

THIRD STUDENT ANIMAL WELFARE CONFERENCE
WRITTLE COLLEGE
30TH APRIL 2008



Writtle COLLEGE

a partner institution of the University of Essex





PROGRAMME:



10:00 – 11:00 Registration

11:00 – 11:10 Welcome by Principal Dave Butcher

11:10 – 11:40 Opening talk: Prof. Don Broom, University of Cambridge
Awareness in domestic animals and our obligations to them

11:40 – 13:00 Session 1

1. *Welfare and production implications of fostering methods in sheep*
Sam Ward – Moulton College
2. *The effects of lavender and chamomile oils on the behaviour and heart rate of stabled horses exhibiting normal and stereotypical behaviour*
Hannah Al-Temimi – Hartpury College
3. *People's knowledge of equine laminitis*
Rachael Saggars – Writtle College
4. *Problems associated with controlling clinical and sub-clinical laminitis in dairy cattle*
Julia Rushton – Moulton College
5.
Lucy Dumbell -- Hartpury College

13:00 – 14:15 Lunch and poster session Authors in attendance 13:45 – 14:15

14:15 – 15:30 Session 2

6. *Relationship between lameness and lying behaviour in zero-grazed Holstein dairy cattle recorded using an activity monitor*
Nicola Blackie – Writtle College
7. *Social bonds in dairy cattle: Effects of dynamic group systems on welfare and productivity*
Krista Mcklennan – Moulton College
8. *The effects of relocation to novel institutes as part of the European Endangered Species Breeding Programme on the behaviour of the bush dog (*Speothos venaticus*)*
Carla Khouri – Writtle College
9.
Lucy Dumbell -- Hartpury College
10. *The effects of service regime on salivary cortisol levels in multiparous weaned sows*
Dominic Smith -- Writtle College

15:30 – 15:45 Prize giving and closing remarks



ABSTRACTS:



1. WELFARE AND PRODUCTION IMPLICATIONS OF FOSTERING METHODS IN SHEEP

SAM WARD – PHD, MOULTON COLLEGE

Fostering lambs allows the successful rearing of abandoned lambs onto other ewes or the ability to provide surplus lambs a new mother in the case of triplets. However, this process is made difficult by the ewe's ability to discriminate between their own and an unknown/alien lambs' specific odour. Methods of fostering include skin grafting, odour manipulation, restraint techniques, birth fluids and cervical stimulations which in some cases have not been found to be continually successful. It is thought that breed differences and ewe experience may be important factors in the success of fostering due to evidence supporting differences in maternal behaviour between hill and lowland breeds and between parities.

Previous research has focused on the success of these different methods in terms of threshold times to acceptance or overall rearing success. Little is known about the welfare implications of these methods; such as increased stress levels of the ewe and/or lamb due to separation or physical stress to the lamb due to malnutrition or being kicked away from the teat; or the comparative stress experienced by multi-parous and null-parous ewes and their lambs when fostering alien lambs. The information gathered from this study will help farmers worldwide in deciding on the most effective and welfare friendly ways in fostering in sheep which have not previously been researched.

The first stage of this study will identify current methods of fostering in the UK sheep industry and collate shepherds' opinions on the success of these methods and their impact on ewe and lamb welfare. This will be carried out in the form of a questionnaire which will be distributed through a mailing list provided by English Lamb and Beef Executive (EBLEX) and contacts made through various conferences and regional farm meetings. The questionnaire can also be accessed online (<http://moodle.moulton.ac.uk/lambing/>) which will increase the possible return rate of the responses.

The second stage of the study involves an evaluation of three or four fostering methods which were identified as prevalent in the questionnaire. Behavioural observations will begin from the initial point of fostering. It is estimated that there should be around 20 replications of each fostering method and that data collection at other ELITE colleges may be needed to achieve this number. Comparisons between breeds and parities will also be investigated and further experimentations will occur if needed.

