UFAW Indo-Pacific Asia Online Workshop

Controversies and Collaboration: Moving Toward Consensus in Animal Welfare

Abstract Book

Welcome to the UFAW Indo-Pacific Asia Online Workshop

The Universities Federation for Animal Welfare (UFAW) would like to take this opportunity to welcome you to this regional event, *Controversies and Collaboration: Moving Toward Consensus in Animal Welfare*.

We are delighted to be hosting this online workshop, enabling researchers in the Indo-Pacific Asia region to present their current animal welfare research to a global audience. By hosting this event, we seek to build trust, confidence and a sense of collegiality between participants that are committed to progressing animal welfare.

The programme has a focus on controversial issues in animal welfare. Within each session, speakers will present a range of opinions and perspectives on different topics, followed by the opportunity for questions or open discussion. By providing a forum to share and discuss a diversity of perspectives, we hope to enable progress towards greater consensus and collaboration across disciplines in animal welfare.

We would like to thank those who are contributing to the meeting, as speakers, facilitators, and attendees. We hope that you enjoy the workshop!

Mia Cobb, Kat Littlewood and Huw Golledge
Organising Committee

The Universities Federation for Animal Welfare (UFAW)

The Universities Federation for Animal Welfare (UFAW) is an international scientific and educational animal welfare charity and membership organisation. UFAW's vision is a world where the welfare of every animal affected by humans is maximised through a scientific understanding of their needs and how to meet them. UFAW promotes an evidence-based approach to animal welfare by funding scientific research, supporting the careers of animal welfare scientists and by disseminating animal welfare science knowledge both to experts and the wider public.

UFAW's work relies on the support of members, subscribers, and donors. To learn more about our work, to become a member of UFAW, or to donate, please visit www.ufaw.org.uk/. Thank you for supporting Science in the Service of Animal Welfare.

UFAW: Science in the Service of Animal Welfare

Most of us care deeply about animal welfare and want to do the right thing for animals, be it those we eat, those we experiment upon, or our much-loved pets. But simply caring about animals isn't enough; we also need to know what makes animals' lives better or worse to guarantee their welfare. Our mission is to discover what matters to animals, develop scientific solutions to animal-welfare problems and disseminate evidence-based animal welfare information

At UFAW we strive to answer such fundamental scientific questions about animal welfare by:

- Funding innovative research projects, prioritising those areas and species where the greatest benefit to animal welfare can be made.
- Supporting the development of animal welfare science in countries and regions where it is less developed by supporting and helping to develop local expertise.
- Collaborating with other individuals and organisations who share our commitment to evidence-based animal welfare, wherever working together can create a greater impact than we would alone.
- Sharing accessible, evidence-based animal welfare information with experts and the wider public.

For more information, visit: www.ufaw.org.uk

Please join UFAW

UFAW is a membership society for all those who are interested in Animal Welfare Science. One of the best ways to support our work and stay up to date with our activities is to become a member of UFAW.

Membership currently costs just £30, or £10 for students.

ufaw.org.uk/membership

Timetable of event

Tuesday 6 December 2022

Session One (12:00PM NZDT / 10:00AM AEDT / 7:00AM HK)
Working relationships

12:00PM
10:00AM
7:00AM
Welcome and Introduction Huw Golledge *(UFAW)*

12:15PM
10:15AM
7:15AM
Working collaboratively to improve the welfare of intensively grazed livestock during winter in New Zealand Penny Timmer-Arends *(Ministry for Primary Industries, NZ)*

12:30PM
10:30AM
7:30AM
The wickedness of mud and (no) trees
Helen Beattie *(Veterinarians for Animal Welfare Aotearoa, NZ)*

12:45PM
10:45AM
7:45AM
Does it need to be 'us' and 'them'? Animal-based research and animal activist communities can work together for a better future Jodi Salinsky and Tara Jackson *(University of Auckland, NZ)*

1:00PM
11:00AM
8:00AM
Panel discussion

Session Two (2:00PM NZDT / 12:00PM AEDT / 9:00AM HK)
Training and animal welfare

2:00PM
12:00PM
9:00AM
Short- and long-term impact of cognitive enrichments on dolphin welfare
Eszter Matrai *(Ocean Park Hong Kong, Hong Kong)*

2:15PM
12:15PM
9:15AM
The use of electric shocks on farm animals – Is it ethically acceptable?
Caroline Lee *(CSIRO, Australia)*

2:30PM
12:30PM
9:30AM
Training as enrichment: A critical review Eduardo Fernandez *(University of Adelaide, Australia)*

2:45PM
12:45PM
9:45AM
Questions

Session Three (3:15PM NZDT / 1:15PM AEDT / 10:15AM HK)
New thinking on old techniques

3:15PM
1:15PM
10:15AM
Fasting period and analgesia in streptozotocin-induced experimental diabetes in rats
Marisa Esteves-Monteiro *(ICBAS-University of Porto, Portugal)*

3:30PM
1:30PM
10:30AM
Considering the ethical, welfare and commercial interests of artificial insemination techniques in greyhound breeding females Michelle Ledger *(Greyhound Racing New Zealand, NZ)*

3:45PM
1:45PM
10:45AM
Hair cortisol: what is it really telling us? Examining relationships with other physiological and behavioural measures in companion dogs Carmen Glanville *(University of Melbourne, Australia)*

4:00PM
2:00PM
11:00AM
Questions

End (4:20pm NZDT / 2:20PM AEDT / 11:20AM HK)

Wednesday December 2022

Session Four (12:00PM NZDT / 10:00AM AEDT / 7:00AM HK)
Novel approaches to assessing welfare at slaughter - Where to from here?

12:00PM / 10:00AM / 7:00AM — **Introduction**

12:15PM / 10:15AM / 7:15AM — **Can valid indicators of positive life experiences be identified in animals** Sarah Babington *(University of Western Australia, Australia)*

12:30PM / 10:30AM / 7:30AM — **Assessing welfare at slaughter using EEG** Nikki Kells *(Tāwharau Ora, Massey University, NZ)*

12:45PM / 10:45AM / 7:45AM — **Panel discussion**

Session Five (1:30PM NZDT / 11:30AM AEDT / 8:30AM HK)
Life under water

1:30PM / 11:30AM / 8:30AM — **Does aquatic animal welfare matter?** Culum Brown *(Macquarie University, Australia)*

1:45PM / 11:45AM / 8:45AM — **Australian Shark Control Programs and its animal welfare implications** Stephani Lopes *(Macquarie University, Australia)*

2:00PM / 12:00PM / 9:00AM — **Cetaceans in human care** Stacy Fairfax *(Dolphin Marine Conservation Park, Australia)*

2:15PM / 12:15PM / 9:15AM — **Questions**

Session Six (2:45PM NZDT / 12:45PM AEDT / 9:45AM HK)
The relevance of natural living

2:45PM / 12:45PM / 9:45AM — **The "naturalness" of behaviour** Vittoria Elliott *(Wild Animal Initiative, Germany and USA)*

3:00PM / 1:00PM / 10:00AM — **Challenges and solutions for egg producers in transitioning to and maintaining cage-free systems in China, Indonesia, Japan, Malaysia, Thailand, and the Philippines** Kate Hartcher *(Global Food Partners, Australia)*

3:15PM / 1:15PM / 10:15AM — **Sales and marketing of cage-free eggs in China: A multi-case study** Maria Chen *(University of British Columbia, Canada)*

3:30PM / 1:30PM / 10:30AM — **Questions**

Session Seven (4:00PM NZDT / 2:00PM AEDT / 11:00AM HK)
Managing for better animal welfare

4:00PM / 2:00PM / 11:00AM — **Where's the welfare in wild rescue, rehabilitation, and release?** Gloeta Massie *(University of Queensland, Australia)*

4:15PM / 2:15PM / 11:15AM — **Snake welfare - moving beyond controlled deprivation** Michelle Campbell *(Animal Welfare Unit, Department of Regional NSW, Australia)*

4:30PM / 2:30PM / 11:30AM — **Piglet early life housing experiences and impacts on stress resilience** Megan Lucas *(Animal Welfare Science Centre, University of Melbourne, Australia)*

4:45PM / 2:45PM / 11:45AM — **Questions**

Thursday 8 December 2022

Session Eight (2:00PM NZDT / 12:00PM AEDT / 9:00AM HK)
How can we afford animals moral standing?

