

## MRes in Animal Behaviour: Guide to Project Options 2011

The major component of the degree is the opportunity to conduct your own 24-week research project in your chosen area of research. You will learn how to develop and test your ideas, design and conduct experiments, analyse and present your data, and write up your findings – hopefully as an article to be published in a journal!

Below you will find a list of the potential projects that will be on offer in 2011. They span the full range of research interests of researchers within the CBE, including:

- Animal Welfare
- Behaviour, Ecology and Conservation
- Brain, Cognition and Behaviour
- Evolution of Human Behaviour

The list may not be the exact projects running, and more will be available, but they give a flavour of the available project opportunities. We are also happy to discuss your ideas for your own project, and if you would like to do so, please contact Daniel Nettle ([daniel.nettle@ncl.ac.uk](mailto:daniel.nettle@ncl.ac.uk)) as soon as possible.

### Animal Welfare

**Sandra Edwards** and **Jonathan Guy** offer opportunities to study the behaviour and welfare of farm livestock. This involves research into practical methods for measuring and improving the welfare of pigs, cattle, sheep and poultry, utilising the extensive animal facilities at Cockle Park and Nafferton farms. A particular challenge is the understanding of behavioural needs in these species and the development of innovative methods to accommodate these within today's farming systems.

**Emma Creighton** offers the opportunity to study behaviour and welfare in either companion or zoo animals. Research may involve fieldwork in the community, or surveys tapping into the knowledge and attitude of owners, carers, or zoo keepers. Of particular concern are companion animal training methods and their impact on learning and welfare, and to understand the behavioural needs of zoo animals in order to accommodate them within the constraints of the zoo environment.

**Melissa Bateson's** group offers projects looking at the welfare and affective state in laboratory animals including rodents and starlings, and employing automated techniques for the measurement and analysis of behaviour.

**Candy Rowe** is offering projects investigating how laboratory diets affect the welfare of lab animals, and also the quality of scientific research. Currently the main scientific question is to understand how mice balance their nutritional intake when faced with a monotonous diet, and what factors affect their dietary choices. These projects are conducted in collaboration with Harlan Diets, and offer experience of research with direct industrial application.

**Tom Smulders** and **Tim Boswell** offer the opportunity to investigate the welfare in broiler-breeder chickens from a neuroanatomical and neurochemical point of view. In order to be able to breed "normally", these birds are chronically food-deprived to 1/3 of their desired food intake. We investigate aspects of hippocampal morphology and neurochemistry to determine whether these conditions lead to chronic stress

and potentially depression-like symptoms in these animals.

### **Behaviour, Ecology and Conservation**

**Mark Whittingham's** research focuses on applied ecological questions using aspects of behavioural research. One major theme is to understand food preferences in wild birds (e.g. organic versus conventionally farmed crops), and to carry out research to inform practical management options. Study systems include the use of aviaries for foraging experiments, and fieldwork on farmland birds linked with on-going DEFRA and NERC funded studies.

**Geraldine Wright** will offer projects on the impact of ozone on plant-pollinator interactions. In this project, students will test how high concentrations of atmospheric ozone influence a pollinator's ability to learn to associate floral scent with food. These experiments will be performed in the lab and in a field setting with free-flying bees.

**Gilbert Roberts** will provide opportunities to work on observational field studies of factors affecting avian anti-predatory vigilance behaviour. The work focuses on the relative roles of the detection or "many eyes" and the dilution or "many bodies" effects in explaining the benefits of grouping.

**Tom Smulders** takes a computational approach to understanding the evolution of food-hoarding behaviour in tits. You will use a stochastic-dynamic modelling approach to better understand the role of the digestive system as a constraining variable on the evolution of hoarding behaviour.

### **Brain, Cognition and Behaviour**

**Geraldine Wright** will offer projects on the learning and nutritional ecology of honeybees. Students will study how a bee's nutritional history influences its performance during learning and memory tasks, both in the lab and in the field. In addition, there will be opportunities to study mechanisms of learning and memory in the honeybee brain. These projects will use pharmacological techniques to study how specific biogenic amines modulate olfactory learning in the honeybee.

**Peter Simmons** also works in insect neuroethology, and is particularly interested in how the visual system of locusts controls behaviour. He will offer projects on locust visual behaviour and mutual attraction, startle responses in insects, and the evolution of sense organs more generally.

Projects with **Candy Rowe** focus on dietary cognition and feeding behaviour. Her group works on understanding how animals (mice and starlings) learn about what to eat in order to balance nutrients in their diets. She also work on how birds and insects learn to regulate their intake of toxins to address current questions about the evolution of prey defence strategies, e.g. whether to be cryptic or aposematic, or whether tasting bitter is a good defence against predators.

**Melissa Bateson** also offers projects on decision-making in foraging starlings, and in particular how animals make risk-sensitive foraging decisions. These projects will involve working with birds in the lab, and measuring how their food preferences change in a variable environment, e.g. when temperature increases.

**Tom Smulders'** interests include understanding the neural correlates of seasonal changes in hoarding behaviour in willow tits. By studying willow tit brains collected in Finland at different times during the non-breeding season, we investigate how the

brain changes in order to accommodate the seasonally-changing cognitive needs of the animals.

### **Evolution of Human Behaviour**

**Daniel Nettle** studies the ethology and behavioural ecology of humans. He encourages projects looking at prosocial behaviour, family dynamics, and decision-making, in naturalistic settings and where appropriate using laboratory experiments too. Students may also work with **Kari Schroder** to understand individual differences in cooperative behaviour in laboratory settings.

**Gilbert Roberts** also offers projects in human evolutionary psychology, particularly looking at human cooperation. These experiments use computer-based economic games to test the extent to which cooperative behaviour can be explained by self-interest.