ANIMAL SCIENCES

COLLEGE OF VETERINARY MEDICINE

ANIMAL WELFARE SCIENCE CENTRE

A research day celebrating The Ohio State University joining the Animal Welfare Science Centre as its fourth partner

"Animal welfare issues and RD&E requirements"

10.00	**Welcome**	*Prof. Mike Rickard, Chair, AWSC*
10.05	**Opening**	*Mr. Richard Bolt, Secretary, DPI Victoria*
10.15	**Human attitudes and behaviour: can an understanding of these human characteristics improve animal welfare?**	
	Prof. Grahame Coleman, AWSC, Monash University	
10.45	**Thinking critically about animals in society: is this where animal welfare education should be heading?**	
	Dr. Pauleen Bennett, AWSC, Monash University	
11.15	**Animal welfare education and training developments in the USA**	
	Prof. James Kinder, AWSC, The Ohio State University, USA	
11.45	Lunch	
12.30	**Handling and housing: how important are they to an animal's welfare?**	
	Prof. Paul Hemsworth, AWSC, The University of Melbourne	
1.00	**Painful husbandry procedures: how can they be improved to reduce pain?**	
	Assoc. Prof. Andrew Fisher, AWSC, The University of Melbourne	
1.30	**Understanding stress responses: can we develop strategies to reduce stress and improve welfare?**	
	Prof. Alan Tilbrook, AWSC, Monash University	
2.00	**Benchmarking animal welfare: can this development improve animal welfare?**	
	Dr. Ellen Jongman, AWSC, DPI Victoria	
2.30	**Closing remarks**	
	Prof. James Kinder, AWSC, The Ohio State University, USA	
3.00	**Close**	

Human attitudes and behaviour: can an understanding of these human characteristics improve animal welfare?

Grahame Coleman, AWSC, Monash University

Grahame.coleman@med.monash.edu.au

An understanding of public attitudes to farm animal welfare has the potential to substantially improve farm animal welfare both via the actions of stakeholders on the one hand and of the general community on the other. This improvement can be realised through good communication and targeted education strategies. Also, human attitudes towards farm animals are good predictors of stockperson behaviour and as such can be used to develop training and selection programs for stockpeople.

Public perceptions of farm animal welfare issues are multi-faceted and are studied with a view to understanding consumer behaviour, and to gauge community perceptions in regard to the uses of animals so that not only consumers, but also regulators and legislators can make informed decisions. Two aspects of public perceptions warrant close scrutiny. First, much consumer research does not study the consumer at the level of the individual but tends to investigate consumer behaviour at the community level and the relationship between actual food choice and individual attitudes is rarely investigated. Second, virtually no research has been conducted at the individual level to determine the extent to which perceptions of animal welfare issues drive individual behaviours in support of or in opposition to various uses of animals. Perceptions about farm animal welfare are based on limited direct knowledge or experience and may be mediated by opinion leaders as well as by the mass media. People attribute the media with a status that is disproportionate to its actual reach and authority and perceive the views of others as more polarized than they actually are. Public perceptions about farm animal welfare have little direct effect on purchasing behaviour but may have a more substantial effect on broader community behaviours. Perceived trustworthiness of various sources of information about animal welfare is not very high and, scientists, who may be able to provide the most dispassionate information, are only rated as credible by 23% of the population. Rather than attempting to persuade the various stakeholders, it is better to take an educative approach to farm animal welfare. In this way it may be possible to get a greater convergence amongst all of the stakeholders about farm animal welfare issues and how best to deal with them.

Stockperson attitudes are good predictors of their behaviour towards the animals under their care and the model developed by Hemsworth and Coleman that demonstrates a sequential causal link between these attitudes, stockperson behaviour and the behaviour, stress level and productivity of farm animals. This has led to the ProHand training programs that have been demonstrated to be effective in improving animal welfare and productivity. Also, several variables, including attitudes and empathy to farm animal have proven to be good predictors of good pig stockmanship in new farm employees. This has the potential to improve aid selection and training strategies in stockpeople.