2:00PM
12:00PM
9:00AM
Introduction

2:15PM
12:15PM
9:15AM
Whose welfare matters most? Applying One Health ideas to consider wildlife welfare trade-offs when managing introduced species Jordan Hampton *(University of Melbourne, Australia)*

2:30PM
12:30PM
9:30AM
The moral consequences of perceiving animal minds Michael Phillipp *(Massey University, NZ)*

2:45PM
12:45PM
9:45AM
Is there a role for anthropomorphism in animal welfare science and veterinary practice? Julie Fiedler *(University of Melbourne, Australia)*

3:00PM
1:00PM
10:00AM
Panel discussion

Session Nine (3:45PM NZDT / 1:45PM AEDT / 10:45AM HK)
Change management

3:45PM
1:45PM
10:45AM
A practical framework to promote change and improvement in animal welfare Shari Cohen (*Animal Welfare Science Centre, University of Melbourne, Australia)*

4:00PM
2:00PM
11:00AM
New solutions need new thinking: Towards scientific diversity in animal welfare research Karen Luke *(Central Queensland University, Australia)*

4:15PM
2:15PM
11:15AM
A case study on community engagement for preventive healthcare of stray-owned dogs and cats by veterinarians Rashmi Gokhale *(University of Edinburgh, UK and Independent veterinary consultant, India)*

4:30PM
2:30PM
11:30AM
Questions

Session Ten (5:00PM NZDT / 3:00PM AEDT / 12:00PM HK)
Companion animal welfare

5:00PM
3:00PM
2:00PM
The good, the bad, the helpful – lived experiences of raising a puppy for companionship Ana Goncalves Costa *(University of Adelaide, Australia)*

5:15PM
3:15PM
2:15PM
Risk factors associated with feather damaging behaviour in companion parrots: An owner's perspective Rutu Galea *(University of Melbourne, Australia)*

5:30PM
3:30PM
2:30PM
Questions

End (5:45pm NZDT / 3:45PM AEDT / 12:45PM HK)

WORKING COLLABORATIVELY TO IMPROVE THE WELFARE OF INTENSIVELY GRAZED LIVESTOCK DURING WINTER IN NEW ZEALAND

Penny Timmer-Arends

Ministry for Primary Industries, New Zealand

Winter grazing is a common practice in New Zealand whereby livestock (e.g. sheep, cattle, deer) are held on a restricted area of pasture or crop at a high stocking density, and shifted frequently. The practice is used in pastoral farming systems to manage feed supply at a time of year when pasture growth is limited by cool temperatures and shorter daylengths. Large volumes of rain occur over winter and this practice helps to protect soil structure and pasture on other parts of the farm. However, winter grazing can have a range of impacts on animal welfare e.g. reduced lying times, birthing in mud, cold stress, nutritional and metabolic problems, ill-health, lameness and mastitis.

Following controversial media coverage of livestock in wet, muddy conditions, a pan-sector Winter Grazing Taskforce was established in 2019 to respond to the animal welfare issues associated with winter grazing. The Taskforce published 11 recommendations for the Ministry for Primary Industries (MPI) and the primary sector to implement via the Winter Grazing Action Group (the Group) to improve animal welfare in winter grazing systems.

An early output of the Group was the development of Expected Outcomes for Animal Welfare. This document established outcomes which mitigated the most negative animal welfare impacts, which all farmers could realistically achieve. A key benefit to the Group's collaborative approach was the creation of this single baseline of acceptable practice that could be applied across the different animal sectors. Key animal welfare messaging across the supply chain, was informed by this document, allowing joint and consistent messaging to farmers and graziers without the risk of providing conflicting advice.

Recognising "it will take a concerted effort along the supply chain to improve animal welfare in winter grazing systems" seminars were supported and co-delivered by the Group to over 140 rural professionals. These seminars successfully upskilled veterinarians, farm consultants and environmental advisers on both the animal welfare and environmental impacts of winter grazing, giving them the most recent scientific information to advise farmers and improve practices.

Many farmers have been receptive to advice and proactively improved their wintering systems since 2019. Improvement has been noted across industry groups, with good uptake of written wintering plans during 2021. These include animal welfare considerations and contingency plans to mitigate the impacts of prolonged wet weather.

Increased monitoring of winter grazing by MPI over 2020-2022 shows high levels of compliance with animal welfare requirements.

Back

THE WICKEDNESS OF MUD AND (NO) TREES

Helen Beattie

Veterinarians for Animal Welfare Aotearoa, New Zealand

In 2019, following the establishment of a Ministerial Taskforce on Wintering Grazing, a report was published. It states, "Firstly, it is clear to us that animal welfare is not sufficiently prioritised, by anyone along the supply chain: we see this as the key barrier to adopting good or improved practice."

The wickedness has roots in bank lending, mortgages needing to be paid, on farm systems recommended by industry organisations, and on land use that is consented by regional councils. Veterinarians often don't speak up for the animals; fertiliser reps keep selling fertiliser to feed the system; tanker drivers keep collecting milk for their suppliers, and AI technicians continue to impregnate animals. Tacit complicity rules.

And all the while, the animals and their welfare, arguably, drive none of these decisions.

Who could, what would, and why should we shift the system?
Scope: Given agriculture underpins Aotearoa's economy, resolving this wickedness is a gigantic task. Dairy supports New Zealand's prosperity and wellbeing, and helps to sustain our country's infrastructure. It is our largest export goods sector (approximately one in every three dollars), and it is the 8th biggest dairy industry in the world. Our dairy communities are an integral part of thriving rural life in New Zealand.

It's not possible accurately interrogate available data to understand area cropped or denuded of shelter, nor exactly the numbers of animals affected. And in fact, these details have limited irrelevance - it's not the gross area of cropped or denuded land that is the issue, rather that these areas, and such practices, support the entire sector and New Zealand's prosperity.

Integrity: Both cropping and denuding represent genuine One Health | One Welfare challenges, given the systems support families, and communities, through animal and environmental use, with varying welfare impacts on these. The systems have been enabled by banks lending money based on the balance sheets and farm system analyses that completely fail to take into account the wider costs of the system (ie to the animals and the environment).

Right along the supply chain and with very few exceptions, through their silence the vast majority of actors are complicit in supporting these systems. The small number of people who do speak up for either the animals or the environment face either a barrage of criticism or are ignored and discredited.
Solutions: In 2018, in an effort to address the unacceptable animal welfare outcomes (and the stress to farmers, and environmental damage), that created industry risk, the NZVA's CVO led a call for a pan-sector group to be established to work through these challenges. The Ministerial Taskforce resulted, and the collective, co-designed bottom line and expectation for winter grazing has vastly improved practice and reduced risk to the industry. Further industry leadership is needed to address other challenges like shade and shelter – this leadership is notably absent.

Different analyses must be used prior to mortgages, consents and support is given for systems that clearly won't allow for acceptable outcomes for the wider system – to animals, people and the environment. That requires a different value lens where pure profit and economic growth are deprioritised to allow an ecological economic lens to rule, ensuring that our planet - our life source - is protected for future generations. In that system, our animals will also live closer to A Good Life.

Back

DOES IT NEED TO BE 'US' AND 'THEM'? ANIMAL-BASED RESEARCH AND ANIMAL ACTIVIST COMMUNITIES CAN WORK TOGETHER FOR A BETTER FUTURE.

