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ANIMAL WELFARE SCIENCE UPDATE

Issue 85 | April 2024

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 viewed by the RSPCA Australia office in the past quarter.

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SCIENCE WRITER EXPRESSIONS OF INTEREST!

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The role of the writer is to provide us with plain English summaries of articles we have chosen to be featured in the Science Update. The dates for each issue are locked in to the quarterly publication dates, so the writer's work takes place in the first two to three weeks of March, June, September, and December each year. Papers usually take around an hour each to summarise and we include about 30 papers in each issue. The new science writer would commence work in early June to summarise articles for the Science Update to be published in July 2024.

To be eligible, you need an ABN, but you don't need to be GST registered unless you are required to be for your own tax purposes. All the work is done via email, so it doesn't matter where you are located. The Science Update does not acknowledge the author of the summaries, so the work is anonymous. This is a paid position.

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Email science@rspca.org.au by 26 April 2024.

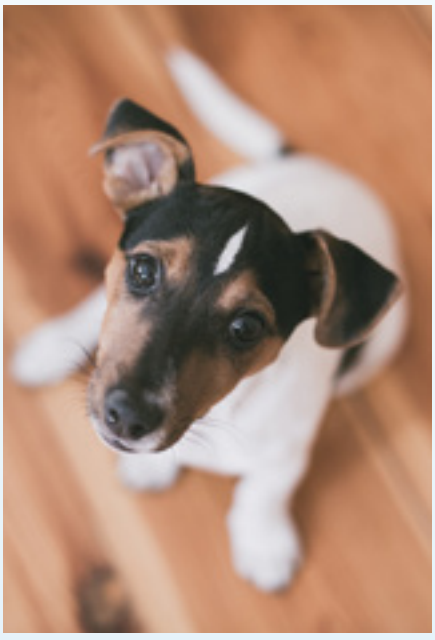
COMPANION ANIMALS

Pandemic Puppies at risk due to reduced socialisation

A massive increase in UK households getting "Pandemic Puppies" in 2020 raised concerns that some were being obtained from breeders operating under unknown welfare conditions. There is also concern that the puppies were not adequately habituated to typical household dynamics. For example, they might be unused to human visitors to the home, leading to aggression, or might be unaccustomed to being left alone, leading to separation-related behaviours. This study aimed to determine the likely extent of these issues.

An online survey of UK owners who obtained a puppy under 16 weeks old between 23 March and 31 December 2020 was undertaken (n = 4,369) and compared to the survey results of owners who obtained a puppy in the same period the year before (n = 1,148). Pandemic Puppies were less likely to have attended training classes or have visitors to their home while under the age of 16 weeks. There was a high occurrence of owners obtaining designer crossbreeds, and puppies were less likely to be Kennel Club registered or to have undergone a veterinary check prior to purchase.

The researchers concluded that Pandemic Puppies may have missed out on socialising experiences and that their owners might have missed education on training techniques. The combination means the dogs will likely need more veterinary and animal behaviourist support than other puppies. This support will help ensure that problems that could arise from the dogs' reduced socialisation and habituation to non-pandemic lifestyles are ameliorated and do not result in danger to people, dog relinquishment, or dog euthanasia. The researchers also recommended more education for owners on how to avoid inadvertently supporting the illegal puppy trade.



Brand CL, O'Neill DG, Belshaw Z, Pegram CL, Stevens KB, Packer RM (2022) ***Pandemic puppies: Demographic characteristics, health and early life experiences of puppies acquired during the 2020 phase of the COVID-19 pandemic in the UK.*** *Animals 12(5):629*

New framework for ethical animal training focuses on welfare

The framework used for animal training and behaviour change has often been based on the "least intrusive, minimally aversive" (LIMA) model. The author of this study postulated that this model suffers from a lack of clarity in terminology, ambiguity in training approaches, and a history of justifying aversive techniques. Instead, the author proposed the "least inhibitive functionally effective" (LIFE) model with the aim of advancing more ethical animal training practices.

The author noted that the LIMA model has been important historically, particularly for dog training. The concept of intrusiveness used, however, does not consider the animal's response nor does it clarify what should be done to be minimal in training method selection. Additionally, it invokes the use of aversive measures such as prong collars. In contrast, the new LIFE model gives equal importance to choice, context, and function. The model calls for increasing meaningful choices, identification of the cause of a behaviour, the effect or behaviour change through training, and functionally effective training that ethically matches behaviour change to its cause. Newly trained behaviours that can serve the same function as the original response are more likely to be successful and ethical. Success is measured by both the functional effectiveness of the training and by how it affects the animal's welfare.

The LIFE model relies on simple yet accurate definition of critical features of modern ethical animal training practices and fosters a connection between animal welfare and behavioural sciences. The author stated that ethical animal training practices should be continually researched and modified in light of scientific theory and practice developments.

Fernandez EJ (2024) ***The least inhibitive, functionally effective (LIFE) model: A new framework for ethical animal training practices.*** *J Vet Behav 71:63–68*

Owners have personal bond with their ex-commercial laying hens

Household chickens are estimated to be the third most numerous pets in Western countries, with many owners in the UK adopting ex-commercial laying hens that would otherwise be slaughtered. Rather than just being backyard chickens, many owners view them as pets that they would not kill unless euthanasia was deemed appropriate. However, the literature on their care and the human-bird relationship is limited. The researchers aimed to obtain a large, holistic body of information about how owners cared for their chickens, how they viewed their relationships with them, and the challenges they faced.