Human attitudes, because they are learned and therefore susceptible to change, represent an important human attribute that can be used to improve farm animal welfare. From the discussion here, it can be seen that these opportunities extend from the farm to the entire community.

Thinking critically about animals in society: is this where animal welfare education should be heading?

Pauleen Bennett, AWSC, Monash University

Pauleen.bennett@med.monash.edu.au

It is impossible to imagine a human society devoid of animals. Other animal species were instrumental in shaping how humans evolved and they continue to occupy many diverse niches within modern communities. Animals pollinate plants and replenish soils. They also provide companionship and social support, assisting those of us with disabilities and enriching millions of human lives. We eat animals and their products, wear them, watch them and use them as models and instruments for research. We also fear some animals and the diseases they may transmit, while competing with others for resources and space.

While a world where humans exist independently of animals is unimaginable, we can be absolutely certain that the interspecies relationships we currently participate in will continue to change markedly in the next few decades, just as they have in the past. This is important because our future is fundamentally dependent on the forms that our relationships with animals take and on the overall health of the broader ecosystem we inhabit with these animals. It is clearly imperative that we, as a community, make well informed and carefully considered decisions about how animals are to be managed, cared for, and integrated into future human societies.

It is unfortunate that current debates about animal use are typically polarised, at least in affluent countries with high levels of literacy and social autonomy. Abolitionists on the one hand appear diametrically and irreconcilably opposed to those conservatives seeking to maintain the current status quo on the other. The perception of there being just two adversarial positions forces community members, including many teachers and community leaders, to choose one side over the other. Because of the way human cognitive processes operate, this thereafter makes it more difficult for these individuals to objectively process information about specific animal issues and the treatment of animals by humans. Educational materials may then be presented in an unbalanced way to the rest of the community, leading to further polarisation.

In this presentation it will be argued that increased community interest in animal welfare is something that should be welcomed by all stakeholders, since it provides an unequalled opportunity to engage the community in important decisions that will affect the future of us all. However, it is essential that those participating in discussions about animals are well informed about a range of issues and also that they are trained to think critically about controversial issues that tend to be clouded by strong emotions, as well as by political and economic interests. Animal welfare science already plays a central role in developing the knowledge base upon which balanced decisions can be made. Facilitating the ability of the community to apply this knowledge to existing and emerging animal issues is equally critical and is where animal welfare education should be heading.

Animal Welfare Education and Training Developments in the USA

James E. Kinder; Jeanne Osborne, AWSC, Department of Animal Sciences, The Ohio State University

Kinder.15@osu.edu

Most of the educational endeavors in animal welfare have been conducted in universities in the USA. The way animal welfare education has evolved in the USA results from the manner of animal welfare scientist personnel employment, which has been sporadic and limited in numbers. Most of the animal welfare education endeavors reside in Departments of Animal Sciences that traditionally focus on programs for food producing animals and horses located in Colleges of Agriculture. There is minimal emphasis on animal welfare education in Colleges of Veterinary Medicine in the USA but some veterinary programs increased their emphasis in recent years. For example, there are two faculty members who have been employed to focus on animal welfare issues in the Department of Veterinary Preventive Medicine in the College of Veterinary Medicine at The Ohio State University (OSU) in recent years. There have been modest efforts at some universities to develop interdisciplinary animal welfare programs encompassing human psychology and philosophy in animal welfare education, but there is minimal progress in integration of such programs into animal welfare educational endeavors. In summary animal welfare educational programs in the USA are few in number, have few faculty and staff in their groups in those that do exist, and are not very well integrated with other disciplines (e.g., human psychology).

