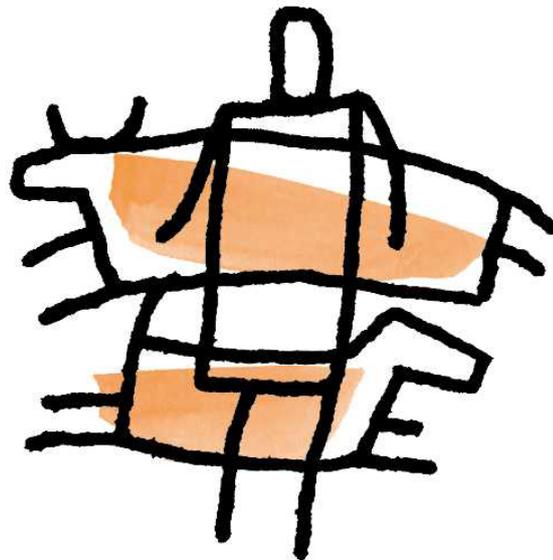




ANIMAL WELFARE SCIENCE CENTRE



ANIMAL WELFARE
SCIENCE CENTRE

STUDENT PRESENTATIONS

JUNE 17TH 2010
LECTURE THEATRE
DPI, ATTWOOD

Program

- 10.00: **Opening** - Paul Hemsworth, Director, AWSC, The University of Melbourne
- 10.05: Anoma Dilrukshi, PhD candidate, AWSC, The University of Melbourne
Defining dairy cow behaviour and welfare in feeding systems based on total mixed ration fed in conjunction with grazed pasture (15min)
- 10.20: Jo Coombe, PhD candidate, AWSC, The University of Melbourne
The effects of flexible feeding systems on the health and welfare of dairy cows (15min)
- 10.35: Catherine Webb, Masters student, AWSC, The University of Melbourne
Establishing a validated methodology for assessing the aversiveness of dog training devices (20min)
- 10.55: Tiffani Howell, PhD candidate, AWSC, Monash University
The utility of minimally-invasive electroencephalography (EEG) in dog cognition research (20min)
- 11.15: Sally Haynes, PhD candidate, AWSC, The University of Melbourne
Relationships between human attitudes, human behaviour and the behaviour and welfare of dogs in animal shelters and veterinary clinics (20min)
- 11.35: Lauren Hemsworth, PhD candidate, AWSC, Monash University
The Welfare of Recreational Horses in Victoria (30min)
- 12.05: Lauren Edwards, Post-doctoral research fellow, AWSC, The University of Melbourne
The human-animal relationship in the caged egg industry (30min)
- 12.35: LUNCH
- 13.20: Joanna Engel, PhD candidate, AWSC, The University of Melbourne
The Importance of Space and Nest Boxes for Laying Hens in Cages (30min)
- 13.50: Cameron Ralph, PhD candidate, AWSC, The University of Melbourne
Are the dynamics of change in intracellular Glucocorticoids related to the dynamics of change in plasma Glucocorticoids? (20min)
- 14.10: Sonja Laine, PhD candidate, AWSC, The University of Melbourne
Animal preference tests: importance of design factors (30min)
- 14.40: Marcus Karlen, PhD candidate, AWSC, The University of Melbourne
Is aggression a contributing factor to sow lameness? (20min)
- 15.00: Bronwyn Stevens, PhD candidate, AWSC, The University of Melbourne
Effects of deprivation of a preferred resource, feed or social contact, on the biological functioning of pigs. (30min)
- 15.30: **Wrap up & close** - Paul Hemsworth

Defining dairy cow behaviour and welfare in feeding systems based on total mixed ration fed in conjunction with grazed pasture

Anoma Dilrukshi, PhD candidate, AWSC, Faculty of Veterinary Science, The University of Melbourne

Abstract:

The current research aims to investigate the aspects of feeding high levels of supplements to cows as a partial mixed ration (PMR); that is, as a total mixed ration incorporated into grazing systems. In a comprehensive evaluation of PMR-based feeding systems for dairying, it is critical to assess and to be able to provide information to the industry on dairy cow behaviour and welfare implications of the various feeding strategies to supplement grazed pasture, as well as on management approaches to overcome any behavioural and welfare challenges.