An online survey (n = 2,059) involving 60 questions targeted owners of adult hens and/or roosters. A large proportion of the respondents lived in the UK where the British Hen Welfare Trust rehomes over 60,000 ex-commercial hens each year. The survey included questions about a hormonal implant that suppresses egg laying, providing potential health benefits for hens.

Many respondents had a "personal" (although not "close personal") relationship with their chickens. There was a higher prevalence of poor hen health reported than in prior studies, with egg yolk peritonitis a leading cause of death. Implants were only used by 6.3% of owners; 68% had not heard of them. Although the occurrence of vegan or vegetarian owners was relatively high compared to the general population, 76.4% of carers ate chicken meat or eggs.

The researchers concluded that there should be more locally available and affordable avian-specialist veterinary care for chickens. More research and education about implants and rooster-specific care is needed, and the development of more tailored support for people caring for ex-commercial chickens is recommended.

Mace JL, Knight A (2024) ***From the backyard to our beds: The spectrum of care, attitudes, relationship types, and welfare in non-commercial chicken care.*** *Animals 14(2):288*

Forced separation of people from their pets has devastating impact on both

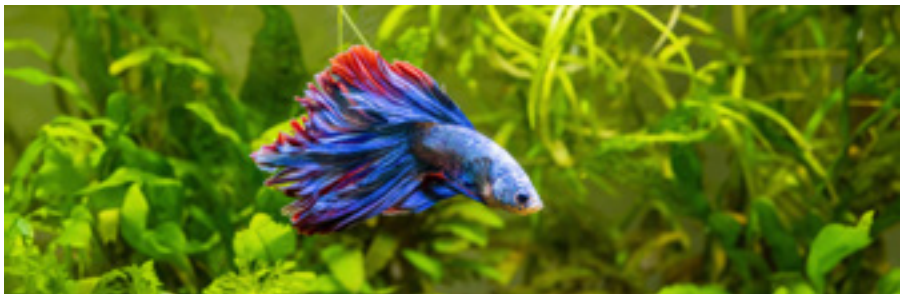
Despite the typically strong bond between people and their pets, research on the consequences of forceful separation during natural disasters, domestic violence, and homelessness is limited. This literature review aimed to map the evidence available relating to the impacts on both people and their pets so that policy and support programs can be better informed.

A literature search resulted in the identification of 42 peer-reviewed journal papers that present research on adults who have had a situational change while having a strong emotional attachment to a pet. Forced separation can lead to intense feelings of grief, guilt, and anxiety that can have long-term mental health consequences. For the pet, the separation can mean death. For example, a NSW study found that 55% of the people studied who were subject to domestic violence reported that their current or previous partner killed their pet. Natural disaster studies have indicated that evacuation plans should include transport and shelter for animals, but this is not always practical. Overall, the researchers identified that the concepts of responsibility and human superiority over animals were central to the outcomes experienced.

The researchers concluded that awareness should be raised across communities about the implications of forced separation so that policies, programs, and legislation are devised that take collective responsibility for the welfare and safety of people and pets in crisis situations. They highlighted that evidence-based science is required to understand the impact on people and their pets and the systemic barriers to improvements in interventions.

Montgomery J, Liang Z, Lloyd J (2024) ***A scoping review of forced separation between people and their companion animals.*** *Anthrozoös https://doi.org/10.1080/08927936.2023.2287315*

The behaviour and welfare of Siamese fighting fish (*Betta splendens*) are affected by space and environmental enrichment in their aquaria



There has been growing public concern for the welfare of fish, but research has largely focused on farmed fish, fish in research, or fishing industries rather than ornamental fish kept in home aquaria. Male Siamese fighting fish (*Betta splendens*) are typically kept alone in small aquaria of around 0.5 litres in volume, and there are concerns about the associated negative impacts on welfare. The aim of this study was to see if the fish would swim more if housed in larger aquaria and whether two males could cohabit larger aquaria with enrichment peacefully.

The researchers studied the behaviour of individual males in aquaria of 0.5, 10, 38 and 208 litres after around 24 hours habituation to the environment. Each of the eight fish were observed for 10 minutes in each treatment. They swam less in the 0.5 litre aquaria than the larger ones, which did not differ significantly in bouts of swimming recorded, although more were recorded in enriched tanks than bare tanks. The agonistic behaviour of a pair of males was recorded in bare or enriched aquaria of 10, 38, 208 and 378 litres. The amount of biting attacks was not significantly different between tank sizes, but the fish performed fewer approaches and aggressive or retreating displays in the larger aquaria.

The researchers concluded that small containers typically used for Siamese fighting fish in pet stores suppress their swimming behaviour, and physically enriched aquaria with a volume of at least 10 litres are necessary to allow the full expression of swimming behaviours in Siamese fighting fish. There is substantial individual variation in expression of agonistic behaviours in Siamese fighting fish. However, even large aquaria cannot prevent two males from fighting. Large, enriched environments are recommended to help fish thrive.