An observation is that in universities where animal welfare scientists have been employed, there is not adequate uptake of the animal welfare sciences by other scientists in the Department and incorporation in their campus-based teaching (e.g., dairy or pig production classes) or by those who have primary roles in outreach education (extension) to food animal producers. There appears to be a “mind set” by most peer scientists in such situations, in programs where animal welfare scientists have been employed, to let the animal welfare scientists address the issues without others taking up aspects of animal welfare in meaningful ways in their educational endeavors. This extends to teaching activities where there is frequently a single course or at best a few courses that are developed that focus on animal welfare. This occurs without a true integration of animal welfare across the Departmental (School) curriculum in those few programs where animal welfare scientists have been employed. There has also been little focus in extension education programs on animal welfare science to impact those in our food animal production sector who work with the animals, beyond a few programs focused on animal transport. There have been greater successes with graduate (postgraduate) education in those programs where animal welfare scientists have been employed, and there are beginning to be graduates from some of these programs. The future, therefore, may be brighter for animal welfare education with the enhanced number of scientists who are being intensively trained in graduate programs to help deliver animal welfare education.

In the OSU Department of Animal Sciences, we have overcome some of what we perceive as weaknesses in animal welfare education programs through our collaborations with scientists of the Animal Welfare Science Centre (AWSC). We, like other universities, have not employed adequate numbers of animal welfare scientists to address this very important issue, nor have we been as effective as we desire in developing strategic

linkages in our educational endeavors with other sectors of OSU, outside of our strong relationship with the Department of Veterinary Preventive Medicine in the College of Veterinary Medicine. Thus our strategy has been focused on collaborations with the AWSC. Our approach, therefore, has been to build our animal welfare educational programs on the knowledge base and programs provided by AWSC scientists.

There was no emphasis in animal welfare science in 1999 in the Department of Animal Sciences when the present Department Chair (J. Kinder) joined the Department. The Dean of the College of Food, Agricultural, and Environmental Sciences in which the Department of Animal Sciences resides, Dr. Bobby Moser was leading a Strategic Planning process, and had developed a focus on what was titled the Ecological Paradigm. This Paradigm focuses on four cornerstones for sustaining agriculture in our society. These are: 1) Production Efficiency, 2) Economic Viability, 3) Environmental Compatibility, and 4) Social Responsibility.

The OSU Department of Animal Sciences had programs in addressing all but the Social Responsibility component of this Paradigm. It was also becoming obvious, through various assessments of public attitudes, that in addition to environmental issues, a developing concern about the care and use of food producing animals was arising as a primary food animal production issue that needed to be addressed from the Social Responsibility aspect of this Paradigm. Because of developing interest in this area, and relationships with Director, Dr. Paul Hemsworth, OSU Animal Sciences began to work with the AWSC. AWSC scientists began to visit OSU where they made presentations and interacted with faculty members. There was considerable initial reluctance by a vast majority of OSU Animal Sciences' faculty members to embrace the need for developing animal welfare science programs. Over time, however, momentum built to develop collaborative programs through high quality interactions with AWSC scientists. This resulted over the last 6 years in 1) Five AWSC scientists, including three human psychologists, becoming Department of Animal Sciences Adjunct faculty members; 2) A USDA Higher Education Grant, a collaborative endeavor between the AWSC, OSU Animal Sciences and OSU Veterinary College's Department of Veterinary Preventive Medicine, focused on developing animal welfare educational modules to incorporate in traditionally taught classes all across the animal sciences curriculum; 3) Completion of jointly mentored graduate programs – University of Melbourne students with OSU programs and vice versa; 4) OSU becoming the North American site for Pig ProHand and Dairy CowCare training modules that focus on importance of attitudes and beliefs of animal caretakers in impacting animal productivity and well being in food animal production enterprises; 5) Procuring funding to assess public attitudes of the general population and those directly associated with food animal production toward a series of animal welfare issues; 6) Developing a study abroad program whereby 15 to 20 undergraduate students take three classes in Australia over a 6 week period for OSU credit (with one course focused on animal welfare); and 7) Teaching two OSU-based classes focused on animals in society and human and animal interactions for students outside of agriculture that satisfy OSU General Education Course requirements (a social science option and an international issues option).

