

Welcome to our departmental newsletter. There are plenty of exciting things happening in the department at the moment, and we are looking forward to seeing what the new academic year brings. For those of you waiting for exam results, we wish you the very best of luck, and hope to see you this coming September.

Puppy School at the Animal Behaviour Clinic

The University of Lincoln's Animal Behaviour Referral Clinic continues to see cases from both local veterinary practices as well as those further afield. Cardiff is the furthest that a client has travelled in this past year. Although, as is experienced by behaviour practitioners around the world, aggressive behaviour in dogs is the most common problem presented, a variety of other problems are also seen – from unruly puppies and dogs chasing imaginary flies, to house-soiling cats.

As always, the cases serve as invaluable teaching material for our undergraduate students, with client confidentiality always protected. , and will also be crucial in the delivery of the new Masters programme starting this autumn. Student feedback regarding seeing cases is positive and comments always stress that this is invaluable in helping them to understand the intricacies of managing behaviour problems in pets.

We have also expanded the clinic services over the past year. Firstly we are offering clients the option to work with members of the departmental research team in one to one sessions to help them with

desensitising and counter-conditioning their dogs to other dogs. This service is still at an early phase and will remain small scale as it is limited by access to only a small number of suitable stooge dogs that cannot be called on too frequently.

Our most important additional service running through the clinic is "Puppy School". Hannah Wright, a qualified Puppy School Tutor, has been running the Lincoln University school for almost a year now and has had more than 50 successful "graduates" who, after completing the 6 week programme, have hopefully been put on the path to becoming model members of canine society. Feedback from owners has been very positive and the puppies certainly seem to enjoy the opportunity to learn and play in a safe and controlled environment. We look forward to another successful year for the behaviour clinic, hopefully with additional services added to our expanding list.



Puppies (and owners) learn to play appropriate games safely



Puppies learn to focus on their owners & respond to basic obedience commands



Puppies learn to settle down quietly whilst their owners are listening to the tutor



Puppies are able to meet other dogs in a safe, positive & controlled manner

Riseholme Park Cross Country Training Course



This year, a cross country training area has been developed at the Riseholme campus which came into operation in April.

The first phase consists of 12 fences of various types including a coffin and steps to test both horse and rider. It was designed and built by an accredited British Eventing course builder.

With the focus of the Eventing world on the health and safety issues of going cross country it is reassuring to know that the fences have been built to a high standard. The development of this facility means that British Horse Society Stage 3 examinations can now be held at Riseholme Park.

Royal Show Prizes

Lindon Principal, our homebred 8 year old stallion, has just won the Chris Dykes International Trophy for the best ridden Cleveland Bay and the Stainmore Trophy for the best purebred ridden Cleveland Bay at the Royal Show. Lindon Principal was ridden by Emily Williams and this is the first time that both awards have been won by the same horse.



Source: Real Time Imaging

Batman on TV

Dave Hughes is a professional ecologist based in Lincoln and working on a research project investigating the size of the population of Barbastelle bats at Chambers Farm woods, near Wragby. Dave is registered as a part-time MPhil student in Biological sciences and is supervised by Charles Deeming and Paul Eady. The study is investigating the habitat preferences of this species, which is rarely found this far north and so the increased range of the bats may reflect global warming. Into his first main field season of data recording, Dave was recently featured on BBC Look North and in the Lincolnshire Echo.

Dinosaur Deeming

Charles Deeming has long held an interest in reproductive biology of birds and reptiles, which has extended to breeding in extinct species. Charles was part of a team that confirmed that ichthyosaurs were viviparous. More recently Charles has worked with colleagues both in Leicester and China to analyse pterosaur eggs. It was concluded that these eggs were soft-shelled like those of modern snakes and lizards.

In August, Charles is off to Bozeman, Montana as the invited keynote speaker at the 4th International Symposium on Dinosaur eggs and babies to discuss how our understanding of modern birds and reptiles can inform study of extinct species. Given that Charles has long disputed the idea that some dinosaurs sat on their eggs like birds, it could be a lively meeting. Charles will also be talking about live-birth in other aquatic reptiles and what this tells us about the evolution of reptilian and avian eggs.