The first experiment was conducted to investigate the effect of different feeding systems on cow lying behaviour. Twenty four focal cows in late lactation were used at each data recording in a completely randomised block design for 7 days within the period of 2 weeks. Cows were randomly assigned to the three main parent treatments (i.e. Control, PMR1, PMR2) and that was balanced for mean (\pm SD) parity, days before predicted calving date, Body Weight (BW), milk fat and protein yield and Body Condition Score (BCS); scored from 1 to 8 following Earle, 1976. The IceTag™ animal activity monitoring sensors (IceRobotics Ltd., Roslin, Scotland, UK) that uses accelerometer technology were used to monitor cow lying, standing and stepping behaviour within these feeding systems.

The second experiment was conducted with the aim of investigating the aggression and withdrawal behaviour of cows around the feed pad and its effect on feeding behaviour. 72 cows at late lactation were divided into 4 treatment groups of 9 cows, for a total of 8 groups with two replicates for each treatment. These PMR diet treatments were 6kg, 8 kg, 10 kg and 12 kg of DM supplements during feed pad feeding. After the 14 days of pre-experimental period the behaviour of cows was observed with video cameras (IR Tough Transit Camera; 550+ TVL TDN PAL 12VDC AUDIO) for 6 days and will be analyzed for social interactions, feeding behaviour and correlation with milk fat and protein yield.

The third study aims to identify current feed pad management strategies used in Victorian dairy industry. This dairy farmer practice survey will be conducted with the close consultation of Victorian Dairy Extension Centre (DEC) and it will be extended to main dairy regions in Victoria, i.e. Gippsland region, Northern irrigated region and South West region.

This information will be used to inform future studies as a part of this PhD program and the success of the project will enable producers to adopt strategies that optimize cow behaviour and comfort within flexible feeding systems, and enable the dairy industry to validate its welfare practices.

Supported by [Department of Primary Industries, Victoria](#)

Notes:

The effects of flexible feeding systems on the health and welfare of dairy cows

Jo Coombe, PhD candidate, AWSC, Faculty of Veterinary Science, The University of Melbourne

Abstract:

The trend towards reduced rainfall in Southern Australia has meant that the predominantly pasture – based system of dairy farming has shifted towards a system which involves the use of increasing levels of supplementary feed. Traditionally cows were fed approximately 90% pasture, with small levels of grain as a supplement. In the future it is anticipated that cows may be fed over half their daily ration as grain, either in the bail at milking, or on a feedpad as a total or partial mixed ration.



The use of high levels of grain as a supplement has inherent health risks, characterized by sub acute ruminal acidosis and its sequelae. One way of reducing this risk may be to offer cows a more uniform feed, containing grain, but also adequate levels of fibre in a form which may reduce the acidotic effects of grain alone. This study will be comparing the more traditional method of feeding grain to cows in the dairy plus hay or silage offered in the paddock, with the use of a partial mixed ration involving grain plus hay or silage mixed and fed on a feedpad.

The difference in management may not only have an impact on the production of the cows, but also on their health, both from a nutritional viewpoint and also from the effects that the differences in management have on the cows' environment. Using a group of research cows at the Department of Primary Industries, Victoria, Ellinbank Centre, a series of experiments will be conducted to investigate foot health, udder health, the function of the rumen and other health parameters, such as blood biochemical profiles.

Through these experiments, the aim is to establish whether the way in which the cows are fed their daily ration has an impact on their health and welfare.

Supported by [Department of Primary Industries, Victoria](#)

Notes:

Establishing a validated methodology for assessing the aversiveness of dog training devices

Catherine Webb, Masters Student, AWSC, School of Land and Environment, The University of Melbourne

Abstract:

Aversion learning studies have been used successfully to assess the aversiveness of various handling practices in sheep and cattle. Aversion learning techniques involve repeatedly exposing an animal to a location and specific treatment, allowing the animal to learn an association between the two. The rationale for aversion learning techniques is that animals will learn to avoid situations that they find aversive, and learn to approach situations that they find attractive or rewarding. Although it is a useful evaluation technique, it has not yet been used for research in dogs. The aim of this study was to evaluate the usefulness of aversion learning techniques to assess the aversiveness of training practices imposed on dogs. A total of 16 dogs of various breeds that were boarding at a commercial boarding kennel in the South-Eastern suburbs of Melbourne were used.