These classes emphasize the attitudes and beliefs about various animals and how those have developed throughout evolution of humankind, where our society is today with regard to attitudes and beliefs about animal use, and responsibilities in the future if we are to continue to be able to have animals for companion-recreational, food producing, and research purposes. In addition, students have the opportunity to compare and contrast cultures with regard to how people interact with, value and use animals.

The manner in which AWSC scientists have worked with OSU scientists in a disarming fashion allowed these experts to impact the attitudes and beliefs of our faculty members, staff members and graduate students about the importance of the animal welfare issue and proper ways it can be addressed. The emphasis in the Department in this realm has been highly embraced by the leadership of the College because of pertinence in addressing the Ecological Paradigm cornerstone on Social Responsibility and by some external stakeholders because of the ever-building importance of this area in their food producing animal operations. This truly symbiotic relationship has led to our OSU successes in animal welfare education through contributions of AWSC scientists and OSU scientists embracing the educational concepts in ways that have allowed for a more integrative approach to animal welfare education than what exists at most USA institutions.

Handling and housing: how important are they to an animal's welfare?

Paul Hemsworth, AWSC, The University of Melbourne

phh@unimelb.edu.au

There appears to be increasing community concern with society's treatment of animals. Confinement housing of livestock such as those common in modern pig and poultry production appear to be at the forefront of these concerns. On the basis of the popular press, one could be led to believe that the only welfare issues in relation to farm animal housing are stall (individual) housing of pigs, cage housing of laying hens, and overcrowding of meat chickens. These concerns in themselves raise a number of questions including the following: What is the best type of housing to provide and on what basis? Is outdoor housing better than indoor housing? What are the space allowance requirements of animals? What are the adverse consequences of housing pigs in stalls or laying hens in cages? What are the social requirements of animals? Assuming we can determine the requirements of different species for space and social contact, what other facilities should be provided? While extensive livestock systems are generally not considered to involve 'housing', extensive systems do impose restrictions on animals, albeit with considerable freedom, and there are different issues raised including frequency of inspections and opportunity for intervention, climatic conditions and natural disasters. Nevertheless, the main focus of welfare concerns has been on intensive confinement systems.

One of the reasons that housing of farm animals changed markedly post-second world war was because consumers and governments in western societies wanted cheap and safe food. Science and the livestock industries responded and, consequently through more industrialized housing and production methods, have increased productivity, improved the quality of food and lowered the cost of food. Furthermore, these changes in animal housing and production methods have reduced or eliminated a number of welfare problems such as predation, thermal stress, some infectious diseases and nutritional stress. However, these changes in housing and production methods have exacerbated or created other welfare problems such as overcrowding, social restriction, pain and lameness.

While there is a focus, in intensive animal production, on housing systems, research indicates that the design of the housing system is probably more important for animal welfare than is generally recognized. For example, design features of a housing system, such as floor space, group size, floor type and feeder design have been shown to affect the welfare of pigs and poultry. Furthermore, the development of alternative systems for farm animals has often merely replaced one set of welfare problems with another and in many instances has provided no great benefit to the welfare of animals. The underlying reason for the lack of improvements in animal welfare in alternative systems is a lack of knowledge of the requirements of animals in these systems, including the requirements for space and social contact. It is apparent that considerable research is required to make progress in designing housing systems to meet animal requirements.

Comparisons of the effects of different housing systems on animal welfare are difficult because of the wide variation across systems, and because specific design features within systems often have greater effects on welfare than differences between systems. Rather than attempting to provide an overall assessment of housing systems, perhaps a more useful research approach in improving animal welfare is to identify and address the key welfare issues for each type of housing system.