2. THE EFFECTS OF LAVENDER AND CHAMOMILE OILS ON THE BEHAVIOUR AND HEART RATE OF STABLED HORSES EXHIBITING NORMAL AND STEREOTYPICAL BEHAVIOURS

HANNAH AL-TEMIMI – UNDERGRADUATE, HARTPURY COLLEGE

The causal factors and treatments of stereotypical behaviour in horses have been researched for the last twenty years. However, no studies as yet have managed to prevent the occurrences of these behaviours. Scientists suggest that environmental enrichment can enhance a horse's domestic environment and therefore may reduce abnormal behaviours. Such attempts of enrichment include stable toys, mirrors, music, extra forage, companions, more exercise and stable redesigning. Giving the horse maximum opportunity to exhibit natural behaviours by keeping it solely outside in fields and not in a stable environment would seem to be the most successful solution to providing

environmental enrichment. However, this is not often the most practical means of horse husbandry, with lack of sufficient land being a common problem. Aromatherapy is a relatively new area of scientific study, but has been used for centuries in the healing of humans and animals. Certain oils have been shown to have a depressive effect on an individual, as well as lowering heart rate, and even slowing progress of certain diseases, suggesting it to be a possible alternative to modern day medicine. Its uses have been recently studied in humans and even in captive animals in zoos as a form of enrichment, demonstrating positive results. The objective of this study was to investigate the effects of lavender and chamomile aromatherapy oils on normal and stereotypical behaviour of stabled horses. Ten horses exhibited normal behaviour (Group A) and ten horses exhibited stereotypic behaviour of varying intensities and duration. Heart rate and behaviour was recorded before, during and after application of each oil using scan sampling and focal sampling, for a period of five weeks. Results suggest that there was a significant reduction in heart rate, and increase in dozing behaviour in both groups after application of either oil. Stereotypical behaviour also significantly reduced in Group B after application of either oil. It was concluded that lavender oil and chamomile oil may reduce abnormal behaviours and stress levels in stabled horses thus improving their welfare, suggesting aromatherapy oils to be a convenient form of environmental enrichment in a stabled environment.

3. PEOPLE'S KNOWLEDGE OF EQUINE LAMINITIS

RACHEL SAGGERS – UNDERGRADUATE, WRITTLE COLLEGE

This study was carried out to investigate people's knowledge of equine laminitis. It was hypothesised that people's knowledge would be poor due to old out of date information still available in books and the constantly changing opinions from experts about causes and pathogenesis. The aim was to identify the most common misconceptions and areas of weakness in knowledge. Questionnaires were distributed face to face at Your Horse Live and at riding school/livery yards, as this represents the normal equine population, 92 were completed. When assigned a score for laminitis knowledge out of 8 the mean score was 4, with 53% of people scoring 4 or less. A positive correlation existed between number of years experience and knowledge score, score was not statistically related to equine education level, their estimated knowledge or age. The most common misconceptions about laminitis were the belief by 59.8% of respondents (n=87) that protein was the cause of laminitis and 65.5% (n=84) of people not being aware that trotting on hard ground can cause laminitis. In addition only 32.1% (n=78) of people could correctly define laminitis. The poor scores achieved for laminitis knowledge in this study indicate that there is a lack of laminitis knowledge amongst owners, riders and people involved in the equine industry and that information about the disease is not being effectively put across to them. The increase in knowledge associated with experience rather than education suggests that information about laminitis delivered in different types of equine courses, including BHS exams, National Diplomas and degrees is not effective at increasing knowledge of the disease. The high numbers of people thinking protein causes laminitis raises the issue of how aware people are of what they are feeding their horse. More needs to be done to improve people's knowledge of the disease and also improve people's understanding of feeding and how it can relate to laminitis and potentially other metabolic disorders.

4. PROBLEMS ASSOCIATED WITH CONTROLLING CLINICAL AND SUB-CLINICAL LAMENESS IN DAIRY CATTLE

JULIA RUSHTON – UNDERGRADUATE, MOULTON COLLEGE

5. THE EFFECTS OF SERVICE REGIME ON SALIVARY CORTISOL LEVELS IN MULTIPAROUS WEANED SOWS

DOMINIC SMITH – UNDERGRADUATE, WRITTLE COLLEGE

The method of mating sows on commercial farms is often undertaken by 2, or more commonly 3 services, which are made up of artificial insemination and natural boar service. There has been evidence to suggest that there is an increased level of cortisol in sows when exposed to a boar. This is thought to be a result of the vigorous courting behaviour which the boar expresses, such as flank rubbing and shoulder scratching. In addition the boar mounting and the sow having to support his weight, plays a factor in the increase in cortisol level. It has also been suggested that management factors which happen around the time of natural boar service play a role in the elevated cortisol levels. For example entering an unfamiliar pen to be served, mixing of sows and handling by the stockman.