The experiment was a simple between-groups design with 8 control and 8 treatment (exposed to citronella) animals. All animals completed 3 trials per day for 6 days, with trials 1-9 designed to determine whether learned aversion occurred in the citronella-exposed dogs, and trials 10-18 designed to examine whether there was any extinction of this learned aversion. During the second day (trials 4-6) of the aversion learning phase of the experiment, dogs exposed to citronella were significantly slower in being led to the treatment area than control dogs ($p = 0.037$). There was a tendency for the experimenter to apply lead pressure for longer in order to move dogs exposed to citronella to the treatment location than control dogs during trials 4-6 ($p = 0.124$). Heart rate was measured at the beginning and end of the aversion learning phase, and at the end of the extinction phase. Citronella-exposed dogs had a significantly increased heart rate when stationary in the treatment location at the end of the aversion learning phase than control dogs ($p = 0.027$), but not at the beginning of it, nor at end of the extinction phase ($p > 0.05$).

While increased dog numbers would have been preferred, the results, together with those on other species, support the use of this aversion learning technique as a valuable approach to measure aversion in dogs exposed to training devices.

Notes:

The utility of minimally-invasive electroencephalography (EEG) in dog cognition research

Tiffani Howell, PhD candidate, AWSC, School of Psychology and Psychiatry, Monash University

Abstract:

Electroencephalography (EEG) is a fundamental physiological measurement of brain activity. P300 event-related potentials (ERPs) comprise a measurable change in brain activity, which occurs approximately 300msec after the onset of a novel stimulus and is represented by a positive-going waveform. Due to the relatively late appearance of this waveform, P300 ERPs are believed to represent cognitive processing of the stimulus, rather than a reflexive response to the stimulus itself. In humans, P300 ERPs are considered to be related to attention, expectation, and short-term memory, as they occur most reliably when attending to a stimulus elicited in the context of the task at hand. In humans, they have been used to study cognitive processing in healthy and clinical populations, including dementia patients. Additionally, P300 ERPs show clear heritability, with more closely related humans having a more similar waveform than humans who are not closely related.



Currently, dog cognition research is based almost exclusively on behavioural response; while this is useful, in some cases it could be confounded by obedience training or motivation. Thus, an objective measure of cognitive processing in dogs, such as the P300 ERP, could shed light on the dog's cognitive abilities regardless of any observable, or absent, behaviour. It would also represent the establishment of the first electrophysiological measure of cognitive processing in dogs, allowing dog cognition researchers the opportunity to study the neural underpinnings of dog behaviour. To the best of our knowledge, there is no known data that demonstrates a P300 ERP in dogs; however, we believe it may exist because it has been established in cats, rats, and monkeys. To date, EEG research in dogs has been invasive, and has aimed to better understand the mammalian brain or to diagnose diseases such as epilepsy.

We propose a new procedure that uses three sub dermal needle electrodes, similar in size to acupuncture needles. This minimally-invasive method will permit dogs to be awake and calm during the study, which may in turn allow researchers to establish whether the P300 ERP, or its species-specific analog, is observable in dogs. If a P300 ERP can be shown in dogs using a minimally-invasive technique, there may be a case for using such a technique for future EEG research with dogs, rather than the more invasive procedures often employed at present. Possible future research may include two-dimensional, auditory, or olfactory discrimination tasks, developmental changes, and breed differences in cognitive processing. This method could likewise help examine the cognitive effects of disorders such as canine cognitive dysfunction in older dogs.

Notes:

Relationships between human attitudes, human behaviour and the behaviour and welfare of dogs in animal shelters and veterinary clinics

Sally Haynes, PhD candidate, AWSC, School of Land and Environment, The University of Melbourne

Abstract:

Previous research has demonstrated the existence of a significant sequential relationship between human attitudes, stockperson behaviour and animal behaviour and animal welfare in livestock settings. Routine stockperson behaviours used to inspect and handle animals may have a profound effect on livestock, particularly those that are intensively farmed and in regular and close contact with humans. Frequent aversive stockperson behaviours can result in farm animals becoming highly fearful of humans, which can in turn negatively impact on livestock productivity and welfare. In addition, stockperson attitudes to interacting with farm animals have been shown to be consistent predictors of human behaviours towards livestock. Despite more than 37% of Australian households owning one or more dogs, there is a limited understanding of the relationships between human attitudes and behaviour and canine behaviour and welfare.



