PROJECT TITLE: Sustainable management of livestock pest and parasites  
DTP Research Theme(s): Living World  
Lead Institution: University of Bristol  
Main Supervisor: Professor Richard Wall, School of Biological Sciences, University of Bristol  
Co-Supervisor: Dr Lauren Ellse, University of Bristol  
Co-Supervisor: Dr Faith Burden, The Donkey Sanctuary, Sidmouth.  
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Image Caption: Sustainable management of parasites of livestock in Botswana

Project Background  
Livestock play a vital economic role in many countries where they are often the only cost-effective means of food production, since they can graze land that is unsuitable for the production of crops. In many cases they are also the only means of providing traction for ploughing or transport. However, livestock are particularly vulnerable to the impacts of pests and parasites, which can threaten the economic viability of grazing animals. Arthropods and vectors, such as ticks, mites, biting flies, fleas and lice, can have significant direct impacts on animal health, productivity and welfare, particularly in less developed parts of the world. In addition, biting flies and ticks are well-known vectors and livestock are important reservoirs of zoonotic diseases which may impact on human health. The sustainability of reliance on neurotoxic insecticide use for pest and parasite management is increasingly questioned and attention given to the development of more ecologically and economically sustainable novel control technologies.

Project Aims and Methods  
An area of current and growing interest is the use of plant secondary metabolite biotechnology, particularly essential oils, as botanical insecticides; experimental studies have shown that they may be highly effective alternatives. Such compounds are environmentally benign and may be relatively inexpensive. However, their use needs to be thoroughly evaluated and the best approaches for optimum use demonstrated. The aim of this studentship will be to examine the control of biting flies with essential oils, to identify optimum formulations for use against flies and, in particular, to identify approaches that increase the period of residual activity of essential oil products when applied to animals. This will be achieved through initial laboratory investigations followed by large scale field trials in the UK and overseas. Other approaches, that contribute to sustainable pest management, may also be incorporated in the work undertaken.

Candidate
The preferred candidate will have a background at BSc or MSc level in ecology and entomology with an interest in animal welfare. The candidate should be willing to undertake periods of months in the field (either UK or overseas). Good laboratory and numerical skills would also be an advantage.

Case Award Description
The CASE partner is The Donkey Sanctuary, (www.thedonkeysanctuary.org.uk). This is an animal welfare charity dedicated to improving the quality of life for donkeys, mules and people worldwide and their Head of Research, Dr Faith Burden, will be closely involved in the project throughout.

Training
Training in animal handling, health and safety and animal welfare will be undertaken by the CASE partner. Training in biochemical laboratory techniques and toxicity assays will be undertaken by Dr Ellse. Training in arthropod identification and sampling will be undertaken by Professor Wall. Training in biostatistics, experimental design and other generic research skills will be provided by the University of Bristol.

References / Reading List

Links
School webpage http://www.bristol.ac.uk/biology/courses/postgraduate/
NERC GW4+ DTP Website: http://nercgw4plus.ac.uk/
Bristol NERC GW4+ DTP Prospectus: http://www.bristol.ac.uk/study/postgraduate/2017/doctoral/phd-great-western-four-dtp/

Application deadline: 23.59 GMT, Sunday 7 January 2018

How to apply to the University of Bristol: http://www.bristol.ac.uk/study/postgraduate/apply/

General Enquiries:
Bristol NERC GW4+ DTP Administrator
Email: bristol-nercgw4plusdtp-admin@bristol.ac.uk