A study was undertaken to investigate the effects of two service routines, which include different levels of boar service and artificial insemination, on salivary cortisol in multiparous weaned sows. The aim of the study was to determine whether the stress response of sows would be significantly different between two commonly used service routines. These routines are 2 natural boar services and 1 artificial insemination or 2 artificial inseminations and 1 natural boar service. The results would therefore identify a service regime which could help decrease stress in sows and increase welfare on pig units and in the pig industry. 13 sows were sampled in total. The sows were randomly allocated to one of two treatments. Either service regime AI-am, Boar-pm, AI-am (ABA). Or service regime Boar-am, AI-pm, Boar-am (BAB). Both treatments were sampled for baseline levels of cortisol the morning and evening prior to the treatments. Saliva was swabbed from the sows 15 minutes post each service to measure salivary cortisol.

There were no significant differences in the salivary cortisol concentration between the two treatments. It can be concluded that cortisol secretion in response to service regime, showed that there was no difference in the sow's salivary cortisol secretion between the service regimes BAB and ABA.

6. RELATIONSHIP BETWEEN LAMENESS AND LYING BEHAVIOUR OF ZERO-GRAZED HOLSTEIN DAIRY CATTLE RECORDED USING AN ACTIVITY MONITOR

NICOLA BLACKIE – PHD, WRITTLE COLLEGE

Lameness can be assessed using locomotion scoring; however, this method is time consuming and an automated method of detecting lameness is needed. Studies have shown that in conventionally-managed dairy herds, lame cows spend more time lying down than non-lame cows (e.g. Singh *et al*, 1993). However, there are limited data available for high producing zero-grazed dairy cattle in the UK. IceTags™ are activity monitors which use an electronic accelerometer to determine the percent of time spent standing, lying or active and have been validated in a study by Munksgaard *et al* (2006). The aim of the present study was to assess the impact of lameness on lying behaviour of high yielding, zero-grazed, Holstein dairy cows and to assess the potential use of lying time to detect lameness.

The study was conducted on a commercial 500 cow, zero grazing dairy herd in the south east of the UK from 15th Jan to 2nd Feb 2007 using 59 lactating Holstein dairy cows (11 primiparous and 48 multiparous). The cows were housed all year round in a free stall cubicle yard; on mats bedded with sawdust. Cattle were milked three times daily throughout the study. The lameness of the cows was assessed using the locomotion scoring method (locomotion score 1-5; score 1 normal gait; score 5 severe lameness) of Flower and Weary (2006). No cows scoring 4 or 5 were used in the study as there were too few animals of this score. For analysis cows were grouped according to locomotion score (1, 2, 3). Groups were balanced for stage of lactation and parity (parity 2.3 ± 0.10 ; 174 ± 8.8 DIM (mean \pm SEM)). Immediately after locomotion scoring, activity monitors (IceTag™, Ice Robotics Ltd, Roslin, UK) were attached to the back right leg above the fetlock for 4 days to measure standing and lying behaviour. Data from the IceTags were used to determine the percentage of time that the animal spent standing, lying or active; the data were converted to hours/day. Lying bouts of less than 2 minutes were discarded as likely to be incidences where the cow lifted the leg on which the IceTag™ was attached. The mean lying bout time was calculated as the number of consecutive minutes that the proportion of time spent lying was recorded as being greater than 96%. The minimum and maximum duration of lying bouts was calculated from the mean of 4 days data. Frequency of lying was determined as the mean number of times a cow lay down in a period of 24 hours. Daily milk yield was measured over the week of study. All data were normally distributed (using Pearson's skewness test) and differences between groups were assessed by one-way Analysis of Variance using Genstat (Version 8, Lawes Agricultural Trust).

Cows with locomotion score 3 spent approximately 2 hours/day longer lying down ($p=0.008$) than cows with locomotion score 1 and locomotion score 2. There was no effect of locomotion score on time spent active. Locomotion score 3 cows had longer mean lying bouts ($p=0.13$) and maximum lying bout ($p=0.11$) than cows with locomotion score 1 and 2

Locomotion score 3 cows produced 8.0 and 6.4 litres ($p=0.03$) less milk compared with cows with locomotion score 1 and 2, respectively.