Animal shelters and veterinary clinics provide an excellent opportunity to examine the variation in human behaviour and the effect on dog behaviour in tightly controlled conditions. Not only may dogs associate rewarding or punishing events in the shelter or the veterinary clinic with humans through conditioning, but negative handling may invoke generalised fear responses towards humans, typically manifested in dogs as either avoidance behaviour or defensive aggression. This may be problematic in a shelter environment where the behavioural responses of a dog towards humans in a temperament test can determine whether the dog is deemed suitable for adoption or euthanased. In the veterinary clinic, dogs may become increasingly sensitised to treatment by a veterinarian and become more difficult to handle over time. This has implications not only for the dog's welfare, but also for the safety of the veterinarian and its owner's willingness to seek further veterinary attention.

This project aims to examine the human-canine relationship in animal shelters during the first 8 days and in veterinary clinics during standard consultations. It is hypothesised that the attitudes of 'dog handlers', e.g. shelter attendants and veterinarians, towards working with dogs in these settings are associated with their behaviour towards dogs which is, in turn, related to the dog's response to both the handler in these settings and to humans in general. The research will thus contribute to the handling recommendations for dogs in shelters and veterinary clinics to improve dog behaviour ease of handling and outcomes as well as providing valuable scientific knowledge regarding the human-canine relationship.

Notes:

The Welfare of Recreational Horses in Victoria

Lauren Hemsworth, PhD candidate, AWSC, School of Psychology and Psychiatry, Monash University,

Abstract:

A recreational horse is defined as any horse not currently involved in the horse racing industry. Little is known about recreational horse ownership in Victoria due mainly to the absence of compulsory horse identification and registration systems, and the difficulty associated with contacting horse owners that are not members of horse clubs or societies. The welfare of horses has become an increasingly important issue. In Victoria, since 1997 the RSPCA has investigated more than 1200 cases of horse welfare per year, second only in number to dog welfare investigations. A considerable proportion of the welfare problems that occur appear to involve horses that are used primarily for recreational purposes. Despite industry and public concern, limited information is available regarding the extent and seriousness of welfare problems in horses used in such a capacity. It is however, widely believed that the primary cause of welfare concerns in recreational horses is due to owner mismanagement, as a result of ignorance rather than intentional neglect or abuse.



An obvious lack of information on horse welfare and the details surrounding their ownership, coupled with the high representation of horses in welfare investigations were the incentives for the current investigation into recreational horse ownership in Victoria. The current project examines the welfare of recreational horses in Victoria, focusing on human-horse interaction; the impact human attributes have on horse welfare and the ways in which horses are managed.

The project has three research components. An initial survey-based examination of recreational horse ownership in Victoria was implemented using a random telephone questionnaire. The incidence of recreational horse ownership in Victoria was found to be approximately 3.5% and the details surrounding this ownership were collected. Ownership details collected included horse demographics, owner attributes and the beliefs underlying said ownership. The second component of the project involved an on-site inspection with participants and their horses, where human-horse interaction was examined. The focus of the on-site inspection was primarily on potential relationships between key human attributes and horse health and welfare outcomes. On-site data collection is complete and data analysis is currently being undertaken. The final component of the project examines horse owners' views, ideas and concerns regarding recreational horse ownership in Victoria using a structured qualitative interview. Data collection is currently occurring. The rationale, methodology and findings for all research components will be discussed.

While a greater understanding of recreational horse ownership in Victoria is required, determining the impact key owner attributes may have on horse welfare and management is crucial. It is hoped the research currently being undertaken will begin to explain the relationships that may exist between owner-horse interaction and horse health and welfare. Such knowledge is essential in developing and implementing appropriate strategies to manage recreational horse ownership and welfare in Victoria.

