed in the future.

Owner motivations prior to purchase and the level of attachment to the dog varied between the breeds, with the owners of the breeds with extreme features prioritising appearance over health and behaviour of the dog, and also being more attached to the dog. The high level of attachment shown by owners of Chihuahuas, French Bulldogs and Spaniels may be related to the dogs’ ‘infantile’ facial features, affiliative behaviours and their high care needs. In fact, health and behavioural problems in the dog did not dissuade the owners of Chihuahuas and Spaniels from wanting to purchase the same breed again in the future. These results suggest that despite a growing awareness of the welfare problems associated with some extreme dog breeds, the emotional response they elicit will continue to motivate people to purchase them as pets.

Companion animals in natural disasters

During natural disasters, emergency response services focus attention on assisting humans at risk, with little consideration for their companion animals. This can have repercussions for the health and safety of both humans and animals. People may make evacuation decisions based on whether they can take their companion animals with them, and those that evacuate with their pets may be refused access to shelters due to public health regulations. In addition, animals that are abandoned during natural disasters face threats to their health and welfare, which in turn can influence the mental health of their owners. Thus animal management during natural disasters can be considered a major public health issue, and this review examines the research relating to people and their animals in the context of disasters to inform policy, practice and future research.

This review considered research that was conducted from 2004-2014, and was refined to studies from the UK, Ireland, USA, Canada, New Zealand and Australia due to their common language and legal systems. A total of 38 articles were analysed in detail to determine what was known about animals in natural disasters, in the context of the human-animal bond.

Two main themes were apparent in the literature. The first was that companion animals were a risk factor for humans during natural disasters, and included issues such as influencing the decision to evacuate, increasing the number of vehicles used by evacuees which can contribute to transport issues, and the psychological impacts caused by companion animal loss. Humans may also place themselves at risk by attempting to rescue animals in disaster zones. The second main theme was that companion animals were themselves at risk during natural disasters, including issues such as abandonment, being cared for by poorly-prepared people, and a lack of veterinary attention. The authors conclude that integrating animals into emergency responses will be difficult without a better understanding of how the human-animal bond influences disaster management, and defining what human responsibilities are to companion animals.


Factors associated with owner knowledge and neuter status of their pet rabbits

Rabbits are the third most popular companion animal in the UK and the US after cats and dogs, but also the third most commonly relinquished animal at pet shelters. Limited owner knowledge and unrealistic expectations are the main contributors to pets being relinquished to animal shelters, while dog owner participation in activities such as obedience classes or regular veterinary check-ups are associated with a lower chance of relinquishment in dogs. This relationship between poor owner knowledge and relinquishment is concerning, as a recent study found that despite rabbit owners researching rabbit care and husbandry prior to purchase, their actual knowledge of rabbit care at the point of sale was limited. The current study surveyed rabbit owners in relation to their knowledge of rabbit care.

On online survey was distributed to rabbit owners through rabbit related groups, welfare organisations, animal shelters, pet stores and one breeder. The survey consisted of questions relating to demographic information, level of attachment to the companion rabbit, owner knowledge of rabbit care, owner behaviour, and the neuter status of the rabbits. Of the 2890 survey responses, 1740 were useable. The majority of the respondents were female (91%) and located in the USA (63%) or Canada (22%), but some resided in other countries (15%).

Rabbit owners with the best knowledge of rabbit care were more likely to participate in desirable rabbit husbandry behaviours, such as having a neutered rabbit, acquiring their rabbit from a shelter or adopting a stray, taking their rabbit for regular veterinary check-ups, and being members of online groups relating to rabbit care or rescue. The companion rabbits were more likely to be neutered when they were acquired from a shelter, housed singly rather than in a group, and when they received regular veterinary check-ups. These results suggest that veterinarians and acquisition sources can play an important role in educating rabbit owners in rabbit husbandry, as well as promoting the health and behavioural benefits of neutering their pet. Encouraging these educational opportunities will broaden owner knowledge and improve the welfare of companion rabbits.

Staying in or going out? The dilemma for cat welfare

Veterinarians are often asked by cat owners for advice about whether to keep their cats inside or to let them roam outside. This article provides a summary of the risks and benefits of both housing options that should be discussed with owners when making a decision about the best option for their cat. The risks involved with letting a cat roam outside include road traffic accidents, the spread of disease, unwanted pregnancies, fighting, theft, and predation of local wildlife. The risks involved with keeping a cat indoors include behavioural frustration, unwanted behaviours, and potentially stress and poor health, especially in houses with multiple cats. It should be acknowledged that there are benefits to both housing options and that many of the risks can be mitigated through owner management, however this article focuses on assessing the risks to cat health.