The results demonstrate that lying time measured using an activity monitor has the potential to detect lameness in dairy cattle as indicated by increased lying times. These findings could contribute to the automation of lameness detection. Further work is required to assess the causes of impaired locomotion and their relationship with lying behaviour.

7. SOCIAL BONDS IN DAIRY CATTLE: EFFECTS OF DYNAMIC GROUP SYSTEMS ON WELFARE AND PRODUCTIVITY

KRISTA MCLENNAN – PHD, MOULTON COLLEGE

Most dairy cattle in the UK live in large, group-housed systems and are re-grouped on a number of occasions throughout their lifetimes. This is to create groups of cows at similar stages in their reproductive cycle and with similar productivity levels (Philips 2002; Bøe and Fæverik, 2003). This is very different to the grouping behaviour seen in feral herds, in that most are small matriarchal units consisting of related cows (Murphey, 1990).

The re-grouping of calves, heifers and cows in the commercial situation has been found to cause an increase in aggression (Raussi *et al.* 2005), an increase in stress levels (Bøe and Fæverik, 2003), an increase in somatic cell count (Kay *et al.* 1977) and a decrease in milk yield (Hasegawa *et al.* 1997). The effects on production levels have been reported to last for up to two weeks (Hasegawa *et al.* 1997) and can have serious economic impacts.

Feral cattle are known to form close, long-lasting social bonds (Reinhardt and Reinhardt, 1981) and they are only broken through natal dispersal or death (Newberry and Swanson, 2001). There have been very few studies looking at the effect of breaking the social bonds that may have formed between dairy cows, and how this may affect their welfare and productivity.

The aim of this study is to investigate whether dynamic group systems such as those on commercial dairy farms has an affect on the welfare and productivity of dairy cows. The study will look at the affiliative behaviours of dairy cows and will examine whether or not they form social bonds. This will be assessed through the use of nearest neighbour calculations and indices of association (Martin and Bateson, 1993). If it is found that they do form bonds, the study will investigate the affect of short-term and long-term separation. It will also examine the impact on behaviour and production at reunion of preferred partners. Production will be examined through milk yield, milk quality and fertility data, which is stored and analysed on Fusion Crystal on a daily basis. Behaviours such as vocalisations and activity will be examined to gauge the social stress cows may be under when separated for short-periods of time. Over longer periods of time, production parameters and behaviours such as bond formation and affiliative behaviours will be examined to look at how long it takes a cow to settle into a new group. As social behaviour varies with age and experience (Ewbank, 1967; Arave *et al.*, 1985; Veissier *et al.*, 2001), both heifers and cows will be studied over an extended period of time.

It is hypothesised that cows in a stable group will have a preferred partner and when they are separated either for short or long periods, there will be a decrease in production and welfare levels. It is hoped that this research will be able to offer commercial dairy farmer's advice about separation and regrouping that will decrease the chances of both economic loss and decreased welfare within the dairy cows.

8. THE EFFECTS OF RELOCATION TO NOVEL INSTITUTES AS PART OF THE EUROPEAN ENDANGERED SPECIES BREEDING PROGRAMME ON THE BEHAVIOUR OF THE BUSH DOG (*SPEOTHOS VENATICUS*)

CARLA KHOURI – UNDERGRADUATE, WRITTLE COLLEGE

Biological diversity, the variety of life on earth, has a vital role in the sustenance, health, and well-being of humanity. Fossil records show that losses to biodiversity have always occurred. However, it is humans that are now deemed to be the biggest threat to biodiversity on earth today, with unprecedented losses of species currently being seen, primarily due to losses of habitats caused by changes in land use and other anthropogenic activities. These issues are starting to be addressed and measures are being implemented to attempt to reverse the current trends. These measures include *in situ* and *ex situ* conservation strategies. One *ex situ* strategy currently being implemented in zoological institutes worldwide is the use of captive breeding programmes. This study focused on one vulnerable species, the bush dog (*Speothos venaticus*) and aimed to establish if their relocation to novel institutes as part of one particular breeding programme (The European Endangered Species Breeding Programme) led to any significant behavioural changes. Understanding the behaviour of an animal in captivity is essential as it may give an indication as to their state of physical and psychological health, and welfare.