Supported by the [Bureau of Animal Welfare](#)

Notes:

The human-animal relationship in the caged egg industry

Lauren Edwards, Post-doctoral research fellow, AWSC, School of Land and Environment, The University of Melbourne

Abstract:

Previous research in the pork and dairy industries has demonstrated that the human-animal relationship is an important determinant of farm animal welfare. The behaviour of stockpeople toward their stock is determined largely by the attitudes that they have toward the animals and their work. If the majority of the interactions that occur between stockpeople and their animals are negative then the animals will be fearful of humans. Fear is an aversive emotional state, and its presence indicates a reduction in welfare. Fear also elicits a stress response, which can have negative effects on health and productivity. Thus, stockperson attitudes and behaviour can have important consequences for the animals in their care. This PhD project examined the human-animal relationship in the caged egg industry. This industry is one of the largest intensive farming industries in the world, and the human-animal relationship has the potential to impact a great many animals.



Twenty-nine laying sheds were studied in Australia and the USA, and in each shed the following four facets of the human-animal relationship were examined: stockperson attitudes, using a questionnaire; stockperson behaviour, using two days of direct observations; fear of humans in the hens, using two human-approach tests; and the impact of fear on stress and productivity, using an egg sample to assess stress hormone concentrations and farm records to assess egg production. These data were then examined for relationships. Stockperson attitudes and empathy were indeed related to stockperson behaviour, and this behaviour was in turn related to the fear of humans that the birds experienced. Interestingly, high fear of humans was associated with low concentrations of stress hormones and increased egg production. This result cannot be explained, however in more controlled experimental situations, human behaviours that decreased fear of humans was associated with improved egg production and reduced stress hormone response.

From these results it can be concluded that the human-animal relationship has important consequences for laying hens in the egg industry, in terms of their welfare and productivity. The development of training packages that target the key attitudes and behaviour of stockpeople could result in improvements to the welfare of laying hens by reducing their fear of humans.

Supported by [Australian Poultry CRC](#)

Notes:

The Importance of Space and Nest Boxes for Laying Hens in Cages

Joanna Engel, PhD candidate, AWSC, School of Land and Environment, The University of Melbourne

Abstract:

One of the welfare issues attracting the most attention in the egg industry is the use of conventional cages in production, specifically the behavioural restrictions associated with housing laying hens in cages. This issue has increased the push for use of alternative housing, cage free, free range, and specifically, furnished cages.

This experiment will examine the effects of floor space allowance during rearing, as well as, floor space allowance and access to a nest box during production on the welfare of laying hens. Birds will be reared at minimum floor space allowance based on predicted weight at 15 weeks of age and three times that floor space allowance.

At 16 weeks of age, 196 hens (32 cages) will be moved into production cages. The production cages will be set up in a 2x2 factorial design with the two factors: floor space, minimum floor space allowance (according to Code of practice) vs. 3 times minimum floor space allowance; and nest box, access to vs. no access to a nest box. Cages without access to a nest box have a nest box to maintain physical characteristics of cage, but access is blocked.

At 26 weeks of age, 4 weeks of biological functioning tests will take place. During this time physiological stress will be measured using corticosterone concentrations, both baseline and after an ACTH challenge, in plasma, eggs, and faeces, and various measures of immune function will be measured. Video records will be used to determine behavioural time budgets of behaviour and to examine egg laying behaviour, both time of oviposition (temporal) and location of oviposition within the cage.

At 30 weeks of age, 4 weeks of preference testing will commence. 32 hens (4 per cage) will be selected and divided into 2 groups, one being tested for space preference over food and the other being tested for nest box preference over food. The first of 4 replicates has been completed.

Supported by the [Australian Egg Corporation Limited](#)

Notes:



Are the dynamics of change in intracellular Glucocorticoids related to the dynamics of change in plasma Glucocorticoids?

Cameron Ralph, PhD candidate, AWSC, School of Land and Environment, The University of Melbourne

Abstract:

The relationship between plasma glucocorticoids and intracellular glucocorticoids is not well understood. We have little understanding of the process that facilitates glucocorticoid transport from normal blood circulation into target tissue and we do not fully understand the significance of an acute increase in plasma glucocorticoids to biological functioning.

There is a significant lag-time (over an hour) between glucocorticoid secretion into plasma and the appearance of its effect on target tissue. What happens during this lag time? Are changes in plasma glucocorticoids reflected in changes to the intracellular environment and are the changes to intracellular glucocorticoid concentrations proportional to those recorded in plasma?

This experiment investigated the relationship between plasma glucocorticoids, and intracellular glucocorticoids, so that we can better understand the connection between changes in plasma glucocorticoids and the pathway to physiological changes in the animal.