Jodi Salinksy and Tara Jackson

University of Auckland, New Zealand

It would come as no surprise to say that there are some distinct goals and philosophies of those working in the fields of animal-based research and teaching and those generally opposed to it. Worldwide, this divide has generated decades of fear, stress, frustration, physical and psychological attacks on researchers, mistrust on both sides, and mixed messages to the public and lawmakers. Is any of this really helping our animals or moving us closer to a day when they are truly not needed for scientific progress?

While historically the relationships between these groups have been tense, that is changing in New Zealand as communication is increasing. Common areas of interest are being identified, and shared goals are beginning to be created. Everyone says they want animals out of science as much as possible, so can we possibly get there faster and easier together?

This collaborative talk will share the perspectives and relationship of Tara Jackson (animal activist) and Dr. Jodi Salinsky (scientist). The benefits and challenges of working together will be addressed, focusing particularly on the New Zealand Anti-Vivisection (NZAVS) Striking at the Source campaign, and identifying key areas where the wider groups are attempting to cooperate. As anticipated, there is a reasonable amount of common ground.

Because of this specific relationship and wider collaboration, New Zealand has become internationally known for the positive communication between animal activists and organisations that use animals in science. It is hoped that this cooperative approach can spread further, and that organisations from 'both sides' will get involved nationally and internationally.

Back

SHORT- AND LONG-TERM IMPACT OF COGNITIVE ENRICHMENTS ON DOLPHIN WELFARE

Eszter Matrai

Ocean Park Hong Kong, Hong Kong

Dolphins live in complex societies where social behaviours have important roles in finding food, looking after the young ones, building and maintaining alliances. Thus having opportunities for engaging and practicing collaborative actions may be considered key components of dolphin welfare. Environmental enrichments provide great tools for that, their value have repeatedly documented with animals under human care. The evolution of a special group of enrichment devices have taken the enrichment programmes one step further; cognitive enrichments have provided novel opportunities of linking welfare and science. The utilisation of cognitive enrichments not only allows the assessment of activity budgets, but it also facilitates the investigation of species-specific cognitive processes.

In our study, we developed a series of cognitive enrichment devices with a focus on mutualistic and altruistic cooperation in a group of male Indo-pacific bottlenose dolphins. The devices were provided in between feeding sessions without specific training regarding their manipulation. The devices were constructed of PVC pipes, caps and rope handles, allowing simultaneous interactions for the dolphins. Besides recording the outcome of the trials, we were also interested in the welfare impact of these novel enrichments. Therefore, seven welfare indicators were monitored for a 3-year observation period. The occurrence of affiliative, aggressive and potentially stereotypical behaviours was assessed and compared between 'Session days' (when the cognitive enrichments were utilised) and 'Non-session days' (only regular enrichments were used).

The analyses revealed that 'Play with enrichment', 'Affiliative tactile', 'Social play' and 'Synchronous swim' were significantly higher, while 'Aggression' was significantly lower on Session days than on Non-session days. Moreover, the individual and the social network analysis further supported our findings. Positive welfare indicators increased for all dolphins during Session days and aggressive interactions in the network decreased.

The project was launched in 2016 and due to its success it continued even after 2019. Up till today over 260 sessions were conducted and no sessions were recorded without interactions, proving the value of the devices to the dolphins. Four research papers were published on the outcomes of cognitive research, including the first description of a novel affiliative behaviour. The results with regards of the welfare impact are currently under consideration for publication. We truly believe that cognitive enrichments are the key for advancing both welfare and science simultaneously in cetaceans.

Back

THE USE OF ELECTRIC SHOCKS ON FARM ANIMALS – IS IT ETHICALLY ACCEPTABLE?

Caroline Lee

CSIRO, Australia

Electric shocks are being increasingly used in farm management practices, including to stimulate movement (electric prods), animal training and for conventional and virtual fencing. Electric shocks are aversive, painful and stress-inducing with welfare impacts likely varying depending on application and context. The use of electric shocks evokes animal welfare debate as to whether they are ethically acceptable.

In considering the use of electric shocks to manage farm animals, we should first consider the welfare impacts on the animals. We have previously proposed a framework that highlights the importance of both predictability and controllability in considering the animal welfare impacts of the application of electric shocks to virtually fence livestock. In virtual fencing, the pairing of a predictable audio cue with an electric shock enables the animal to learn that it can control receiving the electric shock by staying within the virtual fence boundary. Studies show that virtual fencing has minimal impact on animal welfare when applied for up to four weeks and that animals rapidly learn to respond to the audio cue alone. However, there is a period of initial learning where the animal cannot avoid the electric shock.

As well as determining the welfare impacts of the electric shock itself, some propose that unless the use of electric shock has clear welfare benefits that cannot be practicably delivered in other way, then it may not be ethically justified to use it on animals. In relation to virtual fencing, welfare benefits would come from improved monitoring via GPS location so farmers can see where animals are and what they are doing. This would enable more timely treatment of sick or injured animals. Whether this could be achieved in other ways, would depend on the farming context. Regular monitoring may be more achievable on smaller farms compared with larger, extensive systems. Whether the welfare benefits outweigh the pain and stress of receiving intermittent electric shocks will depend on how these are weighted. This is the challenge that is faced when considering animal welfare assurance and assessment programs at large and will rely on weighing the impact on the animal with any potential welfare benefits. Further, welfare impacts will depend on context, individual differences, and the findings of further research.

Back

TRAINING AS ENRICHMENT: A CRITICAL REVIEW

Eduardo Fernandez

The University of Adelaide, Australia

Husbandry training and environmental enrichment are both important advancements associated with current behavioral welfare practices. Additionally, the use of training procedures has been proposed as a form of enrichment, with the implication that training can produce beneficial behavioral welfare results. Less clear are the specific testable ways in which training can be demonstrated to be enriching, beyond simply providing opportunities to be enriched.

This presentation examines the concept of training as enrichment through three distinct ways training procedures could enrich: (1) training facilitates enrichment usage, (2) training modifies interactions, conspecific or otherwise, and (3) training expands behavioral repertoires. Within each category, I discuss past research that provides empirical support for training functioning as enrichment, as well as related areas of research that provide additional evidence. Previous studies support the claim that training is enriching, with additional research necessary to better understand how prevalent and under what conditions training procedures function as enrichment. Future training research should examine these potential enrichment effects, including methodology that allows for comparisons to traditional enrichment, the use of welfare diversity/variability indices, and the effects of learning on trainers and trainees alike.

Back

FASTING PERIOD AND ANALGESIA IN STREPTOZOTOCIN-INDUCED EXPERIMENTAL DIABETES IN RATS

Marisa Esteves-Monteiro

ICBAS-University of Porto, Portugal

Diabetes mellitus (DM) is a chronic progressive metabolic disorder with a high worldwide prevalence. Its impact on human health justifies its translational study, using several animal models. Streptozotocin (STZ) has been the agent of choice to chemically induce DM, but because it is uptaken into β-cells by GLUT2 transporters, fasting before induction is usually recommended to avoid competition with postprandial glucose. However, there is a lack of consensus regarding the duration of fasting, so some researchers restrict food up to 16 hours (mostly overnight) and even 24 hours, a long period that has been considered as an important source of stress. In addition, STZ induction is commonly performed without analgesia, although inflammation of the pancreas is considered to be very painful. So, we decided to test the efficacy of STZ diabetes induction using only a 4 hours fasting and providing tramadol analgesia.

On the day of DM induction animals were fasted for 4 hours during the morning, with free access to water. The STZ solution (55 mg/ml in citrate buffer pH 4.5) was prepared just prior to the injection. DM was induced by a single intraperitoneal injection of 55 mg/kg of STZ, under the analgesic effect of tramadol (20 mg/kg, PO), administered moments before. Rats maintained ad libitum access to water and food through the remaining protocol. Animals were considered diabetic if 48h after STZ injection their blood glucose was ≥ 250mg/dL. The first induction was performed in 10 animals and 8 became diabetic. One second induction in the same conditions was performed in 12 animals and 11 became diabetic. So, from 22 animals that were injected with STZ, 19 became diabetic, representing an average rate of induction of 86,4%.