Recent research has investigated the risks of free-roaming cats in the UK being involved in road traffic accidents, as these are a common source of injury and fatality to cats. This research found that cats were more likely to be hit by cars in rural locations, with no effect of the age, gender, coat colour, breed or neuter-status of the victims. This is contrary to previous research suggesting that young entire male cats in areas of traffic volume, particularly those with a black coat at night, are at high risk of road traffic accidents. The authors recommend that the results of both studies be presented to cat owners when discussing the risk of road traffic accidents for their cats.

Aspects of the home environment should also be discussed with cat owners when making a decision about the housing of their cats. The amount of space, enrichment and consistent owner interaction available to the cat, as well as any perceived threats, such as children or other animals, will influence cat welfare when housed solely indoors. When advising cat owners about housing, veterinarians should consider both the risks and benefits for each individual situation, and recommend the housing option where the benefits to cat welfare outweigh the risks.

Maremma guardian dogs are protecting their sheep, not their territory

Maremma guardian dogs have been used to protect livestock from predators for centuries in Europe, but their use has only been recently adopted in Australia. These dogs live in the paddock with livestock, such as sheep or chickens, with little human interaction. It is suggested that Maremma dogs drive off other predators (wild dogs) because they are defending their home territory, as these dogs show a greater response to simulated wild dog stimuli in the centre of their home range than on the edge of their range. It was the aim of this study to determine whether Maremma guardian dogs are indeed defending their territories, or defending the animals they live with.

Seven Maremmas and five wild dogs (dingo type) were collared with GPS data-loggers that regularly recorded their physical location on a large sheep and cattle station that ran 13,000 head of sheep. This station had previously experienced losses of up to 15% due to wild dog predation, but this decreased to 3% after the Maremma dogs were introduced, and were generally not losses due to predation. The locations of the Maremmas and wild dogs were logged for approximately 6 months and their individual territories were determined.

The wild dogs established distinct territories that did not overlap with other wild dogs, but overlapped significantly with the territories of the Maremmas. Wild dogs were a constant presence in the Maremma territories and sheep paddocks, and typically spent many hours within these territories. When wild dogs were nearby, the Maremmas showed very little movement, which was attributed to them guarding the flock. In conclusion, the authors found no evidence that the Marrema dogs established territories and excluded wild dogs from these territories. Instead, the reduced predation rates in the presence of Maremmas appears to be specifically related to the guarding behaviour of the dogs that protect the sheep when wild dogs are nearby.


Litter and enrichment reduce fearfulness in adult laying hens

The laying hens used for egg production are sourced from rearing farms, where day-old chicks are raised to pullets (a hen just prior to point of lay). The pullet rearing environment is known to influence the behaviour of the hens as adults, and factors such as environmental complexity, group size and human exposure can determine how fearful these birds become. This has implications for welfare, as fear itself is a stressor, and can lead to behaviours such as panic and smothering. This study investigated whether providing a paper substrate to chicks from one day of age could decrease their fearfulness in adulthood.

In Europe, conventional cages are banned and birds are housed in enriched cages or loose-housed systems such as aviaries. This study was conducted on five aviary rearing-systems in Norway, resulting in 23 flocks of adult hens assessed for fearfulness. Within each rearing shed, half of the wire mesh floor in the aviary was covered in thick paper that protected the chick’s feet from the mesh flooring and allowed feed, dander and droppings to accumulate as ‘litter’. The chicks in the treatment area were kept separate from the control chicks, who were housed in the other half of the aviary on standard mesh flooring. The pullets from each treatment group were sent to different laying facilities at point of lay, with each flock supplying at least two egg producers. The adult hens were assessed for fearfulness at 30 weeks of age by testing their approach behaviour toward a stationary human and a novel object.

Providing paper to the chicks was found to reduce fearfulness in adult hens, but only if the production farm provided environmental enrichment. Environmental enrichment was classified as any object or litter provided to the hens that encouraged activity or exploration, and was provided solely at the discretion of the farmer. On farms where no enrichment was provided, the hens raised on paper approached the novel object more often than the control birds. The authors conclude that raising chicks on paper helps them to cope with novelty in adulthood, and that providing enrichment to adult hens can counteract the effects of not having had access to litter during early rearing.

Stakeholder perceptions of welfare issues and indicators for extensively managed sheep

The welfare of extensively managed sheep can be impacted by a variety of factors, such as climatic extremes, predation and nutrition. Deciding which factors have the greatest impact, and what measures should be used involves both objective scientific evidence and a subjective ethical decision about the level of welfare compromise that is acceptable. Scientists working in this field can provide expert opinion, producers can provide first-hand experience and opinions related to sheep management, and the perceptions of the general public can provide drivers for change in relation to product consumption and the social acceptability of the sheep industry (its “social licence”). This study investigated the opinions of these stakeholders in the Australian sheep industry to determine which welfare issues they considered important, and what indicators could be used to best measure sheep welfare.