Oldfield RG, Murphy EK (2024) ***Life in a fishbowl: Space and environmental enrichment affect behaviour of Betta splendens.*** *Anim Welf 33, e1:1-10*

Cats' choices are important to how owners view home containment

Pet cats allowed to roam can have a negative impact on wildlife and risk danger to themselves. Some initiatives aimed at explaining the welfare benefits of keeping cats contained to owners have been successful. However, little is known about how the owner-cat relationship influences the decision to stop cats from roaming. This study aimed to understand the owner-cat relationship and the cat's membership in the local community in Aotearoa, New Zealand.

Five focus groups were conducted with 31 cat owners, and thematic analysis identified three major viewpoints: concern for the welfare of the cat, the cat's choice to repeatedly return home reaffirming the owner-cat emotional bond, and the belief that the cat belonged in the wider community, even though the cat-human-wildlife community included threated wildlife species. Most participants believed that owned cats were not the worst wildlife predators in the community – citing instead stray cats and possums. Some noted that their cat fostered positive interaction with their neighbours.

The researchers concluded that helping owners shift cats to a contained lifestyle should involve enabling them to provide choices for their cats that will meet their welfare needs while also fostering the owner-cat relationship. Locally relevant strategies that consider the owner's community are likely to have greater success. Collars that track cat movements might help owners understand where cats roam to and the dangers they may face. Cat fencing or catios could provide containment while still offering the cats enough choice to demonstrate their bond to their owner.

Ovenden K, Bassett I, Sumner CL (2024) ***'I want you to want me': How owners value cats' choices has implications for cat containment.*** *People and Nature https://doi.org/10.1002/pan3.10580*

Some purebred dogs are more vulnerable to heat stroke than cross breeds

The understanding and prevention of heat stroke in dogs has increased relevance with global warming expected to result in more heatwave conditions in NSW. Few studies have involved large datasets, so this historical study aimed to describe the incidence and risk factors for heat-related illness in dogs by examining VetCompass Australia data between 1997 and 2017.

Over that time, 119 cases of heat-related illness (HRI) were reported, and the fatality rate was 23%. Most cases occurred in December and January and during the heat wave conditions experienced in 2004 and 2016. The incidence figures are considered underestimates, as it is sometimes difficult to diagnosis heat-related illness and there is likely under-reporting of cases to veterinarians. The analysis showed 15 breeds, including the Australian Stumpy Tail Cattle Dog, British Bulldog, French Bulldog, Maremma Sheepdog, Italian Greyhound, Chow Chow, Airedale Terrier, Pug, and Samoyed, had an elevated risk of HRI compared to mixed breed dogs. A number of brachycephalic (flat-faced) breeds were identified as at-risk from HRI. Their brachycephalic conformation may make them more vulnerable to HRI, as it can compromise their breathing and ability to thermoregulate effectively (although not all brachycephalic breeds were identified as having elevated risk). Nine of the 15 breeds have double coats consistent with previous evidence that coat type might be a risk factor. There was no apparent relationship to sex or neutering status, but cases were more prevalent amongst older dogs, possibly due to poorer cardiovascular health or other underlying health conditions. Heat-related illness was less prevalent amongst small breeds, possibly due to their physiology, but also possibly because they are more likely to be keep indoors and not exercised as vigorously as larger dogs.

The researchers called for continued monitoring of the situation. They also proposed that education programs should be focused on the prevention and early detection of heat-related illness in dogs so that owners can seek veterinary care as soon as possible.

Tripovich J, Wilson B, McGreevy P, Quain A (2023) ***Incidence and risk factors of heat-related illness in dogs from New South Wales, Australia (1997–2017).*** *Aust Vet J 101:490–501*

FARM ANIMALS

Not all sheep temperament indicators are expressed in a group setting

Behavioural indicators of sheep temperament have been linked to differences in growth, maternal ability, and milk production. Temperament indicators are typically assessed on individuals in isolation even though sheep are usually managed in flocks. In the company of conspecifics, their behaviour can differ, rendering individual temperament indicators less reliable. This study aimed to compare the temperament characteristics of individual sheep assessed in isolation to that shown when conspecifics were present.

Merino lambs born at a University of Melbourne research facility (n = 220) were tested for temperament indicators involving vocalisation and locomotory behaviours under two scenarios when they were 3-4 months old. The tests recorded their behaviour in response to human presence and to startle tests in isolation, and then when three other conspecifics were present. The two tests were conducted on consecutive days, and the experimental design considered factors such as sex, weight, and test day order. The lambs rarely vocalised when in a group setting. For all behaviours, there was a reduction in either the mean or number of lambs performing the behaviour in the group setting. Vigilance and attentional orienting towards a human, but not locomotion in the presence of a human nor vocalisations, were repeatable across the two different social scenarios. Overall, the researchers found no clear relationship between behaviours expressed.

The researchers concluded that vocalisation was likely a response to social isolation rather than the tests performed. They concluded that while vigilance could be a useful measure that expressed consistently during isolation and in social groups, overall, the results of sheep temperament tests conducted in isolation should be treated with caution.