Before fasting, basal glycemia of control animals and STZ-induced rats was similar (105.63 ± 6.31 mg/dL vs 99.30 ± 3.29 mg/dL, respectively, $p>0.05$). STZ-induced rats glycemia increased to 395.09 ± 13.80 mg/dL within 48 hours (p0.05). At d7 and d14, almost all STZ rats presented with a glycemia above 500mg/dL with ketone bodies, while control animals presented glycemic values of 105.57 ± 4.76 mg/dL (n=8) at the 14th day. During the protocol, diabetic animals also exhibited classic DM signs, as polyphagia, polydipsia, polyuria and weigh loss.
With these results, it appears to be possible to decrease the fasting period and add analgesia during STZ-induction of DM in rats, taking in account animal welfare without jeopardizing experimental results.

Back

CONSIDERING THE ETHICAL, WELFARE AND COMMERCIAL INTERESTS OF ARTIFICIAL INSEMINATION TECHNIQUES IN GREYHOUND BREEDING FEMALES

Michelle Ledger

Greyhound Racing New Zealand, New Zealand

Breeding of racing greyhounds in Australia is predominantly via the use of artificial insemination (AI), mostly using frozen semen (FSI). AI can be performed either trans-cervically (TCI) or via surgical insemination (SI), which is most frequently performed in greyhound breeding females. Our data analysis investigated whether the less invasive, TCI, offered similar commercial success rates to SI; and to further understand barriers to its preferred use, we surveyed veterinary FSI technicians to understand the factors influencing their choice of AI methods and gain information on the associated welfare outcomes. A retrospective data analysis of Greyhounds Australasia (GA) records of all FSI performed in greyhounds between 2012-2020 was performed to determine whether commercial success rates between the two methods of insemination were similar. Our Generalised Linear Mixed Model of regression parameters contributing to pups-per-service, shows that method of insemination is not a significant predictor for the number of pups produced ($p<0.087$). A Linear Binomial Model, looking at the probability of a successful litter, determined that SI (70.2%) was more likely to result in a successful litter than TCI (48.1%) or intravaginal (IV) FSI (20.7%). Our survey results demonstrate that the welfare implications of SI are more severe than TCI, but that there are barriers to choosing TCI, including equipment, training, and commercial market forces. Ethical responsibility for welfare-centric choices regarding method of insemination should include a wide stakeholder group in weighing the commercial benefits against the welfare costs to greyhounds. The provision of adequate practical training in TCI to enable veterinarians to improve success rates will ensure that they are pro-active in ensuring the most welfare-centric method is used for inseminations.

Back

HAIR CORTISOL: WHAT IS IT REALLY TELLING US? EXAMINING RELATIONSHIPS WITH OTHER PHYSIOLOGICAL AND BEHAVIOURAL MEASURES IN COMPANION DOGS

Carmen Glanville

University of Melbourne, Australia

Cortisol is one of the most commonly used physiological indicators in animal welfare assessment. In canine science specifically, it has often been used as the sole animal-based measure in a welfare assessment protocol. However, there has been increasing debate regarding cortisol's utility and what it is actually 'telling us' about the animal's welfare state, particularly short-term fluctuations in cortisol concentrations. Hair cortisol provides a potentially promising alternative in this respect as it provides a longer term endocrine profile of hypothalamic-pituitary-adrenal axis activity as cortisol is deposited in the hair as it grows. However, given its relative novelty, questions remain regarding certain practicalities of using dog hair e.g., effects of coat colour and single sample vs. shave/re-shave procedures. To contribute to this knowledge base, we explored how dog hair cortisol relates to other physiological and behavioural indicators of dog welfare.

Single-dog households (n=48) completed a 2-week field study using PetPace smart collars to track dog physiology (pulse, respiration, heart rate variability (HRV)) and behaviour (activity, body position changes) in the home environment. A single hair sample was shaved and owners completed the Canine Behavioural Assessment and Research Questionnaire (C-BARQ). Items for each C-BARQ behavioural category were averaged, providing an overall score for that category (obedience, aggression, fear, separation, excitability, attachment, miscellaneous). Pearson correlations, one-way analysis of variance, and linear mixed models (with standardised predictors) were conducted.

Cortisol concentrations were consistent with previous studies (M=0.15 µg/dL, range= 0.05-0.39), did not correlate with dog age ($r=0.132$, $p=0.37$), and did not differ between hair melanin type; $F(3,44)=1.90$, $p=0.143$. Cortisol was positively correlated with fortnight average activity scores ($r=0.31$, $p=0.038$), but none of the other PetPace measures. There was a very small significant negative relationship between cortisol concentration and CBARQ aggression scores ($\beta=-0.17$, $df=38$, $p=0.024$), but none of the other CBARQ behavioural categories.

These varying results demonstrate the risk associated with using single animal-based indicators of animal welfare in assessment protocols. While hair appears to be a useful and practical matrix for cortisol analysis in dogs, its validity as an indicator of poor welfare remains unclear and requires further research. Additional practical benefits and limitations of using hair for cortisol analysis will be discussed.

Back

CAN VALID INDICATORS OF POSITIVE LIFE EXPERIENCES BE IDENTIFIED IN ANIMALS?

Sarah Babington

University of Western Australia, Australia

Public awareness of animal welfare is continuously growing and is placing demands on science to provide more objective methods to assess animal welfare. For an animal, life events are experienced along a valence continuum from negative (e.g., fear and pain) to positive (e.g., comfort and play). During the 1900s, animal welfare was generally assessed using validated indicators that have been associated with negative experience, such as stress. While it is important to recognize the inevitable negative experiences of animals during their lifetime, a lack of negative experience only equates to neutral welfare rather than to good welfare. There has been shift in animal welfare science in the last few decades, to improve welfare by maximizing the opportunity for positive experience while minimizing the negative experience of animals.

While existing behavioural and physiological indicators are informative for assessing welfare, they provide little information about how animals experience the world. Existing indicators are based on the outcomes of an experience rather than providing information on the experiential process itself. For example, after an animal is handled cortisol and heart rate may increase reflecting changes in the autonomic nervous system (ANS) and the hypothalamo-pituitary adrenal axis (HPA), which are the result of the central nervous system (CNS) processing the handling event. To assess the experience rather than the response of the experience, we require biomarkers that are from the central mechanisms responsible for generating the experiential state within an animal.

Neuroscience has identified biomarkers that are associated with mental state in humans, including markers of cellular function (proteomic changes, oxidative stress, and antioxidant status), gene regulation, and neurobiological processes (microglial activation, neurotrophin, and neuropeptide expression). To identify and validate these biomarkers for animal welfare, we should investigate changes in the level and/or expression of the biomarkers in the CNS while animals are in situations commonly known to generate negative or positive experience. Human biomedical science has shown that some changes in the CNS are related to experience are accompanied by changes in specific signals, such as microRNA in biological fluids. If similar patterns are seen in non-human animals, it could be possible to estimate experiential state by measuring these biomarkers in body fluids, providing a new dimension to the assessment of animal welfare.

Back

ASSESSING WELFARE AT SLAUGHTER USING EEG

Nikki Kells

Tāwharau Ora, Massey University, New Zealand

The mammalian brain is an electrochemical organ that processes information by means of changes in the membrane potentials of excitable neurones. These membrane potential changes generate far fields and the summated far-field activity of the brain can be recorded at the surface of the body as the electroencephalogram. The electroencephalogram is a by-product of information processing and changes in it are considered to reflect changes in the function of the brain and especially the pyramidal neurones of the cerebral cortex. An important feature of electroencephalographic changes is that they respond instantaneously to changes in brain function. This gives them advantages over many other techniques in situations such as slaughter where underlying physiological function is not stable and profound changes can occur with great rapidity.