The survey was conducted online and participants answered questions relating to their perceptions of welfare issues and welfare indicators in the sheep industry, as well as their self-rated knowledge of the industry, demographic information and their stakeholder category (producer, industry service provider, scientist, or general public). A total of 941 complete surveys were used for analysis, comprised of the following stakeholder proportions: General public (53%), Producer (27.6%), Scientist (10.1%), and Service provider (9.2%). In addition, the majority of respondents were women (61.2%) and tertiary educated (70%).

Animal welfare was considered important by all stakeholder groups, and they generally considered sheep welfare to be adequate with room for improvement. The issues that were considered most important to sheep welfare were nutrition, heat stress, lameness and husbandry practices. Key indicators to assess welfare of sheep included illness/injury numbers, food availability, mortality, nutrition, and pain/fear-related indicators. An open-ended question to list the three most important welfare issues saw live-export, mulesing and flystrike amongst the most frequent responses. Even though live export is not an on-farm welfare issue, this result indicates that it is of significant concern to the general public and may influence perceptions of other areas of the sheep industry. Women and the general public considered sheep welfare to be poorer than the other stakeholder groups. This highlights the need to balance gender and background of participants when consulting stakeholder perspectives on sheep welfare.

Electro-analgesia refers to the use of an electric current to provide pain relief, and may provide an opportunity for pain relief in sheep during painful husbandry procedures. Transcutaneous electrical nerve stimulation (TENS) is widely used in the health industries for relief from acute and chronic pain. TENS is applied to intact skin, and delivers variable pulses of electrical current that are perceived as a tingling sensation in humans. The benefits of TENS over chemical pain relief is that it is easy to apply, has no chemical toxicity, and is safely combined with other methods of analgesia. This review explores the efficacy of TENS, its mechanism of action, and its potential applications to sheep husbandry.

There is strong evidence that TENS is an effective method of analgesia in humans and animals when applied correctly. It can relieve both acute and chronic pain, and analgesia can continue for a period after the TENS stimulation has ceased. There appear to be several mechanism by which TENS provides analgesia: one mechanism is by stimulating peripheral receptors in the injured area to transmit non-pain related signals to the neurons in the dorsal horn of the spine, inhibiting their transmission of pain-related signals up to the brain (also known as the spinal gate-control theory). Another mechanism involves triggering the release of endogenous opioids from spinal neurons, which also inhibit the transmission of pain signals up to the brain. This opioid release could explain how TENS can provide analgesia even when applied to a part of the body that is not injured. Other mechanisms involve the autonomic nervous system and central mechanisms in the brain.

An advanced-generation electro-analgesia (AGED) device that supplies electronic signals at a much higher frequency (25,000 Hz) than the TENS device (100Hz) has been developed, allowing it to ‘override’ the neurons transmitting pain signals and provide immediate pain relief via a nerve block. This device has not been thoroughly investigated, but may provide pain relief for long periods (days to weeks) after electrical stimulation has ceased. The author notes the difference between TENS and electro-immobilisation stating that there is no evidence of the latter having an analgesic effect; on the contrary, there is clear evidence that electro-immobilisation is aversive. The author concludes that the use of electro-analgesia has the potential to provide immediate and long-lasting pain relief during painful husbandry procedures in sheep, and further research into their efficacy and application is needed.


Behavioural response of dairy goat kids to cautery disbudding

Cautery disbudding is a method of destroying the horn buds of young ruminants by cauterising the bud tissue with a hot iron, preventing it from developing into a horn. This practice is often performed without pain relief. The behavioural indicators of pain during disbudding have been well-researched for dairy calves, but there is relatively little information in recognising pain in disbudded dairy goat kids. It is the aim of this study to identify the behaviours indicative of pain in disbudded dairy goat kids.

Ten dairy goat kids were acquired from a New Zealand farm and, at approximately 4 days of age, allocated to either a cautery disbudding treatment, where the horn buds were destroyed, or a sham disbudding treatment, where a cold cautery iron was placed on the horn buds with no resulting tissue damage. The behaviour of the kids was recorded for 12 hours post-treatment, and behavioural differences between the treatments were investigated.