Atkinson L, Doyle RE, Jongman EC (2024) ***Temperament behaviours in individually tested sheep are not related to behaviours expressed in the presence of conspecifics.*** *Animals 14(1):155*

Changing the fate of surplus dairy calves is possible but complex

Hundreds of thousands of surplus dairy calves are slaughtered in their first week of life in Australia, and the practice is seen as a threat to the industry's social licence to operate. The fate of surplus calves is largely driven by economic factors such as beef prices, so the aim of this study was to examine the views of post-farm gate beef and dairy value chain stakeholders to explore the viability of alternatives that are more socially acceptable.

Interviews lasting 60-90 minutes were conducted with 12 representatives from seven organisations: one genetics company, one beef finisher, two beef packers, two milk processors, and one retailer. The interviews were conducted with an external consultant experienced in market research interviews, and the anonymised transcriptions were subject to thematic analysis using an inductive approach. This led to the material being organised into three main themes: ethics, economics, and ways to affect change to current surplus calf management practices. The researchers found that industry stakeholders have ethical concerns about early life killing of calves and recognise that it poses a threat to the industry's social licence. Social media and undercover exposés were identified as areas that make the dairy industry vulnerable to reputational damage in relation to surplus calf management. However, implementing alternatives to current practices, such as raising surplus calves for beef, has been challenging due to concerns about economic viability, as well as infrastructure and labour requirements. Participants believed that there is a need for cooperation between the dairy and beef industries and that this collaboration would be mutually beneficial. Implementing sustainable solutions will require buy in, leadership, and commitment from all relevant stakeholders.

The researchers concluded that it is important to understand the attitudes of industry stakeholders if alternatives to early life killing are to be successful. Viewing the calves as a valued commodity is likely to improve welfare standards.

Bolton SE, Vandresen B, von Keyserlingk MAG (2024) ***Waste not, want not: Value chain stakeholder attitudes to surplus dairy calf management in Australia.*** *Anim Welf 33:e10*

Paired housing for calves can increase herd milk production

Social pairing of pre-weaned dairy calves has been shown to have short-term benefits for health, growth, and behaviour, but less is known about how the practice ultimately affects milk production. The aim of this study was to compare the performance of single-housed and pair-housed calves up until their first calving and during their first lactation to determine if paired housing would be commercially beneficial for a dairy herd.

Holstein heifer calves (n = 431) from a commercial dairy farm (1800 Holstein and Jersey dairy cows; all-year-round calving) in the UK were allocated to either single or paired housing and then monitored while they received typical husbandry throughout their first few years of life. The single and paired housing was maintained for about nine weeks, after which the calves were weaned and moved to stable group housing (30 calves/group) until six months of age when they were moved to a heifer fertility site. Paired calves were less likely to die or be culled than single calves between weaning and first lactation. Overall mortality was 26.6% between weaning and the end of the first lactation, with the highest cull rate occurring in the post-insemination period due to poor fertility. Lameness, most prevalent during pre- and post-calving, trended higher in individually housed calves than pair-housed calves. There were no negative associations between paired housing and daily weight gain, disease, fertility, or milk yield except for a higher prevalence of udder problems. Heifers pair housed as calves had over double the risk of developing mastitis and higher somatic cell counts than heifers individually housed as calves. However, the total milk produced per calf recruited into the study was greater for pair-housed heifers, likely due to the significantly higher rate of individually housed calves exiting the herd prematurely.

The researchers estimated that paired housing had the potential to save the farm GBP 12,733 per 100 heifer calves born.

Mahendran SA, Wathes DC, Booth RE, Blackie N (2023) ***Effects of the individual and pair housing of calves on long-term heifer production on a UK commercial dairy farm.*** *Animals 14(1):125*

Hatching off farm may prepare day-old chicks for future layer hen housing change

Day-old chicks at commercial hatteries are typically sexed, vaccinated, and transported without food, water or litter, to rearing farms. These stressors can be viewed as positive under an "environmental matching" hypothesis where they shape chicks' individual phenotypes to make them more adaptable to similar conditions later in life. Alternatively, under the "silver-spoon" hypothesis, reduced stressors or abundant nutrition may enable hens to cope better when faced with stressors later in life. The aim of this research was to compare the health, behaviour, and laying performance of hens hatched on-farm to those transported as day-old chicks to determine if the results supported either theory.

Dekalb white chicks were used in the Switzerland-based study that included two replicates of the two treatment groups (n = 40 in each replicate pen). After the initial early life treatment (raised on litter), at 17-weeks of age, the hens were raised in pens simulating commercial conditions (multi-tier aviary) while their health and behaviour was monitored. No differences were found in hen mortality or number of eggs produced, but the farm-hatched hens had more severe keel bone fractures than those transferred to the farm at one day old. For the first three months after their transfer into the laying barn, the farm-hatched hens averaged less transitions between the aviary's tiers and spent less time on the littered floor. After that time, the behaviour of the hens was similar across the treatment groups.

The researchers concluded that their results supported the "environmental matching" theory and proposed that hatching on-farm rather than in commercial hatchery could create a mismatch that is detrimental to animal welfare. They also recommended that further research is needed to determine if conventional husbandry practices should be modified to better suit hens hatched on farm.