Supported by [Australian Pork Limited](#), [Australian Poultry CRC](#) and Our Rural Landscape Initiative Funding ([Department of Primary Industries, Victoria](#)).



Notes:

Animal preference tests: importance of design factors

Sonja Laine, PhD candidate, AWSC, School of Land and Environment, The University of Melbourne

Abstract:

The preferences of animals may tell us what is important to them and thus provide an indication of what is required to optimise their welfare. Animal preference tests conducted in a Y-maze apparatus, where an animal is offered a choice between two resources, one in each arm, may appear to be relatively straightforward. However, aspects of the design of the Y-maze test may have the potential to influence animal motivation and thus the choice made by the animal, leading to spurious results that are not reflective of the animal's true preferences. One such factor is the quantity of reward, that is, the amount of time with which the animal has with its chosen resource.



To investigate this factor, laying hens were preference tested for their choice between dust or social contact, while deprived of both resources in the home cage. Hens were allocated into three treatments, which differed in the quantity of reward for dust: 2 minutes (short), 20 minutes (intermediate) or 45 minutes (long). The quantity of reward for social contact remained at 5 minutes for all birds. Results revealed hens preferred dust to social contact; however, the intermediate treatment had a tendency to select dust less often. Intermediate hens were also significantly slower to move through the Y-maze to make a choice compared to the other treatments.

These results indicate that hens provided with 20 minutes of dust contact had a lower motivation to obtain dust in the Y-maze compared to hens provided with either 2 or 45 minutes. This may have been caused by the repeated interruption of dustbathing behaviour, mid-way through the dustbathing bouts. This experiment demonstrated how one factor in the design of a preference test can affect animal motivation and potentially, choice behaviour.

Supported by [Australian Poultry CRC](#) and Our Rural Landscape Initiative Funding ([Department of Primary Industries, Victoria](#)).

Notes:

Is aggression a contributing factor to sow lameness?

Marcus Karlen, PhD candidate, AWSC, School of Land and Environment, The University of Melbourne

Abstract:

In recent years, there has been a tendency to increase the number of sows housed in groups during gestation. This has brought potential solutions to sow welfare issues but also challenges. One of the greatest challenges of group housing for sows is how to control aggressive behaviour amongst recently mixed sows. The intensity and duration of aggressive behaviour relates to the number and severity of injuries suffered by the pigs.

There are a number of environmental factors that may affect the incidence of aggression in gestating sows, and thus the number on injuries. Inadequate social structure and excessive crowding are examples that may alter the behaviour of the sows increasing the aggressive behaviour and in turn making them more prone to injury.

Some of these injuries may lead to lameness. Lameness is a common affection of breeding sows. However, lameness is difficult to diagnose. Variations in the physical and physiological state of the sow translate in variations on the sow's gait. Therefore, a large number of sows with mild sows go through gestation without being diagnosed, let alone treated. This may lead to increase the severity of lameness, which in turn may compromise the welfare of the affected sow.

This PhD looks at the importance of the level of aggression on the incidence of lameness in group housed sows.

Supported by [Australian Pork Limited](#)

Notes:



Effects of deprivation of a preferred resource, feed or social contact, on the biological functioning of pigs.

Bronwyn Stevens, PhD candidate, AWSC, School of Land and Environment, The University of Melbourne

Abstract:

There is uncertainty within science on the concept of animal welfare, this arises basically because scientists differ in their concept of animal welfare and thus how animal welfare should be measured or judged. Scientists have predominantly used two methodologies to study animal welfare (Fraser, 2003): the welfare of animals has been assessed on the basis of either biological function or animal preferences. The first approach is an integrated one measuring behavioural, physiological, health and fitness responses to assess the overall biological functioning of the animal, on the basis that difficult or inadequate adaptation will generate welfare problems for animals (Broom, 1986). The second uses animal preference (and behavioural demand) testing on the basis that animal preferences are influenced by the animal's emotions, which have evolved to motivate behaviour in order to avoid harm and facilitate survival, growth and reproduction (Duncan, 2004). An important question in addressing this scientific uncertainty is how animal preferences relate to biological functioning. This experiment sought to test the hypothesis that deprivation of a preferred resource results in biological dysfunction.