Analysis of the electroencephalogram has been used to study both responses to specific stimuli (especially noxious stimuli) and states of brain function associated with conscious awareness or its absence. Both of these methodologies have been applied in the context of slaughter to give indications of the time to insensibility and potential for pain associated with a variety of slaughter techniques. Examples of slaughter/stunning techniques that have been investigated include mechanical stunning, electrical stunning, controlled atmosphere stunning, diathermic syncope and slaughter by neck incision without prior stunning.

This presentation will outline some of the principles of using electroencephalographic analysis to investigate welfare aspects of slaughter/stunning techniques and present some examples of the findings of relevant studies.

Back

DOES AQUATIC ANIMAL WELFARE MATTER?

Culum Brown

Macquarie University, Australia

There is emerging consensus that fishes, like other vertebrates, are sentient and therefore ought be included in our moral circle. This has considerable implications for how we treat fishes. Nonetheless, this topic has been controversial, particularly in relation to whether fish feel pain. Humans interact with fishes in a wide range of contexts; fisheries, aquaculture, zoos and aquariums, ornamental fishes trade and increasingly in scientific research. Surprisingly little is known about the capacity for sharks and rays to feel pain and this is also controversial because several studies have failed to identify nociceptors in elasmobranchs. Beyond fishes, however, other aquatic animals are also starting to emerge in animal welfare research including cephalopods and decapod crustaceans. Many nations and states have subsequently altered their animal welfare regulations to include these animals. Recreational and commercial fishing are both multi-billion dollar industries and there is understandably going to be push-back from these sectors. Animal welfare organisations are starting to campaign for aquatic animal welfare, a topic they have largely ignored for the past 60 years. There are clearly multiple conflicting interests in this field and the stakes are high. How will industry respond to the growing public interest in aquatic animal welfare?

Back

AUSTRALIAN SHARK CONTROL PROGRAMS AND ITS ANIMAL WELFARE IMPLICATIONS

Stephani Lopes

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The number of shark incidents in Australia have been increasing over time, and for this reason authorities were pressured to start the Shark Control Program (SCP). The SCP displays of two fishing strategies: nets and baited drumlines. These fishing strategies are designed to capture sharks ‚â• than 1.5 meters, as at this body size the sharks are considered hazardous for humans. The biggest problem with these management strategies is that the gear is not specific and catches a big variety of marine fauna as by catch, including threatened species. Statistics show that the majority of animals caught by the gear die and the fate of those released alive is largely unknown. Cause of death is most often drowning, but drumline hooks can also cause substantial damage to captured animals. Growing public awareness of aquatic animal welfare and marine conservation is putting pressure on state governments to find alternatives. Alternatives to improve the presented issues are (1) replacement of baited drumlines to smart drumlines; (2) increase the constancy of service in the SCP gears and (3) think about non-lethal alternatives to avoid shark-human interactions.

Back

CETACEANS IN HUMAN CARE

Stacy Fairfax

Dolphin Marine Conservation Park, Australia

Cetaceans housed in zoological facilities are often used in Animal-Visitor-Interactions (AVIs). Despite limited evidence about the effects these programs have on cetacean welfare, integrated behavioural and physiological measures have not been combined to quantitatively evaluate these effects. The aim of this study was to assess the welfare of five Indo-Pacific bottlenose dolphins (Tursiops aduncus) by measuring serum cortisol levels and changes in behaviour, following common AVIs.

Results showed no significant statistical differences in cortisol levels among the treatment groups which included poolside interactions, in-water interactions, and a control in which the dolphins did not interact with guests. Furthermore, there were no statistically significant changes in overall behaviour from before the AVIs to after. While trends in individual behavioural changes were emerging, the statistical power was too low to elucidate these trends with any statistical significance. A future longitudinal study focusing on individual animals might more clearly illuminate behavioural implications of animal-visitor-interactions, on individuals. Given the results, in this study, it is unlikely that animal-visitor-interactions are linked to negative welfare impacts, in this population of Indo-Pacific bottlenose dolphins.

Back

THE "NATURALNESS" OF BEHAVIOUR

Vittoria Elliott

Wild Animal Initiative, Germany and USA

Keepers of animals in captivity concerned with their welfare strive to create environments that are natural for their captives - a particular challenge when creating enclosures for large nomadic animals in a confined space. Here we investigate the purpose and practicality of this endeavor and pose the question whether other criteria regarding positive welfare indicators might be more helpful in enhancing conditions for wild animals. In this paper, we assess the evidence for the naturalness of behavior and discuss it in the context of the welfare of wild animals. We reviewed 50 studies of animals in zoos to understand the relationship between welfare and behaviours exhibited in captive animals that are considered to be 'natural'. We further explored the purpose and practicality of 'naturalness' as a measure of welfare in zoos and considered what other positive welfare indicators could be used instead. We found that some behaviours that are considered "natural" are poor welfare indicators, (e.g. many stereotypies fall in this category), whilst other "non-natural" behaviours are beneficial for welfare (e.g. playing with a ball). We also found that natural behaviours can be exhibited as 'displacement behaviours", which also can be an indicator of poor welfare. Due to high variation among species, zoo practices, assessment measures, and reporting by the studies reviewed, it was hard to quantify the relationship between behaviours and welfare in some cases, which confirmed that greater standardization and consistency is needed.

Nevertheless, we found that striving for a 'natural'-appearing enclosure relates to visitor perception rather than welfare of the animals. Some enrichments supporting aspects of animal welfare can be a biproduct of more "natural' enclosures, including being spacious, and having stimulations. It is, however, likely that such stimuli could likewise be replicated with the use of less 'natural' enclosures. Alternatives to "naturalness", as an indicator of enclosure quality, were also explored, confirming that focusing on defining both behavioural and physiological indicators of positive welfare, and establishing consistency among institutions will help with assessing welfare more effectively. We explore the purpose and practicality of exhibiting natural behaviours in captivity and place our results in the context of recent literature discussing the validity of other welfare indicators and the challenge of quantifying good versus bad welfare from behaviours, such as play.

Back

CHALLENGES AND SOLUTIONS FOR EGG PRODUCERS IN TRANSITIONING TO AND MAINTAINING CAGE-FREE SYSTEMS IN CHINA, INDONESIA, JAPAN, MALAYSIA, THAILAND, AND THE PHILIPPINES

Kate Hartcher

Global Food Partners, Australia

Asia-Pacific countries contribute nearly two-thirds of global egg production. The adoption and management of cage-free egg production systems is an emerging issue across Asia. The primary goal for this research was to investigate the main challenges egg producers face in adopting and maintaining cage-free egg farms. The expected outcomes were to identify opportunities for engaging and supporting egg producers.

A total of 202 egg producers completed questionnaires; 108 of these were from Indonesia, the rest were from China, the Philippines, Thailand, Japan, and Malaysia - 165 of participants were from cage farms, and the remaining from cage-free farms. Binary and numerical data were summarised, and qualitative data was subjected to manual thematic analysis using software packages Nvivo (QSR International, 2018) and Microsoft Office. Data within each theme were then subjected to further analysis to create subthemes, organised, and quantified for frequency.

Challenges

The top challenges identified by existing cage-free producers were:
- Cost of production (22%)
- Management of the system (14%)
- Disease (14%)
- Product sales (13%)
- Production rate (11%)

Specifically on animal welfare related husbandry practices, when cage-free producers were asked to score the difficulty of managing various issues on a scale of 0-5 (5 being the most difficult), the most difficult issues were:
- Preventing disease (2.8/5)
- Maintaining litter quality (2.2/5)
- Preventing smothering (2.1/5)
- Preventing feather pecking and cannibalism (2/5)
- Humane euthanasia (1.9/5)

Solutions

Egg producers were positive about the feasibility of cage-free egg production in the region. However, 81% of cage-free producers believed that more support is needed to maintain their farms. They identified ‘improving on-farm practices’ as the single most important solution for maintaining existing cage-free egg farms, raised as 36% of responses on this topic. This was followed by improved marketing (17%), government support (8%), disease prevention and management (7%), information and training for producers (7%) and increasing investment (7%). The results of this study show a strong theme of needing to improve farm practices and a need for information and training by producers.