Montalcini CM, Petelle MB, Toscano MJ (2023) ***Commercial hatchery practices have long-lasting effects on laying hens' spatial behaviour and health.*** *PLOS ONE 18(12):e0295560*

Lidocaine-impregnated latex bands provide long-term pain relief for lambs

Tail docking and castration using rubber rings are common procedures undertaken on lambs. Multi-modal pain relief, e.g. using local anaesthetic in combination with a non-steroidal anti-inflammatory drug, is recommended but this still doesn't fully alleviate the pain resulting from these procedures. Pain relief can be given in the form of injected lidocaine which provides short-term anaesthesia for up to three hours. However, it can take a long time for these ring procedures to be completed (e.g. over four weeks for the scrotum to drop off following rubber ring castration). The aim of this study was to assess the pharmacokinetics and pharmacodynamics of injectable lidocaine and to assess whether lidocaine-impregnated latex bands were able to deliver therapeutic concentrations over time to provide long-term pain relief. Previous research on this topic has been undertaken for cattle but not lambs.

Four treatments were trialled experimentally in small samples ($n < 10$ lambs) at a commercial farm in Canada. The experiments conducted were: investigation of in vitro release of lidocaine from impregnated bands; pharmacokinetics and pharmacodynamics of injectable lidocaine in scrotal and tail tissue; pharmacokinetics and pharmacodynamics of in vivo delivery of lidocaine with bands placed on the tail and scrotum of lambs; and a comparison of the sensation in control and lidocaine-impregnated banded tail tissue over time. The lidocaine-impregnated bands provided at least three days of anaesthesia (based on the lamb's response to electrostimulation of tail tissue over a period of 7 days) compared to controls (who had untreated bands placed), and they offered some pain relief for 21 and 28 days (tail and scrotum, respectively). More lidocaine was required to anaesthetise scrotums than tails.

The researchers concluded that the lidocaine-impregnated bands could help manage long-term pain in lambs undergoing castration and tail docking but note that further studies are needed to compare them to the use of an injectable local anaesthetic.

Ross JA, Roche SM, Beaugrand K, Schatz C, Hammad A, Ralston BJ, Hanson AM, Allan N, Olson M (2024) ***Assessment of the pharmacokinetics and pharmacodynamics of injectable lidocaine and a lidocaine-impregnated latex band for castration and tail docking in Lambs.*** *Animals 14(2):255*

Socialising entire male piglets improves welfare without negative impact on sows

Male piglets are routinely castrated in commercial practice because entire male pigs can display more aggressive and mounting behaviour than females, and this increases the risk of pigs being injured, particularly when mixing unfamiliar pigs together. However, castration is a painful procedure, so there are potential welfare benefits to leaving males entire. While socialising piglets prior to weaning has been shown in previous studies to reduce the injury risks, few studies have assessed the impact on the sows as well as on her piglets. This research examined both piglet and sow health during trials of a system that aimed to be a cheap and simple way to create groups of familiar entire male piglets in a conventional Swedish farm environment.

Swedish Yorkshire sows (n = 24) and their piglets (n = 235) were housed in individual farrowing pens without crates, and the male piglets were left entire. Half of the sows had a small door opened between their two pens when their piglets were two weeks old. The other 12 were kept in control conditions with their litters isolated from their neighbour. At weaning time, the sows were removed, and the socialised piglets were separated according to sex so that there were either eight males or eight females in the pens. The control piglets were left in their family group without the sow. There were no differences in measures of sow health between the groups and no difference in piglets' daily weight gain before weaning. Socialised piglets had a significantly higher growth rate during the week after weaning than control piglets. Socialised male piglets showed levels of aggression and mounting that were as low as in the female piglets.

The researchers concluded that socialising entire male piglets was effective at reducing the rates of aggression between piglets which was beneficial for piglet welfare and did not have any negative effects for the sows.

Rydhmer L, Andersson K (2024) ***Effects of socialising piglets on sow and piglet performance and behaviour of entire male piglets.*** *animal 18(3):101086*

Preening cups increase wet preening in Pekin ducks without impacting health

Ducks, as waterfowl, naturally perform water-related preening and bathing behaviours, however most commercial production systems do not provide ducks with open water sources that facilitate these behaviours. Wet preening is when a duck dips their head or takes water into their bill and then transfers it through their feathers by nibbling and stroking. Ducks in commercial systems are typically only provided drinking water from nipple drinkers which limits their ability to perform wet preening behaviours. However, having open water sources in a commercial system can lead to higher risk of bacterial infections in ducks resulting in decreased production and increased mortality. Providing access to a preening cup could allow for ducks to perform more natural preening behaviours without those increased risks. The aim of this study was to assess whether preening cups had any detrimental effects on duck welfare or productivity.

Day-of-hatch Pekin ducks (n = 260) were obtained from a commercial vendor in the US and housed at a research facility in 12 floor-based pens (approximately 65 ducks per pen). Half of the ducks were provided one preening cup in addition to the nipple drinker line and the other half of the ducks were only provided the nipple drinker line. Body weight and body condition score were measured weekly for a sample of the ducks, along with video monitoring of behaviour via scan sampling. At the end of the experiment, a sample of ducks were killed and various organs collected for weighing and analysis. Wet preening was more frequent in ducks with access to preening cups than the control group. There were no other significant differences between the ducks with or without preening cups in health, behaviour, preening gland weight, or productivity.

The researchers concluded that the preening cups increased natural wet preening behaviours in ducks while not adversely affecting duck health or productivity. However, the preening cups were also not necessary for the ducks to maintain their feather condition.