This study observed the behaviour of 6 adult bush dogs, 4 of whom were relocated to novel institutes within the study period, before and after relocation using instantaneous and focal sampling methods. It was established that the relocation did cause significant changes in their behaviour. The predominant change found in their activity budgets was the increase in locomotory behaviours and scent marking and there was a marked reduction in time spent in dens or nest boxes. There were also significant increases in vocalisation although it was not evident whether this could be attributed to relocation or to the new pair formation. These behavioural changes may indicate novelty related stress responses which may subsequently be mitigated by habituation to the new institute. However, there are also other health and welfare implications which may need to be addressed for newly relocated bush dogs. The increase in locomotion that follows will result in an increase in energy expenditure which may in turn have a negative impact on their health, reproductive ability and success, which is ultimately one of the key aims of captive breeding programmes.



POSTERS:



1. THE DISAPPEARING DORMOUSE
LOUISE ALEXANDER – UNDERGRADUATE, MOULTON COLLEGE
2. DO RESCUED BARN OWLS EXPERIENCE ANY STRESS WHILE BEING REHABILITATED?
VICTORIA ARMSTRONG – UNDERGRADUATE, MOULTON COLLEGE
3. A STUDY INTO THE RESPONSE OF MEERKATS (*SURICATA SURICATA*) TO TWO TYPES OF ENVIRONMENTAL ENRICHMENT
MICHELLE BITE AND MARY FARRELL – UNDERGRADUATE, HARTPURY COLLEGE
4. THE DISTRIBUTION AND HABITAT CHOICE OF WATER SHREWS (*NEOMYS FODIENS*) IN NORTHAMPTON
KAYT BOYLES – UNDERGRADUATE, MOULTON COLLEGE
5. THE EFFECT OF VISITOR DENSITY IN A GROUP OF SEVEN CAPTIVE CHIMPANZEES (*PAN TROGLODYTES*) AT COLCHESTER ZOO
CHRIS CLARK – UNDERGRADUATE, WRITTLE COLLEGE
6. ROAD TRANSPORTATION STRESS IN LAMBS: MEASURING SALIVARY CORTISOL AND BEHAVIOUR TO COMPARE THE STRESS RESPONSES OF LOADING AND TRANSPORT
CARLY MARIE BALDWIN DEAN – UNDERGRADUATE, WRITTLE COLLEGE
7. GORILLA ACTIVITY
VICTORIA FYSON – UNDERGRADUATE, MOULTON COLLEGE
8. BEHAVIOURAL OBSERVATIONS OF HORSES IN DIFFERENT TURNOUT SYSTEMS
SOPHIE MAYES – UNDERGRADUATE, WRITTLE COLLEGE
9. ESTIMATING THE POPULATION DENSITY OF THE NAMIBIAN CHEETAH
CASSANDRA MERCER – UNDERGRADUATE, WRITTLE COLLEGE
10. DOGFIGHTING WITHIN THE UK
SIOFRA O’KELLY – UNDERGRADUATE, MOULTON COLLEGE
11. VISITOR EFFECTS ON MARMOSET BEHAVIOUR AT MOULTON COLLEGE
MARIE ROBERTS – UNDERGRADUATE, MOULTON COLLEGE
12. TRAINING CHIMPANZEE TO IMPROVE CAPTIVE WELFARE
KIRSTY SERGISON – UNDERGRADUATE, MOULTON COLLEGE
13. ENCLOSURE UTILISATION WITHIN A MIXED SPECIES EXHIBIT OF RING TAILED (*LEMUR CATT*) AND RED RUFFED (*VARECIA VARIEGATE RUBRA*) LEMURS AT BRISTOL ZOO GARDENS
EMMA SHAW AND JOHN DUTTON – UNDERGRADUATE, HARTPURY COLLEGE
14. LAMINITIS – THE KNOWN FACTS
KIRSTY SPITTLES – UNDERGRADUATE, MOULTON COLLEGE
15. INTERACTION OF STABLED HORSES WITH A SNAK-A-BALL IN BOTH PERMANENT AND INTERMITTENT CONDITIONS
JOANNA TOWLER – UNDERGRADUATE, WRITTLE COLLEGE
16. USE OF LAVENDER SPRAY FOR REDUCTION OF STRESS IN SHELTERED CATS
RACHEL WATSON – UNDERGRADUATE, WRITTLE COLLEGE