In the first part of the experiment, 36 pigs female Large White × Landrace pigs aged between 10 and 14 weeks at the start of the experiment were studied in a series of preference tests. A Y-maze was used to provide the animals with the opportunity to choose between two resources: social contact with familiar animals; or access to feed in a distinctive feeder. Animals were tested in a random order once daily over 12 days and allowed 2 minutes with the resource once the choice had been made. During the 12 days of testing all pigs were fed 70% of voluntary feed intake (VFI) and deprived of tactile and visual contact with other pigs in their home pens. Two groups of 8 pigs each were selected, 8 that predominantly chose feed (chose feed on average in 80% of trials) and 8 that predominantly chose social contact (chose social contact on average in 91% of trials). The second part of the experiment involved studying preference and restriction in a factorial design. Over a 6-week period, half of each group of pigs (the “social preferred” and the “feed preferred” pigs) were deprived of visual and tactile social contact but had VFI, while the other half were placed on 70% VFI feed restriction but allowed visual and tactile social contact. At 5 weeks of treatment, the behaviour of pigs was video recorded and analysed for time budgets. Pigs then underwent surgery to implant catheters to allow for repeated blood sampling to measure basal cortisol (total and free) and the total cortisol response to an acute adrenocorticotropin (ACTH) challenge, and an acute corticotropin releasing hormone (CRH) challenge. Behavioural, liveweight and physiological data were analysed using general linear model in SPSS statistical package, where required data were log transformed.

There were no significant main effects on the liveweight change over the study period. However, there was a significant ($P=0.026$) interaction on liveweight change with both socially preferred and feed preferred pigs showing lower liveweight gains when deprived of their preferred resource. A similar tendency for an interaction between main effects was evident on free cortisol ($P=0.11$), with animals deprived of the preferred resource showing higher average day time (ADT) free cortisol. There was a main effect of feed deprivation on cortisol with increased ADT total cortisol ($P=0.044$) and increased cortisol response to CRH ($P=0.013$) in the feed deprived pigs. On the basis of changes in free cortisol and liveweight, this study provides limited evidence that deprivation of a highly preferred resource may result in biological dysfunction.

Supported by [Australian Pork Limited](#), [Australian Poultry CRC](#) and Our Rural Landscape Initiative Funding ([Department of Primary Industries, Victoria](#)).

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The Animal Welfare Science Centre

www.animalwelfare.net.au

The Animal Welfare Science Centre was established in 1997 by the University of Melbourne as a collaborative centre for research, teaching and training in animal welfare, with the two organisations Monash University and the Victorian Department of Natural Resources and Environment.

In 2009, a long-standing collaborative arrangement with the Department of Animal Sciences of The Ohio State University (OSU) was formalised by admission of the Department and the College of Veterinary Medicine at OSU as full partners of the Centre.

The AWSC currently comprises 4 collaborative partners – [DPIV](#) (through the Future Farming Systems Research Division), [The University of Melbourne](#) ([School of Land and Environment](#) and [Faculty of Veterinary Science](#)), [Monash University](#) ([School of Psychology and Psychiatry](#) and [Department of Physiology](#)) and [OSU](#) ([Department of Animal Sciences](#) and [College of Veterinary Medicine](#)).

In 2009, the AWSC together with the Centre for Animal Welfare and Ethics of The University of Queensland (CAWE), the Animal Welfare Unit of CSIRO and 2 New Zealand organisations, (Massey University’s Animal Welfare Science & Bioethics Centre and AgResearch) were designated as an [OIE Collaborating Centre for Animal Welfare Science and Bioethical Analysis](#).

The Centre has considerable research and teaching capacity in animal welfare science and has made a number of important national and international contributions to research, teaching and training.

The Centre conducts research across 3 programs areas:

1. Welfare methodology.
2. Housing and husbandry effects on animal welfare.
3. Attitudes to animals and animal welfare, and farmer, consumer and community behaviour.

These programs support the fourth program area:

4. Tertiary and post-graduate education and training

The Centre’s activities are guided by our vision and mission:

Our Vision

“Animal welfare and its constant improvement are societal and cultural norms”

Our Mission

“To contribute to improved animal welfare as a world leading provider of expert information, advice and education underpinned by rigorous research”

For further information on Centre RD&E activities, please email Jeremy Skuse, Executive Officer at:

awsc-info@unimelb.edu.au