The kids receiving the cautery disbudding treatment showed an increase in behaviours focussed on the head, such as head shaking, head scratching and head rubbing. This was likely to be due to the pain and swelling at the site of the disbudding. Head shaking is known to increase in dairy calves following disbudding, and can be alleviated with the administration of pain relief, further supporting the use of this behaviour as an indicator of pain. The only behaviour seen to decrease in the cautery disbudded kids was body shaking. Body shaking may be a grooming-related behaviour, and a reduction in grooming behaviour is often indicative of a reduction in welfare. The authors ascribe this reduction in body shaking to the kids’ attention being focused on the head region rather than the body region. There were no differences between treatments in any of the other social or maintenance behaviours, and the authors conclude that head shaking, rubbing and scratching, as well as body shaking, may be useful indicators of pain in disbudded dairy goats.

Using RFID tracking to monitor range use in free-range laying hens

Free-range egg production has been increasing rapidly over the last decade, but little is known about how individual laying hens use the outdoor range. Understanding how many hens use the range and for how long can benefit studies of hen welfare in these systems. However, due to the large numbers of hens involved, and the inability to identify individual hens, the variation in range use by individual hens cannot be determined. This study investigated individual variation in the ranging behaviour of free-range hens using radio-frequency-identification-technology (RFID) tags.

Two flocks of laying hens housed on a commercial free-range farm in Australia were used in this study. Within each flock of 18,000 hens, approximately 450 hens were tagged with RFID leg tags and their movements on the range were monitored using RFID antennas for 13 days (Flock A) or 10 days (Flock B). The antennas were placed at three strategic locations: at the pophole exits of the laying shed (0m), at the gateway between the veranda of the shed and the near range (2.4m), and at the gateway between the near range and the far range (11.4m). This meant that the duration of time spent in each area of the range could be measured for each tagged hen, as well as the number of times the range was visited each day and the preferred time of day for visiting the range.

The hens were found to make good use of the range, with over 60% of the tagged hens accessing the range on every day of the study despite the winter conditions. In Flock A and Flock B respectively, 85.6% and 97.1% of birds accessed the range at least once. Once outside, there was wide individual variation in the way the hens used the range. The total time outside varied from only a few minutes up to 6 hours per day, and the number of visits to the range varied from one to 25 visits per day. The hens also preferred to spend most of their time in the undercover veranda area, but did venture into all three areas on the range.


An evaluation of corporate reporting in global food companies

Companies that produce or sell food products can have a major influence on animal welfare. Industry stakeholders are also demanding greater transparency and action from companies in relation to their animal welfare practices. For this purpose, the Business Benchmark on Farm Animal Welfare (BBFAW) was developed to annually evaluate the animal welfare practices, reporting and performance of the largest food-producing companies in the world, with the aim of improving farm welfare standards globally and providing investors with a tool with which to make ethical investment decisions. This UK paper reports on the outcomes of the first two BBFAW assessments.

The BBFAW evaluates each company by inspecting all of its published information, such as websites, corporate reports, press releases and consumer brochures, in relation to the company’s animal welfare practices. Company performance was scored in the following three areas: Management, commitment and policy; Governance and management, and Leadership and innovation. The overall score was used to categorise the company into one of six tiers to indicate how well the company was performing in relation to its contemporaries. The BBFAW began in 2012, and the results for the 2012 and 2013 evaluations are presented in this paper.

Around 70% of companies acknowledged that animal welfare was a business issue, and the overall score for all companies increased by 5% from 2012 to 2013, indicating that more companies were reporting their attention to farm animal welfare. However, less than half of companies had published comprehensive animal welfare policies and many of these policies were quite limited in terms of guaranteeing their implementation, or stating who was responsible for welfare of the animals used by the company. This reflects the normal evolution of corporate responsibility practice to new issues, starting with high end policy and then working out the finer details over time. Future iterations of the BBFAW will include performance measures of animal welfare to determine if company policy is actually improving the quality of life for its animals. In the meantime, the authors are optimistic that implementation of the BBFAW is encouraging progress in corporate responsibility to animal welfare.

The welfare of ducks during foie gras production

Foie gras production involves the force-feeding of ducks for 12-15 days to increase the size and fattiness of the liver (hepatic steatosis). The ducks are group-housed in cages and force-fed twice daily using a rigid feeding tube and a pneumatic pump. The amount fed increases from 200g to 450g over the force-feeding period, and the duck’s liver increases in size from around 180g to 550-700g. Due to recent calls for the banning of this practice, this UK review examines the impact of foie gras production on duck welfare in France.