New Practical Conservation Module on Offer to Year 2 Students

Students on the Animal Management & Welfare and Conservation Biology degrees will be scrub-bashing and hedge-laying during the first semester, as part of a new course which trains them in some practical conservation techniques.

Graduates in these subjects may well find themselves expected to supervise or organise practical conservation tasks and an essential part of preparation for such activity is to have had a go at it oneself!

These outdoor tasks will form a small part of the module content which will also include such activities as learning to use Global Positioning System instruments and software, interpreting Ordnance Survey maps, understanding landscapes, and learning how to organise and run groups of volunteers. There will also be a strong emphasis on learning how to apply the more theoretical aspects of biology to real-life practical situations.

Gadgets and Gizmos: Equipment in Support of Diagnostics and Analytics

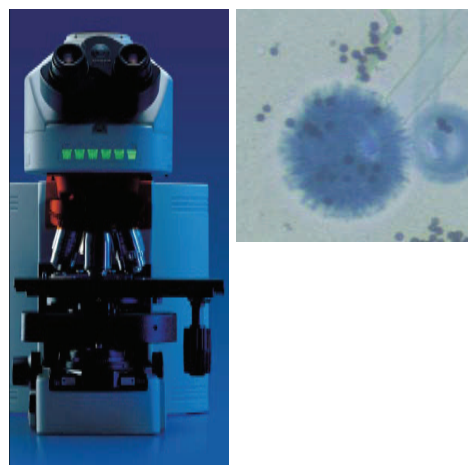
Diagnostics and Analytics (D&A) is a new module specifically developed for the BSc Bioveterinary Science and though this module has not even been taught yet, we are getting terribly

excited already. One of the reasons for this is the acquisition of new equipment to support this unit that will enable the student to get hands on experience with diagnostic techniques applicable to a wide range of para-veterinary fields.

In addition we are planning to include practical sessions to train the student's dexterity by including dissections and micro-suturing. Considerable time will spent allowing students to familiarise themselves with techniques such as High Performance Liquid Chromatography (HPLC) and Gas Chromatography Mass Spectrophotometry (GCMS). These investments reflect the current interest of students in the para-veterinary sciences.



D&A aims to provide an insight into a wide range of diagnostic and analytical techniques, ranging from basic haematology, advanced mycology, fluorescence microscopy and gas chromatography to the use of ultrasound scanning in small and large animals.



MSc in Clinical Animal Behaviour

A new Masters programme is being launched by the Department of Biological Sciences to produce the next generation of problem pet gurus. Many students already come here to study behaviour at undergraduate level with a keen interest in problem behaviour, but this new programme will take the experience to a whole new level. The MSc in Clinical Animal Behaviour is specifically focussed on equipping students with the knowledge and skills to diagnose and manage the root causes of bad behaviour in cantankerous cats, disruptive dogs and other troublesome companion animals.

The Masters programme, which will get underway in September 2009, builds on our reputation as a world leader in this rapidly developing discipline. The MSc in Clinical Animal

Behaviour will suit our own graduates, as well as those in life sciences from other institutions, veterinary scientists and other related disciplines, including qualified veterinary nurses. It is set to be offered on both a full-time and part-time basis, and interest has already been high since its validation in May. Students will complete modules in human/animal interaction, domestic animal behaviour and clinical skills for behaviour management. They will also receive expert tuition in ethics, animal welfare and small business enterprise, so that they should be able to set up their own business by the end of the programme. Lincoln graduates also get a £1000 discount off the full-time taught fees.

The course will be headed by Professor Daniel Mills & Helen Zulch.

Daniel was the first individual to be recognised as a specialist in veterinary behavioural medicine and was recently honoured with Fellowship of the Institute of Biology for his contribution to the broader field of biology. Helen has been at the forefront of the discipline in her native South Africa before being recruited to boost the Department's expertise last year. The specialism continues to grow at Lincoln with on-site puppy classes being run by one of our post doctoral researchers, Dr Hannah Wright, who is investigating training on a government sponsored project, an increasing amount of cat work being done by post doc, Dr Sarah Ellis, thanks to our unique Cat Welfare Centre, and now a growing group on rabbit welfare being headed By Drs Jonathan Cooper and Laura Dixon, sponsored by a number of charities.