Furthermore, while housing clearly affects animal welfare, no housing system will work effectively and protect animal welfare without competent and skilled stockpeople. While technical skills and knowledge are important attributes, two other important but less well recognised characteristics of stockpeople are their attitude and behaviour towards farm animals. The most studied aspect of the stockperson-farm animal relationship has been the fear responses of animals to humans, probably because of the implications of fear on animal welfare and productivity. Recently, there has been increasing appreciation that animals may experience positive or pleasant emotions in the presence of humans that may arise from rewarding events and associations. There is also limited evidence that positive emotional states in the presence of humans may reduce the stress responses of farm animals in stressful situations.

There are three main lines of evidence that demonstrate the implications of human contact for the welfare of farm animals: handling studies under controlled conditions, observed relationships in the field, and intervention studies in the field targeting human contact for improvement. This research has shown that stockperson behaviour significantly impacts on farm animals. The direct effects include the adverse impact of inappropriate handling, where fear and stress, physical trauma, ease of handling, reproductive performance, growth, health, meat quality and welfare may all be affected. While handling at an early age may be highly influential, subsequent handling is also influential and has the potential to modify such early learning effects. The two types of learning, conditioning and habituation to humans, occurring both early and subsequently in life, are probably the most influential factors affecting fear responses of farm animals to humans. This research has also shown that stockperson attitudes are highly predictive of stockperson behaviour and that these stockperson attitudes and behaviour are amenable to change.

Since handling and housing are consistent features of the animal’s environment in intensive management systems, adverse effects have the opportunity to cause chronic stress. Consequently, from a welfare perspective, there is an imperative to minimize handling and housing stressors.

Painful husbandry procedures: how can they be improved to reduce pain?

Andrew Fisher, AWSC, The University of Melbourne

adfisher@unimelb.edu.au

Welfare attention on surgical husbandry practices for farm animals focuses on the conundrum that many of the procedures involve innervated tissues and are traditionally performed without anaesthesia or analgesia, in contrast to the requirement to perform similar procedures with anaesthesia in companion animals. There is little evidence to support a contention that the perception of pain in farm animals such as sheep or cattle is biologically less effective than in dogs, cats or horses.

Surgical husbandry procedures that may occur for sheep and cattle include castration and tail docking (both species), mulesing (sheep), and dehorning and spaying (cattle). There are several approaches available for addressing welfare concerns surrounding these procedures. These options include 1) ceasing the procedure altogether and addressing the current need for the operation through management strategies; 2) breeding animals that do not require the procedure; 3) replacing the current procedure with a non-surgical alternative that has been shown to optimise welfare; or 4) performing the procedure without pain. Specific examples of these approaches include breeding polled cattle (option 2), and farmers in lower fly risk areas who manage their unmulesed merino sheep through strategic inspections and larvicide treatments (option 1). In the future, option 3 may be achieved for the castration of cattle by the development of long-acting pharmacological or immunological alternatives, and the successful selection and dissemination of merino sheep with lowered susceptibility to breechstrike (option 2) would obviate the need for any form of mulesing.

Although it is generally seen as preferable for the future to not have to perform surgery to achieve the outcomes delivered by the current range of surgical husbandry procedures, there are several reasons why option 4 - anaesthesia and analgesia- should not be discounted. Firstly, genetic selection strategies take time. For a quantitative trait such as the amount of wool and wrinkled skin on the hindquarters of a sheep, progress is only incremental with each generation. Even for a trait such as polledness in cattle, where a single gene produces the polled condition, there would be a significant time lag following the identification of the gene and development of a test before homozygous breeding animals were disseminated throughout the cattle population. There is also likely to be some time delay before the development and implementation of some of the non-surgical approaches currently under investigation. More importantly, it will be critical to have evidence that a non-surgical alternative to a current procedure actually produces significantly better welfare for the animals. It would be unfortunate if a perceived need to move away from the perception and image issues surrounding surgery were to fail to result in any animal welfare improvements.

It has been shown that it is scientifically feasible to perform surgical husbandry procedures in livestock in a manner that is not incompatible with animal welfare principles.