Five areas of duck welfare were reviewed: mortality, health, behaviour, force-feeding, and housing. Mortality rates are relatively high at 2-4%, compared to 0.2% for ducks used in meat production, although the housing systems used are quite different. The physical health of the birds deteriorates during the force-feeding period, with the excessive weight gain and mesh flooring resulting in very poor foot and leg health, as well as contact dermatitis. Injuries and dilation of the oesophagus can also occur. In relation to behaviour, the mulard duck (used most frequently in foie gras production) is poorly suited to intensive housing and human contact, due to its fearful and nervous nature. The comfort behaviours and activity levels of the ducks decrease during the force-feeding period, indicating a reduction in welfare. The high avoidance behaviour of the ducks indicates that force-feeding is aversive, and the resulting enlarged liver can cause discomfort and difficulty breathing. The large meal size and lack of swimming water for thermoregulation causes the ducks to overheat, indicated by long periods of panting after each meal. The cages have a crush-mechanism that forces ducks to the front of the cage and holds them against the floor for force-feeding. The cages do not contain any litter, bedding or water for immersion, and are quite restrictive in size.

When the welfare of ducks used in foie gras production was assessed by the authors using the 12 criteria of the Welfare Quality® assessment system, only 3 of the 12 criteria were met and none of the welfare principles. The authors conclude that force-feeding of ducks results in very poor welfare and should not be practiced.


Exploration feeding and higher space allowance improves welfare in grower pigs

Tail biting in intensively housed grower pigs is a welfare concern, and piglets are often tail docked to reduce the chance of this injurious behaviour occurring. Tail biting can develop in situations where the pigs lack environmental enrichment and are housed at high stocking densities. This study investigated the use of exploration feeding, increased space allowance and sex segregation to reduce tail biting in commercial grower pigs.

Three experimental treatments (exploration feeding, space allowance and sex) were imposed on 550 grower pigs on a demonstration farm in The Netherlands, and the changes in skin lesions, lameness and tail biting were recorded every 4-5 weeks. Half of the pigs received ‘exploration feeding’, which involved overhead feeders dropping small portions (12-25 grams) of pelleted feed onto the floor of the pig pens to encourage exploration behaviours. The feeders were remotely activated by the movement of the pigs, and dispensed feed approximately 25-30 times per day. Space allowance was modified by housing the pigs in groups of either 7 (0.8m²/pig) or 9 pigs (1.0m²/pig) per pen, and each pen was segregated into all-male or all-female groups.

None of the three treatments reduced the incidence of tail biting, and the authors attributed this to the multifactorial nature of tail biting. The provision of exploration feeding itself was not sufficient to prevent tail biting, possibly because the pigs had ad lib access to the same pelleted feed from the feeders. Providing a different type of feed for exploration, or reducing access to the ad lib feed may improve the effectiveness of exploration feeding in reducing tail biting. There was a reduction in skin lesions for all three treatments, with exploration feeding, increased space allowance and all-female groups experiencing lower lesion scores. The authors conclude that while exploration feeding did not reduce the incidence of tail biting or improve the performance of the pigs, both exploration feeding and reduced stocking density were able to improve pig welfare by reducing aggressive behaviours.

Indoor-housed dairy cows value access to pasture as highly as fresh feed

Housing dairy cattle indoors is increasing in prevalence, with the vast majority of dairy cattle having no access to pasture at all through the year. Previous research has shown that if dairy cattle are allowed access to pasture, they prefer to be on pasture at night time. If this preference is driven by a strong motivation then this may have negative consequences for the welfare of indoor-housed cattle that are prevented from accessing pasture. It was the aim of this study to measure the strength of this motivation to determine what value dairy cattle place on accessing pasture at night time.

Motivation can be assessed by measuring how hard an animal will work to access a resource, with greater effort indicating a stronger motivation for that resource. In this Canadian study, 22 indoor-housed dairy cattle were trained to push against a weighted gate to access pasture. The weight of the gate was increased daily until the cattle stopped accessing pasture, and the maximum weight that each cow pushed was recorded. This value was then compared to the maximum weight that the same cattle pushed to access fresh feed after milking, as it is known that dairy cattle place a very high value on accessing feed after milking and will push as much weight as physically possible to gain access. By comparing the two values, the relative value of pasture access can be determined.

There was no difference in the amount of weight pushed by the cattle to access either pasture or feed after milking, indicating that they place an equal value on both resources. As predicted, the cattle were more strongly motivated to access pasture in the evening than in the morning. The authors conclude that indoor-housed dairy cattle are very strongly motivated to access pasture, particularly at night time, and that this motivation was likely to be driven by temperature preferences rather than hunger, as the cattle had ad libitum access to fresh feed inside the barn. The motivation of dairy cattle to access pasture may decrease during winter conditions.