Spatial Requirements of Pet Rabbits

Rabbits are now the third most popular pet in the UK, following dogs and cats. There are no set guidelines on the housing requirements of pet rabbits. Consequently pet rabbits can be housed in smaller enclosures than farmed or laboratory rabbits and there is growing concern that traditional hutches are too small to allow the rabbits to perform natural behaviour patterns, which may contribute to health problems such as obesity and musculo-skeletal abnormalities.

Grants from the RSPCA, UFAW and UROS let Dr. Jonathan Cooper, Dr. Laura Dixon and Jessica Hardiman investigate the effects of pen size and height on pet rabbit behaviour and welfare. This work was significant as research on rabbit welfare had concentrated on farmed and laboratory rabbits, and little is known of pet rabbits behavioural needs. We studied 20 pet rabbits from Riseholme Animal Care or on loan from local rabbit owners. These included representatives of dwarf, standard, large and giant breeds. These were observed in pen of dimensions of 0.88m² (equivalent to a hutch of approximately 5 foot by 2 foot), 1.67m² (approximately 6 foot by 3 foot) and 3.35m² (6 foot square) and in enclosures without roofs or with a roof height of 45cm (1 foot 6 inches) or 75cm (2 foot 6 inches).

It was found that the smaller enclosures restrict a number of behaviour patterns, with extensive locomotion and environmental interaction less common in smaller pens, whilst lowering roof height to 45cm reduced rearing and

sitting with ears raised. Rabbits also adopted a more restricted or "hunched" posture when sitting or lying in smaller pens, whilst reducing pen height reduced the height rabbits were able to rear. These effects were found in all breed types but most pronounced in large and giant breeds.

A relatively new method, derived from consumer economics, was used to assess the value placed on additional space. In this case, rabbits were asked to push through weighted doors for access to medium sized (1.67m²) and larger (3.35m²) enclosures from a home pen the dimensions of a large hutch (0.88m²). Rabbits worked considerably harder for the larger pen, (albeit not as hard as they worked for extra food) and primarily spent their time in locomotion (hopping) once they had entered the large pen.

The study indicates that short term exposure to small enclosures restricts locomotor activity, environmental interaction and leads to adoption of restricted postures compared to rabbits with more space. Rabbits also value additional space highly, apparently to allow locomotor activity that is not

possible in the smaller enclosures. This research indicates that the traditional hutch (of average floor area 0.68m², and usually incorporating at least one solid dividing wall) is likely to be inadequate for permanent housing of rabbits. Giant and large breeds would require a larger enclosure as their home environment, whilst all rabbits should have access to a large area once per day to allow locomotion, stretching and rearing activities.

Work continues to further investigate breed differences, and to look into the long term welfare benefits of housing rabbits in large enriched enclosures.

Horse Profile: Drummer

Darling Demon, or Drummer as he is known, has been a fixture at Riseholme Park for 4 years now. He is the type of horse that makes the ideal school master.

He has competed to Elementary level and was used in BUSA (Student) competitions before coming to us.

He is a warm blood by the popular Selle Francais stallion, Dallas out of a thoroughbred mare called Rilk. Dallas was of course the sire of the 1999 Burghley winner Diamond Hall Red as well as many other successful competition horses in all three Olympic disciplines.

Drummer is one of our more popular horses as he is rather more forward going than some!

Drummer is now having a well earned rest and regaining his energy for next years intake of students!



Andrew McLean Clinic



We were lucky to have Andrew McLean include Riseholme Park in his UK tour again this year.

His focus this year was on helping the more established competition rider. Two members of staff, Emily

Williams and Tanya Bridgeman and one student, Vicky Boakes acted as guinea pigs riding their own horses. It was a fascinating demonstration of how to blend the principles of classical equitation with "Equitation Science in Practice". This is in fact part of the title of Andrew's latest book "Academic Horse Training".

This will be a core text for one of the new modules in both the BSc Equine Sports Science and BSc Equine Science programmes – Equitation Science.

How now brown, doe-eyed cow?