Understanding stress responses: can we develop strategies to reduce stress and improve welfare?

Alan Tilbrook, AWSC, Monash University

Alan.tilbrook@med.monash.edu.au

Neuroendocrine and behavioural stress responses occur when homeostasis is challenged. While such responses are normal, severe stress, particularly if repeated or constant can disturb normal physiological and behavioral function which, in turn, can impact on the welfare of animals. Understanding the nature of stress responses may provide knowledge that can be utilized to develop strategies and treatments to reduce stress and over come stress-induced disorders including compromised welfare. The neuroendocrine responses most commonly studied are the sympathoadrenal system and the hyopothalamo-pituitary adrenal (HPA) axis. While activation of both systems have the potential to disturb normal physiological and behavioural functioning, is the repeated and prolonged activation of the HPA axis that is most commonly associated with stress-induced disorders. Consequently, our research has focused on understanding on the activation of the HPA axis during stressful situations and the physiological and behavirоual impact of this activation.

The responses of the HPA axis to stress differ between different physiological states. For example, males and females respond differently to stress and these responses vary with the type of stressor to which the animal is exposed. Stress responses also vary between different stages of the reproductive cycle and, during late pregnancy and lactation, neuroendocrine responses to stress are attenuated and anxiety-related behaviours are reduced. The level of visceral adipose tissue also affects neuroendocrine responses to stress in females, with lean healthy animals displaying lower responses than obese animals. Thus, low levels of visceral adipose tissue and late/pregnancy and lactation are natural states where responses to stress are reduced. We have been investigating the neuroendocrine mechanisms by which stress responses are naturally attenuated as such knowledge may allow the development of approaches to reduce stress.

Benchmarking animal welfare: can this development improve animal welfare?

Ellen Jongman, AWSC, DPI Victoria

Ellen.jongman@dpi.vic.gov.au

Animal welfare is an issue of increasing interest and concern to the broader community and both government and livestock industries are examining opportunities to monitor and stimulate ongoing improvements in animal welfare and assure the quality of animal care standards. The concept of benchmarking and compliance has the potential to assess industry performance in relation to animal welfare. It is important that animal industries can demonstrate compliance with welfare codes and standards industry wide, so that consumers (both domestic and overseas) as well as the general public have confidence in the standards under which production occurs. However, benchmarking can also be used by farmers to improve animal welfare on-farm.

A 'benchmark' is a point of reference to make comparisons, usually implying that it is a good basic standard to achieve. By highlighting problem areas as well as the potential for improvement, benchmarking provides an incentive to change and assist in the setting of target goals. Sometimes benchmarking involves a rather superficial 'tick-a-box' approach based around performance indicators. To get the most value from the gathering and use of data, there is a need to concentrate on what are the most useful indicators, rather than what is easiest to measure.

A welfare monitoring and benchmarking scheme should include animal-based (outcomes) measures, resource-based measures and management-based parameters. These measures should be relevant and based on good science. Outcomes-based measures can be taken from the animal itself, e.g. presence of injuries, body condition score and fearfulness, as well as carcass-related measures such as meat quality or broken bones. It is the animal itself that best reflects how it is coping (or how it has coped) with its physical and social environment and so these are the best measures of welfare. However, these measures are labour intensive to collect and may reflect a moment in time, rather than a welfare assessment of the whole production cycle. Resource-based measures (e.g. space allocation, group size, shade and shelter, feed and water etc.) and management-based measures (e.g. skill of stockperson, record keeping etc.) can also be used as animal welfare indicators, however they reflect risk, or potential benefit to welfare, rather than the animal's actual welfare state.

For the monitoring scheme to be widely accepted and implemented it must have a good scientific basis but it must also satisfy public, industry and political views of animal welfare. Ideally, benchmarking should be part of a quality insurance scheme, with the aim of the product satisfying the requirements of the general community. However, it should also include feedback to producers to compare their outcomes with others to identify their strengths and weaknesses as a basis for self improvement.