**SCIENCE UPDATE**

**HUMANE KILLING**

**High airline pressure improves the efficiency of pneumatic penetrating captive bolt guns when stunning cattle**

Pneumatically powered penetrating captive bolt guns are one of the most commonly used methods of stunning beef cattle prior to slaughter. The guns use air pressure to drive a metal rod (the bolt) through the skull and into the brain with concussive force. This renders the animal insensible by directly damaging the brain, and by transmitting kinetic energy to the head. The amount of kinetic energy transmitted to the head is determined by the velocity of the bolt, which is in turn determined by the airline pressure of the pneumatic gun. This study investigated the effects of high and low airline pressures on the efficiency of stunning Zebu beef cattle in Brazil.

Observations were made on 443 beef cattle that were stunned using either high (190 psi) or low (160-175 psi) airline pressures, in accordance with the recommendations of the gun manufacturer. The efficiency of each stun was assessed using 12 different measures of consciousness at three sequential stages of the slaughter procedure: immediately after the cow collapsed, after the cow was hoisted on the shackles, and at the start of the bleeding rail.

The stunning procedure was less effective at the lower airline pressure, and the researchers ceased using this pressure for stunning once it became clear that the resulting brain damage was not sufficient to cause rhythmic breathing to cease in many of the animals. Despite the reduced effectiveness of stunning at low airline pressure, the accuracy of the shot was greater when airline pressure was low. This was attributed to the operators taking more care with the lower pressure shot due to the higher risk of imperfect stunning. The authors conclude that despite the airline pressures of 160–190 psi being recommended by the gun manufacturers, airline pressures below 190 psi are inappropriate for stunning adult Zebu beef cattle.


**MISCELLANEOUS**

**Assessing the effectiveness of an animal welfare education program for children**

Children are naturally attracted to animals and enjoy their company, with many children reporting close relationships with their pets. By educating children about the needs and behaviours of animals, as well as promoting empathy and compassion toward animals, animal welfare can be promoted by improving the way children recognise and respond to animals in need. A number of animal welfare organisations run intervention programs in primary schools to educate children about animal welfare, however the effectiveness of these programs is often not assessed in a rigorous manner. It was the aim of this study to investigate the effectiveness of an animal welfare intervention in primary schools in Scotland.

The intervention program consisted of a 1hr class that was delivered to children aged 7-13 yrs old in 22 Scottish primary schools. The intervention focused on either pets, wildlife, farm animals or general animal rescues depending on the choice of the school, and the knowledge, attitudes, beliefs about animal minds and attachment to pets was assessed pre-and post-intervention using a questionnaire. A total of 1217 children took part in the program, with an additional 127 children completing the questionnaires but not taking part in the program to act as a control group.

The intervention significantly improved the children’s knowledge about animals and the Scottish SPCA when compared to the control group, but did not improve the children’s attitudes or attachment to pets. The authors suggest that the children’s attitudes and attachment to pets were already quite high, and thus may have little room for improvement. The children’s beliefs about animal minds were improved after the interventions that targeted pets and farm animals, but not for wildlife or general animal rescues. This was attributed to the pet and farm animal interventions specifically including videos or activities involving animals in pain and thus directly addressing the animal’s capacity to suffer. In conclusion, the 1 hr classroom intervention successfully improved knowledge of animal welfare needs, knowledge of the Scottish SPCA, and child belief of minds, but could be improved by applying more theoretical knowledge to the educational methods for improving attitudes and attachment.

Fish cognition and behaviour

Fish are widely used in scientific research, are the most commonly consumed animal in terms of numbers, and are the most numerous pet. Despite their prevalence in modern life, the study of fish cognition and behaviour has lagged behind that of the terrestrial vertebrates until relatively recently. The history and current state of knowledge relating to general fish cognition have been reviewed recently, and so this review focuses on recent developments in fish cognition in the following specific areas: numerical discrimination, social cognition, spatial cognition, and consciousness and pain.

Fish show good numerical skills, and are able to discriminate between large and small groups of items in terms of both number and size. Guppies with stronger brain lateralisation showed better numerical skills than non-lateralised fish. In terms of social cognition, fish possess complex social behaviours such as social learning, individual recognition, cooperation, dominance hierarchies and transitive inference (using deductive reasoning to predict social interactions based on observing other individuals interact). During spatial reasoning tasks, fish operate in three dimensions and use baroreceptors to perceive changes in depth. This can result in fish performing better in the vertical dimension of spatial tests than the horizontal dimension. The life history and microhabitat of a fish species can also be related to its spatial reasoning ability. For example, gobies that inhabit rocky reefs and must return to a home pool every time the tide recedes have better spatial reasoning than gobies that live on sandy shores and simply follow the tide out.