Schober JM, Merritt J, Swanson M, Tetel V, Oluwagbenga E, Frey D, Parnin H, Erasmus M, Fraley GS (2023) ***Preening cups increase apparent wet preening behaviors, but have no impact on other behaviors, body condition, growth, or body morphometrics of grow-out Pekin ducks****. Poultry Sci 102:103145*

ANIMALS IN SPORT, ENTERTAINMENT, PERFORMANCE, RECREATION AND WORK

Experience around horses helps understanding of their body language

Misunderstanding a horse's affective state can be pose human safety risks, but published findings about the importance of previous experience with horses to identify their affective states is not conclusive. Evidence is scarce on whether a person's ability to recognise human emotions is also important. This study aimed to understand the importance of these two factors, along with any interaction they might have, to a person's ability to correctly interpret the body language of horses.

An online survey was prepared that used 32 photographs of horses in poses that demonstrated body language representing their affective state. Participants (n = 299) were asked to choose one of eight alternative emotional states for each photograph. They were also given a Reading the Mind in the Eyes Test where they were asked to choose one of four adjectives to describe the feelings of a person as demonstrated in a photo of their face around their eyes. Prior experience with horses proved to be the most strongly correlated factor with correct interpretation of horse body language. Performance on the human test was also relevant, but to a lesser extent. Horse-experienced people had a 50% success rate in the horse body language test compared to 30% for people who scored well on the human test. No interactions were evident between the two factors.

The researchers noted that their results contrasted with previously published research involving identifying affective state from horse vocalisations, and they suggested that this is because human communication relies on vocalisation more than it does for horses. They therefore proposed that previous horse experience is more important to successfully interpreting horse body language than it is for interpreting vocalisation.

Braun MN, Müller-Klein A, Sopp MR, Michael T, Link-Dorner U, Lass-Hennemann J (2024) ***The human ability to interpret affective states in horses' body language: The role of emotion recognition ability and previous experience with horses.*** *Appl Anim Behav Sci 271:106171*

Agonistic behaviour in horses relates to situation rather than innate aggression

Agonistic behaviour in horses refers to behaviours that involve fighting, placation, or conciliation, so they can be aggressive or defensive. These behaviours can be dangerous to humans, horses, or other species and can affect the horse-carer relationship and horse financial value. The aim of this Australia-based study was to evaluate if agonistic behaviour such as biting, kicking, or the threat to perform these behaviours, can be related to specific situations that might indicate they are a response to pain, fear, or confusion, rather than being the result of innate aggression.

A survey of riders (n = 5,721) from around the world provided information about 3,391 horses, but only ridden horses (n = 2,734) were considered in the study. The questionnaire consisted of 97 questions and included 42 demographic items about horse and rider. A cluster analysis revealed five distinct situations with common characteristics: locomotion under saddle, saddling, reaction in a familiar environment, inter-specific threats, and intra-specific threats. Fear or pain was often a possible motivational trigger for the agonistic behaviour performed. For example, approximately 52% of the 1,061 horses with complete aggression scores showed these responses during locomotory effort relating to responses to rider's signalling for more muscular effort or speed. Rather than laziness or stubbornness, these behaviours could be a response to pain.

The researchers concluded that the five clusters likely highlight different motivations for agonistic behaviour. They also highlighted the potential role of pain and fear, thus challenging the view that these behaviours are the result of problems with the horse's nature rather than management practices.

Fenner K, Wilson BJ, Ermers C, McGreevy PD (2024) ***Reported agonistic behaviours in domestic horses cluster according to context.*** *Animals 14(4):629*

Horse fatalities and injuries are higher in jumps racing than flat racing

Victoria is the only Australian state that allows Thoroughbred jumps racing involving hurdles and steeples. In hurdle racing, horses jump over a series of hurdles that are at most 1 metre high over approximately 3km distance. Steeplechase races typically involve higher obstacles (up to 1.15 metres) over 5km. There are animal welfare concerns related to these sports, as previous research in Australia and overseas has indicated they have a higher rate of fatalities, falls, and injuries. Risk factors include track conditions, height and number of jumps, horse fatigue, and whip use. Falls and fatalities are often associated with musculoskeletal injury, contact with barriers, and contact with other horses. Steward's reports for Victorian jumps races have not been aggregated since 2012-2014, so the aim of this study was to evaluate the 2022 and 2023 seasons to determine fatality and injury rates and compare these with flat races held at the same race meeting.

Information about horse fatalities, falls, and injuries was taken from Racing Victoria race results and Stewards' Reports for jumps races (n = 150) and flat races (n = 157) held at 38 jumps race meets over 2022 and 2023. There were four horse fatalities over that time; all in jumps races. The rate of horse fatalities in jumps races was 3.3 per 1000 starts, higher than those reported between 2012 and 2014. The rate of horse falls in hurdle races was 24 per 1000 starts and in steeplechase races was 41.6 per 1000 starts, compared to zero in flat races. The rate of horse injuries was 68.9 per 1000 starts in jumps races, compared to 18.8 per 1000 starts in flat races.

The researchers concluded that further investigation of current risk factors is required, followed by the implementation of mitigation measures to protect both horses and riders.