Back

SALES AND MARKETING OF CAGE-FREE EGGS IN CHINA: A MULTI-CASE STUDY

Maria Chen

University of British Columbia, Canada

Housing systems directly impact animal welfare, for example, well-managed cage-free housing offer hens the potential to express natural behaviours and experience higher welfare. As the world's largest consumer and producer of eggs (with 3.3 billion layer hens in 2020), small changes in China can impact large numbers of hens. Despite consumer preference for free-range eggs in China, only 10% of eggs are produced in cage-free systems (1% being indoor systems; 9% being outdoor, free-range systems). Using a multi-case study design, our aim was to examine 5 companies sourcing cage-free eggs in China to understand: 1) why these companies sell cage-free eggs and 2) how these eggs are marketed. We purposively sampled 5 companies (2 using indoor systems, 3 using outdoor, free-range systems) and within each of these selected 1-3 individuals involved in marketing, resulting in a sample of 9 managers, salespeople and marketing specialists. We conducted semi-structured, audio-recorded interviews separately with each participant, using the social media platform WeChat. Other data sources included the participant's WeChat chatlogs (including text, photos, videos) and public online documents (including news, online shops, social media content). We analyzed all data using Template Analysis to generate key themes. Preliminary results suggest the rationale for selling eggs from indoor and outdoor cage-free systems include: 1) producing high quality eggs, 2) meeting existing demands for free-range products, and 3) testing consumer acceptance of eggs from indoor systems. Marketing strategies included identifying target audiences (e.g. high income earners), using appealing concepts (e.g. 'indigenous chicken egg' for free-range, 'edible raw egg' for indoor systems), and establishing trusting relationships with consumers (e.g. welcoming consumers to visit the farms). Though improving sales of cage-free eggs may promote cage-free production, further research and policy efforts are required to help ensure high animal welfare conditions on these cage-free farms.

Back

WHERE'S THE WELFARE IN WILDLIFE RESCUE, REHABILITATION, AND RELEASE?

Gloeta Massie

The University of Queensland, Australia

Wildlife rescue often elicits very strong reactions in people. To some, wildlife rescue is the largest citizen-driven animal welfare effort occurring in Australia, to others it's a horrible waste of time and resources that subverts natural selection. No matter where you are on that spectrum, wildlife rescue has implications for welfare (both animal and human) that should be considered and addressed. In this interactive talk, I will provide an overview of the scope and scale of wildlife rescue in Australia, then discuss data from my PhD research, "Waiting to be seen: Factors influencing the welfare of rescued wildlife and the people who care for them". I have used a mixed-methods approach including a systematic scoping review of over 152 journal articles, a retrospective analysis of over 100,000 wildlife hospital admissions, a survey of 536 people, observations of over 800 rescued animals, and thirty hours of interviews with veterinary professionals to capture the current status of welfare in wildlife rescue. The results of the research are quite stark: the systematic review revealed a widespread absence of scientific robustness, replicability, and consideration of welfare in the literature on wildlife rescue, with only one study including a control, randomisation, and blinding and fewer than half of the studies reporting any physiological animal welfare indicators. The retrospective wildlife hospital admission analysis showed marked increases in wildlife admissions since 2012 with historically high summer admission rates now expanding into spring and fall. In line with surveys of wildlife rehabilitators, my survey confirmed that 66% of respondents (including both wildlife rescuers and non-rescuers) held overly optimistic views about rescue outcomes. Of the rescuers, 77% of respondents engaged in wildlife rescue to alleviate animal suffering, but 37% of respondents rescued wildlife without any training, and 12% of untrained rescuers kept the animals for more than 24 hours. My animal observations and interviews revealed an overburdened and underfunded system that is placing both animal and human welfare at risk, with many rescued wildlife waiting for hours to receive appropriate care and veterinary professionals discussing the negative mental health impacts of their work with rescued wildlife. I will close my talk by suggesting how the wildlife rescue system could be improved through the application of sustainability principles.

Back

SNAKE WELFARE – MOVING BEYOND CONTROLLED DEPRIVATION

Michelle Campbell

Animal Welfare Unit, Department of Regional NSW, Australia

Assumptions regarding the simplicity of the reptilian brain and consequently reptilian behaviour have been used to justify some husbandry practices. These have often shaped community perceptions of reptiles as animals that "matter less", as incapable of complex thought or emotion, and hence unable to meaningfully suffer.

Captive environments for snakes typically involve enclosures with dimensions that prevent them from adopting a straight-line or rectilinear body posture. In particular, in the commercial, hobby, and pet sectors it is very common practice to keep snakes in quite barren boxes or plastic tubs (often stacked in racks), with simple features such as a heat lamp, a clean water source, a sloughing aid and "easily-cleaned" plastic or paper-lined flooring. Zoos and other facilities frequently maintain at least some of their snakes under broadly similar conditions. As such, captive snakes may be the only vertebrates where management commonly involves deprivation of the ability and welfare need to freely extend the body to its natural full length.

Long-standing practices are now being actively challenged as new research demonstrates that reptiles show most, if not all, the spatial cognitive processes as those of mammals and birds and meet the criteria to be considered sentient. Reptiles perceive the world differently and in such a way that makes anthropomorphic approaches to assessing their capacities problematic. Their response to human presence may obscure behaviours that are indicators of welfare.

The assumption that snakes are quite content to remain coiled permanently in the space available is outdated and not supported by mounting scientific evidence. Recent studies with corn snakes and ball pythons suggest that providing captive snakes with larger enclosures is beneficial to their behaviour and welfare and that housing in a racked tub system leads to considerable restriction of species-typical behaviours.

Obesity, dystocia due to poor muscle tone, constipation and spinal disease are all common in captive snakes and may well be associated, at least in part, with their extreme confinement.

Traditional practices reflect snakes' inconvenient shape rather than what is good for them and can be fairly described as 'controlled deprivation'. There is a need to question the messaging that these animals are simple, sedentary and easy to care for. Innovative developments in snake keeping are demonstrating their unique behavioural and cognitive capacities and how these can be supported via novel methods of enrichment and housing design.

Back

PIGLET EARLY LIFE HOUSING EXPERIENCES AND IMPACTS ON STRESS RESILIENCE

Megan Lucas

Animal Welfare Science Centre, The University of Melbourne, Australia

Pigs are exposed to several stressors as part of routine management in production systems, and the ability to successfully cope with these stressors may be shaped by pigs' early life experiences.

Forty-eight litters of piglets were reared in either a farrowing crate (FC) or a loose farrowing and lactation pen (LP) which was larger, more structurally complex and allowed free movement of the sow. A factorial design was used to study the effects of early positive human interaction, but only housing treatment effects are discussed here. After weaning, all pigs were housed in slatted floored pens without enrichment in groups of eight same sex pigs from two litters of the same treatment. Measurements of stress resilience before and after weaning included behavioural and physiological responses to routine husbandry stressors, fear responses to humans, novelty and isolation, and time budgets of behaviour and basal physiological measurements that reflect how pigs cope with their general environment.