On the island of Jersey, imports of cattle have been forbidden by law since 1789. This has been to protect the original population of the Jersey breed of dairy cow from genetic influx from other breeds. Jersey cows have been exported from the island over the years and Jersey are now one of the world's most important dairy breeds, with big populations in Britain, New Zealand, Canada and Denmark, and many other countries. However, as not even Jerseys – or

their bull semen - from these other countries can be imported back onto the island, the breeding advances that have been made around the world cannot be accessed by farmers on the island.

Stephen Hall, the Department's professor of Animal Science, has been acting as an advisor to the Jersey Island government on a proposal to permit importation onto the island of Jersey semen from elsewhere in the world. This is a

highly complex issue with lots of implications for conservation of livestock breeds generally, and is the kind of topic that he covers in his Livestock Systems lectures to second-year Conservation Biology, Animal Management & Welfare, and Bioveterinary Science students. When staff are involved in consultations like this, a benefit is that students can hear at first hand about current issues – rather than waiting for years before they get described in textbooks.

Career Opportunities

One of the most important questions students ask us is what career opportunities their course will bring them. Graduates from the University of Lincoln's department of Biological Sciences go on to a wide and varied range of careers, and just to give you a little inspiration, we have listed a small selection here.

Careers with animals

Many of our Animal Behaviour Science graduates find employment working with animals. Sophie Fensome is an assistant animal behaviourist at the Bath Cats and Dogs Home, the top re-homing centre that works with the RSPCA. This work involves the rehabilitation and re-homing of dogs, cats and many small animals. Joanne Nash is a guide dog mobility instructor, and Jenni Thomkinson went on to set up her own company called Perfect Pups which offers puppy classes and one-to-one training for dogs. Hayley Upton works as an animal nursing assistant at a veterinary clinic.

Many of our Equine Science and Equine Sports Science graduates go on to find interesting positions working with horses. Abigail Bowyer found employment as an equine dentist, while Sam Bolton is qualified in equine sports massage, and provides services in preventative maintenance and rehabilitation following injury. Some graduates have gone on to work abroad, such as Jodie Sizer, who spent 2 years in America working for Olympian Anne Kursinski, and is now in Denmark working with jumping ponies. Samantha Coster works at the Naxos Horse Riding Centre in Greece where she takes tourists on treks to the beach and looks after the 25 ponies.

Claire Mann, also an Equine Sports

Science graduate, works for a stud and show jumping yard where she looks after youngsters before the breaking in process, exercises and trains the show jumpers and helps with the stud horses – foaling duties and helping with live covers. Claire also plans to complete the National Stud diploma.

After graduating in Animal Management & Welfare, Claire Mitchell is now employed as a regional development assistant for Cats Protection. Claire is responsible for 150 volunteer fosterers within the London area and provides fosterer induction training.

Claire Hogarth, and Equine Science graduate is a PR and Marketing Executive for an agency that specialises in equestrian and pet companies. Claire's job involves writing press releases for equine magazines, interviewing top riders for features, and planning advertising budgets for clients.

Careers in teaching

Some students go on to teach, and many are now employed at local schools and colleges. Roxanne Large graduated in 2008 in Animal Behaviour Science and is now in the final stages of her PGCE in Secondary Science. She is about to move to New York where she will be teaching science and animal management & behaviour on a camp

programme.

Careers in science

Some of our students choose careers as scientists, and Gaynor Kellett is one such individual who studied Equine Sports Science. Gaynor works as a trainee laboratory scientist in haematology with IDEXX Laboratories, who service the veterinary diagnostics industry.

Postgraduate education

Some students prefer to continue studying, Our MSc Clinical Animal Behaviour is one such option students can take, but our graduates have taken a variety of routes into postgraduate education.

Maggie Sellers studied Animal Management and Welfare. After graduating in 2006, she worked as an animal care assistant at Rand Farm Park, and is about to start a second degree in Veterinary Medicine at Edinburgh.

After graduating in Equine Science, Becky Gosling went on to complete her PhD in the 'Effects of metal contaminants of herbage on the activity of rumen microbes *in vitro*' and is now looking for a post doctorate position.

More information can be found on our website http://www.lincoln.ac.uk/dbs/alumni_dbs.htm