Jeppesen A, Eyers R, Evans D, Ward MP, Quain A (2024) ***Comparison of reported fatalities, falls and injuries in thoroughbred horse jumps and flat races in the 2022 and 2023 jumps race seasons in Victoria, Australia****. Animals 14(5):804 [Author R Eyers is from RSPCA South Australia and D Evans is from RSPCA Australia]*

ANIMALS IN RESEARCH AND TEACHING

Research macaque welfare assessment tool developed for global use

Primates continue to be used for biomedical research, and they are often used for more long-term studies than other species which can contribute to poor welfare and cumulative suffering. It can be difficult to harmonise the management and welfare standards of research animals globally due to differences in study type, cultural practices, and local oversight requirements. This study described the development of a primate welfare assessment tool (PWAT) for research macaques that aims to promote improvement in their welfare at a facility level and globally.

The researchers engaged primate subject matter experts to identify welfare descriptors based on a literature review and then developed a tool that used a database to provide semi-automated data analysis. The tool used 133 input- and outcome-based measures relating to physical, behavioural, staff training, environment, procedures, and culture of care descriptors of welfare impact. The culture of care component is not found in most other assessment tools and recognises that ensuring employees feel valued and satisfied can lead to better animal care. Testing at 13 sites across four countries demonstrated that the tool was able to identify details at a facility level that allowed for tailored recommendations for improvement.

The researchers concluded that the collaboration that went into the development of the PWAT is important to ensuring its uptake and applicability for promoting global improvements in research macaque welfare. It was demonstrated to be able to identify global challenges to primate care, such as pain assessment and management, that could be addressed through the provision of training resources. PWAT is expected to allow research facilities to identify gaps in their programs and to monitor the implementation of refinements.

Paterson EA, O'Malley CI, Abney DM, Archibald WJ, Turner PV (2024) ***Development of a novel primate welfare assessment tool for research macaques.*** *Anim Welfare 33:e3*

WILD ANIMALS

Welfare evaluation tool developed for bottlenose dolphins under human care

The welfare committee of the European Association for Aquatic Mammals responded to the lack of an individual-based welfare assessment tool specifically for bottlenose dolphins under human care by establishing an expert group to develop the welfare evaluation tool Dolphin-WET. The aim was for the tool to include a wide range of indicators, focusing on the animal as well as the resources being provided, which would be suitable for use by zoos and aquariums.

The members of the group included experts in welfare science, cetacean biology and behaviour, and veterinary medicine. Scientific literature was considered along with the C-Well® protocol, Mellor's Five Domains Model, and the Welfare Quality® protocol. Dolphin-WET combined 37 animal-based and 12 resource-based indicators categorised as nutrition, environment, health, behaviour, and mental state. For example, observing if there is intentional avoidance of a specific area of a pool might indicate a welfare concern such as underwater noise. Abnormal repetitive behaviour, such as regurgitation or intense and repetitive aggressive interactions, could indicate poor welfare. Each indicator is graded using two or three-level scoring, and an app has been developed to facilitate the scoring process and enable comparison of results over time.

Dolphin-WET is a holistic tool that can be used regularly and without the need of external assistance. The ability for zookeepers, biologists, ethologists, and veterinarians to have a comprehensive and on-going view of an individual dolphin's welfare enables them to monitor the effectiveness of interventions designed to address specific concerns. It is anticipated that the tool will be refined to enable dolphin carers to improve monitoring, care and welfare of captive dolphins.

Baumgartner K, Hüttner T, Clegg IL, et al (2024) ***Dolphin-WET—development of a welfare evaluation tool for bottlenose dolphins (Tursiops truncatus) under human care.*** *Animals 14(5):701*

TRANSPORTATION OF ANIMALS

Farm animal transport regulations are often vague and insufficient

Transportation is stressful for farm animals as it involves handling, unfamiliar movement and noise, periods of time where animals are prevented from eating, drinking and resting, and, in some cases, challenging temperatures or new social groups. The aim of this review was to identify animal welfare risk factors associated with farm animal transport, based on the scientific literature, and to assess mandatory regulations in Australia, Canada, New Zealand, the EU, and the US in light of these risk factors.

The literature review covered 214 scientific papers published between January 2021 and December 2022. The main topics of research in the papers reviewed were animals' fitness for transport, journey duration, climatic conditions, and stocking density. Regulations differed across jurisdictions and for different types of animals and transport modes. For example, the US does not include regulations on animal fitness for domestic transport beyond a ban on the slaughter of non-ambulatory cattle. The other countries have all adopted more comprehensive regulations on the transport of unfit animals. However, in many cases regulations were too open to interpretation, such as Canada's ban on the transport of 'extremely thin' animals and Australia's requirement that 'reasonable steps' be taken to minimise the impact of extreme weather.

The researchers concluded that regulations were often vague, ambiguous, not reflective of the latest science, or insufficient to protect animal welfare. They also highlighted that non-compliance is regularly reported by animal welfare organisations. Trade agreements may push countries to harmonise their regulations, and the researchers also proposed a greater focus on enforcement.