During the lactation period, LP piglets had higher concentrations of brain-derived neurotrophic factor (BDNF; a neurotrophin associated with stress resilience) compared to FC piglets. They also performed more play behaviour and sow-interactions, and less repetitive nosing directed to pen-mates. The LP piglets showed more escape behaviour during capture by a stockperson early in life, and more fear, based on greater avoidance, of novelty and humans at 3 weeks of age. There was some evidence that this effect on fear was sustained after weaning, with LP pigs showing more avoidance of humans at 4 and 6 (but not 9 and 14) weeks of age, and more vocalising and higher cortisol concentrations in response to isolation at 7 weeks. The LP pigs also had a higher cortisol response to weaning and baulked more than FC pigs when being moved out of the home pens at 21 weeks. Time budgets of behaviour and basal cortisol and BDNF concentrations after weaning were not affected by early life housing.

These findings suggest the welfare of LP piglets in their undisturbed home pens was superior, but that they were less resilient in response to additional challenges in their environment before and after weaning. We hypothesis the reduced flexibility of LP pigs was attributed to rearing in a more isolated environment with less stockperson and non-littermate contact and less stimulation in general. While the farrowing crate environment clearly deprives piglets of opportunities for positive affective experiences, we found no evidence that rearing in crates had a negative effect on pig welfare or stress resilience after weaning.

Back

WHOSE WELFARE MATTERS MOST? APPLYING ONE HEALTH IDEAS TO CONSIDER WILDLIFE WELFARE TRADE-OFFS WHEN MANAGING INTRODUCED SPECIES

Jordan Hampton

University of Melbourne, Australia

Consideration of animal welfare has become an important theme in conservation, but perspectives on how best to define, assess and prioritise wildlife welfare are diverse. These tensions come into high relief when the control (lethal or otherwise) of anthropogenically introduced animal species is contemplated. This issue has been at the heart of many recent animal welfare controversies in Australasia, from attempts to eradicate rodents from New Zealand to the treatment of ungulates considered charismatic in Australia. Much focus has been placed on the welfare impacts of the proposed lethal tools (poisons, traps, shooting) on the introduced animals (the target species). However, any time we consider wild animals and the ecosystems that sustain them, there will be trade-offs in the welfare of different groups of animals. Non-target species that share the same ecosystems (heterospecifics) may also face negative welfare impacts if control is not undertaken through predation or resource depletion (i.e. competition). When these heterospecifics are native species, and especially when they are threatened species, there are also trade-offs between animal welfare and other values, namely biodiversity. It is presently unclear how welfare should be apportioned when these unavoidable trade-offs between species are encountered. Under the influential 'hedonism' account of welfare commonly applied today through paradigms such as the Five Domains, consideration is usually restricted to animals intentionally impacted, but there is less capacity to account for impacts on non-target species or broad ecological effects. Alternatively, an approach that has become popular under the One Health paradigm is the 'harms' model, which explicitly accounts for all anthropogenic impacts on animals, whether they are direct or indirect, intentional or unintentional. New ways of thinking about animal welfare are needed to tackle wildlife dilemmas in the Anthropocene, and the learnings of One Health may provide a beacon for contemporary animal welfare science to embrace the connectedness of the animals for which we care.

Back

THE MORAL CONSEQUENCES OF PERCEIVING ANIMAL MINDS

Michael Phillipp

Massey University, New Zealand

The presence of mind typically refers to a capacity to think, feel, and engage in wilful action—to have mind is to be conscious. Regardless of an animal's true capacity for experience and information processing, it is the mind that we perceive that matters. Empirical evidence is clear that there are moral consequences to perceiving minds.
In this talk I will review a pair of studies examining lay peoples' attitudes toward the use of population management euthanasia (PME) with diverse taxa and how those perceptions of mental capabilities predict levels of PME acceptability. Across 2 studies with 700 members of the public (UK & Australia) assessing 17 species across diverse taxa we found that unique dimensions of animal mind perception uniquely correlate with people's acceptability of PME. In particular, greater perceived social-emotional capabilities in an animal were associated with less acceptability for PME. However, perceptions of an animal's capability for autonomy were not associated with acceptance of PME. The pattern of results was stable controlling for perceived intelligence of animals and other perceptions known to be associated with the moral considerations we give to animals (e.g., beauty, edibility).

Foremost these studies make clear that the acceptability of PME is closely tied with peoples' perceptions of the animal's social sophistication. However, the studies also reveal that animal minds are not perceived uniformly as simply more or less conscious (or sentient). Rather, people perceive distinct facets of mind that each provoke different moral considerations.

Understanding how the public perceives animals' mental capabilities is critical to conservation efforts—providing insights as to how social license may be maintained and how the general public might be guided toward more sustainable attitudes toward human-animal interaction.

Back

IS THERE A ROLE FOR ANTHROPOMORPHISM IN ANIMAL WELFARE SCIENCE AND VETERINARY PRACTICE?

Julie Fiedler

University of Melbourne, Australia

Horse welfare is a wicked situation because veterinarians, horse owners and the community have been working across generations to find solutions, yet problems remain. One contributing factor which has received limited attention in animal welfare science and in horse owner practice is anthropomorphism. Anthropomorphism involves the projection of human attitudes and characteristics onto animals, nature or objects, a phenomenon that is prevalent in society. We conducted a survey of experienced horse industry practitioners in 2021 (#futurehorse) to identify which aspects of horse welfare survey participants felt were currently done well and to assess attitudes towards and understanding of anthropomorphism and animal agency. Of the respondents, 680/681 (99.1%) were Australian. The majority were 50 years or over (n=387/56.9%), and 578 (85%) were female. Three-quarters (75.2%) of respondents stated they had between 20 and 49 years of horse-related experience. Nearly half of respondents (n= 289; 46.1%) considered themselves professionals. The majority (n=430; 82%) believed that anthropomorphism could positively or negatively influence horse welfare outcomes. Anthropomorphism negatively influenced welfare when the human-centric interpretation of horse behaviours resulted in species-specific needs and behaviours not being acknowledged. Further negative influence occurred when anthropomorphism altered the interpretation of horses' behaviours which are the expression of animal agency. Animal agency refers to situations where horses self-direct behaviours, exercising choice and taking degrees of control of their surroundings and interactions. Opportunities for horses to express animal agency contribute toward a positive welfare status. However, misinterpretation of behaviours may result in animal agency becoming constrained or denied. Anthropomorphism was seen as positively influencing horse welfare in situations where it helped people to relate to animals and give them better care.

In this presentation, we consider two specific horse welfare situations where anthropomorphism may be controversial. The first is anthropomorphism as a communication tool in certain situations to positively influence the veterinarian-client relationship. Examples include achieving desired welfare outcomes when a horse owner delays a euthanasia decision or engaging with the owner about ethical perspectives and Quality of Life. We also consider situations in which anthropomorphism may negatively influence the veterinarian-client relationship to the detriment of welfare outcomes. Second, we consider what role, if any, anthropomorphism has in animal welfare science and whether it may inform the development of a hypothesis or research question but does not negatively influence project design, data analysis or interpretation because of the reflexive practices[2] and documented positionality of the researcher.

Back

A PRACTICAL FRAMEWORK TO PROMOTE CHANGE AND IMPROVEMENT IN ANIMAL WELFARE

Shari Cohen

Animal Welfare Science Centre, University of Melbourne, Australia

A new animal care and use industry-based research project has been launched to develop a framework to positively disrupt, challenge and promote better animal welfare and literacy outcomes. By using the research and teaching industry as a case study, the framework aims to utilise a combination of co-design principles and change management strategies to promote better animal welfare. The project will work closely with the research and teaching industry to deliver a collection of tangible practical materials to challenge and support the application of improvements in the 3Rs and animal welfare. The project will use a combination of benchmarking, training, consensus, and delivery of contemporary guidance materials to promote 3Rs uptake and enable better identification of animal welfare issues. The framework aims to create a practical methodology to be applied across various animal care and use industries as well as support changes towards better animal care, welfare, and attitudes.