In terms of cognition, sentience and pain, there is substantial evidence that fish feel pain in a manner similar to terrestrial vertebrates. Fish respond behaviourally to a painful stimulus, and administering analgesics reduces this behavioural response. There is evidence that fish experience an emotional response to pain, similar to terrestrial vertebrates, and can even display ‘emotional fever’ in response to a stressor. Based on the current knowledge of fish cognition and pain perception, fish should be awarded the same level of welfare protection as any other vertebrate.

The role of beliefs about aggression in cyberbullying and animal abuse

There is a strong association between animal abuse and interpersonal violence, and one form of interpersonal violence that has been related to animal abuse is bullying. Several studies have found a consistent link between animal abuse and bullying in both genders, across a range of ages, and between countries. A related issue is that of cyberbullying. Cyberbullying is defined as intentional, repetitive aggression exhibited through an electronic medium, such as email, instant messages and blogs. Because individuals who engage in cyberbullying also engage in traditional bullying, and traditional bullying is associated with animal abuse, it was hypothesised that a link between cyberbullying and animal abuse exists. This study examined the relationships between bullying involvement, animal abuse, and normative beliefs about aggression.

A questionnaire was administered in the USA to 439 undergraduate psychology students, with an average age of 25 years. The questionnaire collected information about self-reported participation in animal abuse, normative beliefs about aggression, whether the participant had previously been a victim or perpetrator of bullying or cyberbullying.

The most significant predictors of animal abuse were gender, general approval of aggression, and being a bully (both traditional and cyberbullying), with males four times more likely to abuse animals than females. Both male and female animal abusers were more likely to be perpetrators of traditional bullying and cyberbullying than non-abusers. In terms of beliefs about aggression, males who had abused animals were more supportive of aggression in general, while female animal abusers were more supportive of aggression as a form of retaliation. This indicates that male and female abusers process information related to aggression differently. The authors conclude that normative beliefs about aggression may serve as an underlying mechanism linking traditional bullying, cyberbullying and animal abuse.


Factors influencing the development of stereotypies in zoo-housed elephants

Approximately 85% of zoo-housed elephants are known to display stereotypic behaviours at relatively high rates, however the cause of these stereotypies is not yet clear. In other species, the type of behaviour that is stereotyped can indicate how that stereotypy developed. For example, oral stereotypies can develop in situations where feed or foraging behaviours are restricted, and locomotor stereotypies can develop in situations where wide-ranging animals are confined to a small space. Previous research in elephants has not differentiated between the different types of stereotypies that are displayed. This study characterised the different types of stereotypies displayed by zoo-housed elephants in the USA, and related these to the housing and management conditions that the elephants experienced.

Video footage from a previous elephant study was re-analysed, and elephant behaviour was observed for 1 hr/week for 10-12 weeks with the following stereotypies recorded: Stationary whole-body movements (e.g. swaying, rocking), locomotor movements (e.g. pacing, route tracing), oral behaviours (e.g. bar biting) and self-directed behaviours (e.g. trunk sucking). A total of 77 elephants from 39 zoos were observed, and their stereotypic behaviours were compared to their housing, management, life history and demographic variables to determine whether any of these were likely to have influenced the development of the stereotypy.

The elephants displayed all four types of stereotypies, but the overwhelming majority showed whole-body stereotypies (96%), such as weaving, and locomotor stereotypies such as pacing (16%). Only 6.5% of elephants showed oral and self-directed stereotypies. The relatively low prevalence of locomotor stereotypies was unexpected, as wild elephants will range from 3-12 kms/day and the motivation to range is likely to be frustrated in captivity. For analysis, the whole-body and locomotor stereotypies were combined into a single variable: Locomotor Presence. The odds of Locomotor Presence increased when elephants spent more time housed separately, experienced more social mixing, and spent more time housed indoors. Elephant managers may be able to reduce the incidence of locomotor and whole-body stereotypies by enhancing their elephant’s social environment and the spatial complexity of their enclosures.

Chinese attitudes toward bile extraction from living bears

Bear bile is a traditional Chinese medicine extracted from the gall bladders of Asiatic black bears and Eurasian brown bears. Although bear bile is expensive and considered an unnecessary medicine, China consumes 3-4 tons of bear bile annually. To protect dwindling populations of wild bears, bear farming was introduced in China in 1984. The bile extraction techniques and husbandry methods used for these bears create serious problems for their welfare. The Chinese government began work to improve conditions on bile farms in 1993, however the practice is still opposed on welfare and conservation grounds and is gaining more attention in mainstream Chinese society. This study surveyed the attitudes of the Chinese public toward the use of bear bile medicines. Participants were recruited by randomly selecting houses and student dormitories in Beijing. Residents of these houses and dormitories were asked to participate in a face-to-face interview to assess their attitudes for and against bear bile farming, and to collect information relating to their use of bear bile products. A total of 864 valid questionnaires were collected.