Duval E, Lecorps B, von Keyserlingk MAG (2024) ***Are regulations addressing farm animal welfare issues during live transportation fit for purpose? A multi-country jurisdictional check****. R Soc Open Sci 11:231072.*

HUMANE KILLING

Carbon dioxide and nitrogen mixture improves broiler chicken welfare during stunning

At slaughter, animals are stunned to induce unconsciousness so that they do not feel pain and distress before death during the bleed-out process. In Europe, broiler chickens are either stunned using an electrical waterbath or carbon dioxide (CO_2) delivered in two phases. CO_2 stunning usually involves a first phase of <40% CO_2 to induce unconsciousness after which it is increased up to 90% CO_2 to induce an even deeper state of unconsciousness. The lower concentrations are used first to induce unconsciousness because high concentrations of CO_2 are aversive to birds. The use of inert gases, such as nitrogen (N_2), alone or in combination with CO_2 has been suggested as possible more humane alternatives to CO_2 stunning systems. The aim of this study was to determine if CO_2 combined with N_2 induced less aversive behaviours prior to death.

Mixed-sex Ross 308 broiler chickens (n = 243) were obtained from a commercial farm in Spain at 39-days-old and allocated to one of three treatments: industry standard 40C90C; 40C60N with a first phase the same as the industry treatment followed by a second phase of 60% N_2 and <2% oxygen; or 20C80N with a first phase of 20% CO_2 and a second phase of 80% N_2. Behaviour and brain activity were monitored during each of the treatments. The chickens subject to the 40C90C treatment showed more aversive behaviours and some remained conscious until the second phase which is known to cause pain. While all treatment groups showed some signs of aversion during stunning prior to loss of consciousness, the 40C60N and 20C80N treatments reduced the average time it took for chickens to lose consciousness (19 and 20 seconds respectively) and had reduced variability in those times, compared to the 40C90C treatment (53 seconds). Time until brain death was 64 and 70 seconds for the 40C60N and 20C80N treatments respectively, while it was 177 seconds for the 40C90C treatment.

The researchers concluded that the stunning treatments with CO_2 and N_2 resulted in a more rapid induction of unconsciousness and reduced signs of aversion in broiler chickens. Overall, the 20C80N treatment was found to have the best animal welfare outcomes.

Rucinque DS, Velarde A, Xercavins A, Varvaró-Porter A, Gibson TJ, Michel V, Contreras-Jodar A (2024) ***Alternatives to carbon dioxide in two phases for the improvement of broiler chickens' welfare during stunning.*** *Animals 14(3):486*

MISCELLANEOUS

Training helps veterinary professionals refer human victims of domestic violence

Australian police respond to domestic violence incidents on average every two minutes, and this violence can be strongly associated with pet abuse. Violence against pets can, for example, be a way of threatening and manipulating a human victim. The close link between pet abuse and domestic violence means that veterinary professionals could play a role in recognising, responding, and referring human victims. This study aimed to understand how targeted training could help their capacity and willingness to act.

The Eastern Domestic Violence Service (EDVOS) in Melbourne developed 2.5-hour face-to-face training sessions and surveyed participants before (n = 39) and after (n = 17) to assess the impact the training had on their understanding and confidence to act. The self-evaluation identified a lack of confidence to respond when faced with suspicions or disclosures of abuse prior to the training. Confidence increased after the training. However, prior to the training, many participants had a relatively good understanding of the link between domestic violence and animal abuse. The training improved on this, most particularly on their understanding of risk factors. Prior to the training, only 55.6% of the participants correctly identified gender as being the greatest risk factor for domestic violence. The survey results also highlighted that collaboration with local domestic violence support services would help veterinary professionals identify the most appropriate way to refer victims in their local area.

Despite the small sample size, the researchers concluded that veterinary professionals may be an underutilised resource for domestic violence victims with animals. They suggested that larger-scale studies would be helpful for assessing the impact that training programs could have.

Paterson R, Boller E, Kim Y, Hammond K, Diemer K (2024) ***What can veterinary professionals do? Measuring the effect of one domestic violence training pilot program on Veterinary Professionals' capacity to recognize, respond, and refer human victims of domestic violence.*** *Front Vet Sc https://doi.org/10.3389/fvets.2024.1254373*

Monitoring mammal vocalisation adds to assessment of individual welfare

Most studies have evaluated mammal vocalisation in the context of negative affective states, but adding it to the assessment of traditional welfare indicators paves the way to understanding vocalisation as an indicator of positive affective state as well. For example, vocalisations can be produced while foraging, playing, or grooming.

This review study provided an overview of non-human mammal vocalisation in different species and how it can be used to measure emotional valence (positive or negative affective state). In general, increase in the rate of calls and their loudness indicates increasing arousal or intensity. The researchers noted that the absence of vocalisation does not imply positive affective state and that if a call is associated with both positive and negative affective state, a difference may be evident in its fundamental frequencies. The study also reviewed methodological considerations and discussed how they can be applied to monitoring the welfare of animals living under professional care.

The researchers noted that monitoring vocalisations can be a non-invasive indicator of welfare. They encouraged welfare scientists to identify reliable species-specific calls that reflect emotional valence and intensity. By comparing the vocalisations made in positive and negative contexts, shifts in welfare status can be detected that help assess the impact of interventions such as introductions or changes in husbandry practice. They concluded that vocal activity is an ideal measure to integrate into welfare monitoring schemes for mammals, particularly because it could bring positive welfare into focus.

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