Back

NEW SOLUTIONS NEED NEW THINKING: TOWARDS SCIENTIFIC DIVERSITY IN ANIMAL WELFARE RESEARCH

Karen Luke

Central Queensland University, Australia

Demand for better animal welfare is growing, heightening the urgency for improved animal keeping and training practices. While much progress in animal welfare has been made, many challenges persist. One strategy for progressing animal welfare research is surveying fields where the need for change is similarly urgent. For example, climate scientists have identified systems thinking as a core competency needed to address the climate crisis. The cornerstones of systems thinking involve non-linear, holistic, integrative thinking, with co-operation and partnership its' core values. In contrast, most animal welfare science is based on reductionist science, an approach formalised in the eighteenth century utilising linear, reductionist, analytical thinking with hierarchy and domination its' core values. The scientific method was built upon the Plutonian concept, 'the great chain of being', where animate and inanimate objects form a continuous hierarchy. Notably, this hierarchical paradigm underpins most Western institutions including religion, politics, economics, and education. Articulating the paradigm underpinning traditional science is not the norm for most scientists, yet a science paradigm colours all aspects of research from how questions are framed through to how results are interpreted. Believing animals are fundamentally different to humans, occupying a lower place in the universal hierarchy, whether acknowledged or not, shapes how many Western scientists approach animal welfare. Moreover, working within a society built on these beliefs further limits acceptable welfare solutions. Tight alignment of the assumptions underpinning the scientific method and society facilitates maintenance of the status quo. While desirable in some situations, when urgent change is needed, alternative disruptive approaches may be required. This fundamental alignment of science and society may explain why, despite excellence in innovative thinking and intent, improvements in animal welfare are extremely slow. A scientific culture where diversity of thinking is encouraged and there is greater transparency of science's assumptions, strengths and weaknesses, expands the solutions science can provide. Moreover, such a culture means that rather than dogmatically adhering to one scientific approach or another, researchers could critically select the most appropriate approach for their project, creating an environment where different approaches work side-by-side in partnership. While interdisciplinary animal welfare research is growing, there is room for much more. Einstein suggested we cannot solve our problems with the same thinking we used when we created them, and it is likely solving wicked problems such as poor animal welfare, requires some new thinking. One framework to aid new ways of thinking is systems thinking.

Back

A CASE STUDY ON COMMUNITY ENGAGEMENT FOR PREVENTIVE HEALTHCARE OF STRAY-OWNED DOGS AND CATS BY VETERINARIANS

Rashmi Gokhale

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Dogs and humans share unique relationships ranging from companionship to conflicts. After twenty years of implementation of Animal Birth Control (Dogs) rule, 2001 (refereed henceforth as ABC rule, 2001) in India, stray dog population management (DPM) issue is yet to be fully addressed. Estimated population of free-ranging dogs in India is 59 million as per Gompper, 2014. The 3(3) of ABC rule, 2001 states that, ''the street dogs shall be sterilized and immunized by participation of animal welfare organisations, private individuals and the local authority.'' Project Meher was an initiative by a group of animal lovers under MAW foundation in Thane, Maharashtra to promote responsible community dog care and management. We used ICAM's humane dog population management guidance 2019- COM-B model of behaviour where animal feeders also take the responsibility of vaccinating and sterilising the street dogs they are routinely feeding. The model was slightly tweaked for implementation in a regional scenario where individual dog feeders, generally women of various age groups, take the stray dog to a private veterinary practitioner for treatment. Therefore, our three key stakeholders were- community dogs (stray dogs who are routinely fed by a caregiver), Caregivers (community dog feeders) and private veterinary practitioners. MAW foundation vaccinated the community dogs with reference to WSAVAs vaccination protocol for asian small animal practitioners. The MAW foundation's veterinarian acted as a 'community health volunteer' as per the COM-B model who convinced the caregiver about the benefits of vaccinating and sterilising the stray dogs on their dog, family and neighbourhood. Project Meher directed the non-sterilised dogs for sterilisation at a registered veterinary facility permitted to perform animal birth control under local municipal corporations directives. 103 caregivers and 378 community dogs were registered under Project Meher between November 2021 to February 2022. These animals received antiparasitic treatment, first or booster dose of core dog vaccine, rabies vaccine and guidance on taking general care of community dogs and cats.

Back

THE GOOD, THE BAD, THE HELPFUL– LIVED EXPERIENCES OF RAISING A PUPPY FOR COMPANIONSHIP

Ana Goncalves Costa

University of Adelaide, Australia

Dogs living in Western countries today are more likely to be considered a member of the family compared than those in previous generations. This shift in human-dog dynamics also affects how we raise dogs, the benefits we perceive, and the challenges we face. To provide appropriate support to dog guardians we need to understand their experience. Our study aimed to better understand the lived experience of guardians who acquired and raised puppies for companionship. Using mixed-methods we surveyed 19 puppy guardians every two weeks, from 3-weeks after puppy acquisition, through to their puppy turning 6 months of age. By undertaking analysis of free text responses, we developed themes describing what guardians found most rewarding/enjoyable, most challenging, and most helpful. These themes were closely interconnected and suggest that puppy raising is complex, and sequential factors may have cumulative effects. Forming an attachment with their puppy, training, self-efficacy, creating social networks and having access to time were major positive factors in a guardian's experience. Training appeared to have multi-faceted benefits as it likely provided opportunity for shared activity, increased positive states, attachment, increased self-efficacy and decreased challenges. Social networks may help decrease time owners require to raise their puppy (as burden is shared) as well as mitigate challenges, decrease negative states, and increase feelings of self-efficacy. Understanding the puppy raising experience better will guide us on how to provide appropriate support and resources to increase enjoyment and decrease stress in puppies and their guardians.

Back

RISK FACTORS ASSOCIATED WITH FEATHER DAMAGING BEHAVIOUR IN COMPANION PARROTS: AN OWNER'S PERSPECTIVE

Rutu Galea

The University of Melbourne, Australia

Parrots have a long history of being domesticated, and the current estimate suggests that the captive population of parrots is similar in size to their wild counterparts (World Parrot Trust, 2020). Companion parrots, akin to their wild conspecifics, require complexity in their physical environment to meet their behavioural needs, and this is often difficult to replicate in a captive environment. The lack of complexity in captive environments raises welfare concerns for the parrots housed in such conditions, and ethical concerns for a sustainable future of this population. One of the most common behavioural problems in captive parrots is feather damaging behaviour, which often manifests as a form of exaggerated preening involving chewing and pulling of feathers and can lead to physical injuries, infections and psychological distress for both parrots and their owners. Little is known about the causal factors for feather damaging behaviour, only that it is multi-factorial and can either be triggered by an underlying medical condition or due to a single or combination of animal, environmental and management factors. The aim of this study was to gain an understanding of the risk factors for feather damaging behaviour from the owners' perspective and to record any changes in owner-parrot interactions during the COVID-19 pandemic. An online survey composed of multiple choice and open-ended style questions was delivered to Australian parrot owners via the survey platform Qualtrics. The survey questions were designed to target potential risk factors for feather damaging behaviour including health, environment, management, and diet. A section of questions specifically focused on documenting the changes to physical environment of the companion parrot and parrot-owner interaction because of COVID-19 pandemic lockdown restrictions. Of the 63 participants that responded to our survey 93% were female, with an even distribution of female (43.6%) and male (41.8%) parrots. Feather damaging behaviour was reported in 19.6% of companion parrots, of which 82% were male parrots. Following the onset of the pandemic, 75% of participants with feather damaging parrots reported spending more time with them, of which 20% reported an increase in feather damaging behaviour, 20% saw reduction in the behaviour and 14% saw no change. While the study gave an interesting insight into parrot ownership in Australia and the impact of the COVID-19 pandemic on owner-parrot interactions, the smaller sample size limited the opportunity to identify predictive risk factors for feather damaging behaviour. Further opportunities to recruit participants will be sought to continue the investigation into risk factors for feather damaging behaviour in companion parrots.

Back