When reporting whether they had used bear bile products in the past, more citizens (29%) than students (23%) had used bear bile, and 70% of users claimed to use it only occasionally. The authors acknowledge that asking these sorts of sensitive questions in a face-to-face interview may bias the answers. Older people used more bear bile than younger people, and this was partly attributed to older people suffering from conditions that would be treated with bear bile. Younger people were also generally more highly educated, and higher education levels were associated with lower bear bile consumption and less support for bear bile farming. Respondents considered bear bile medicine to be effective, but showed fairly low intentions to buy and use the medicine again in the future. In general, the public in Beijing held beliefs that did not support the use of bear bile extracted from living bears. This result is indicative of a trend toward greater awareness of animal rights and welfare in China.


A call for the ban of killing neck snares in International humane trapping standards

International standards for humane trapping were developed in 1995 in response to pressure from the European Union to ban steel-jawed leghold traps. The resulting ‘Agreement on International Humane Trapping Standards’ (AIHTS) was signed by the European Community, Canada and Russia in 1997, and states that killing devices used for the capture of canids and other animals should render the animal irreversibly unconscious within 300 seconds. The use of steel-jawed leghold traps was banned under this agreement due to the unacceptable levels of injury and suffering they caused to the trapped animal. In this review, the authors provide evidence that killing neck snares cause the same degree of suffering as leghold traps, and should be banned by the AIHTS.

Killing neck snares are exempt from the AIHTS and are currently used throughout Canada to harvest over 70,000 canids (e.g. wolves, coyotes, foxes) each year. For the quickest death possible, the snare wire must pass over the head and catch the canid behind the jaw, cutting off the air supply, however less than 50% of canids caught in this manner lose consciousness within 300 seconds. For animals that are not snared correctly, such as caught by the neck, leg, head or abdomen, death can take days or weeks depending on the injuries incurred, weather conditions and the frequency of trap inspections. In some provinces there are no mandated checking times for snares. The injuries caused by killing neck snares are the same as for steel-jawed leghold traps, and include major lacerations, tooth fractures, dislocations, haemorrhages, organ damage and bone fractures. Snakes can also result in disembowelment if caught around the abdomen, and severe edema of the head in neck-captured animals.

The authors conclude that animals caught in killing neck snares suffer the same level of pain and suffering as those caused by steel-jawed leghold traps. As leghold traps are banned for humane reasons, killing neck snares should also be banned by the AIHTS, particularly as there are more humane methods of trapping available.

RSPCA Animal Welfare Seminar – 23 February 2018
Farm animal welfare: Advances in humane killing

Call for abstracts

RSPCA Australia is calling for submissions for oral and poster presentations relating to the Seminar’s key themes:

- New methods of stunning for slaughter
- Assessment of insensibility
- Use of technology to audit, monitor, enforce animal welfare at abattoirs
- Innovations in killing unwanted animals
- End-of-life decision making for on-farm euthanasia
- Depopulation and emergency killing

Guidelines for abstract authors

- Abstracts must be submitted in English using the template available for download (see below)
- The title should not exceed 120 characters (including spaces)
- The body of the abstract should not exceed 300 words, and should not include figures or tables
- Abstracts must contain a clear statement of the purpose of the work, the methods used, and results in sufficient detail to support the conclusions
- Abstracts on experimental studies must contain data and indicate the method(s) of data analysis
- References are not required in the abstract
- An individual may submit a maximum of two abstracts
- Abstracts not accepted for oral presentation may be presented as a poster – to be advised
- Oral presentations are 15-minute slots with question time at the end of the presentation or at the end of the session
- Abstracts submitted must comply with the “Australian Code of Practice for the Care and Use of Animals for Scientific Purposes” as relevant

Submissions

Abstracts to be submitted by email: aws2018abstract@rspca.org.au
Deadline for abstract submission: 25 August 2017
Notification of acceptance of oral presentation: by 29 September 2017

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Erian I, Phillips CJC (2017) Public understanding and attitudes towards meat chicken production and relations to consumption animals Animals 7(3), 20.


Rabbits


Sheep


General


HUMANE KILLING


MISCELLANEOUS


Magnani D, Ferri N, Dalmau A, Messori S (2017) Knowledge and opinions of veterinary students in Italy towards animal welfare science and law. Veterinary Record 180(9):225 doi: 10.1136/vr.103938

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RESEARCH ANIMALS


TRANSPORTATION OF ANIMALS


WILD ANIMALS


