

## **Wild Mammals and the Human Food Chain**

The Mammal Society held its autumn symposium in association with the British Society of Animal Science and supported by Defra and RELU. Some 150 ecologists, biologists, conservationists and social scientists considered the latest scientific evidence and ideas on the interactions between wild mammals and the human food chain. The symposium was organised by RELU grant-holder Piran White and included papers from various RELU research projects.

The meeting heard details of the costs to agriculture of the depredations of wild mammals. Herbivores such as deer can compete with livestock for grazing pasture and forage. Foxes predate lambs, poultry and piglets. Wild mammals can infect livestock with a variety of diseases, including rabies and bovine TB. But it's not all bad news. On upland moorlands the presence of sheep and rabbits together may help to maintain an open edible sward. For foxes at least, the benefits to farming of their control of rodent and rabbit populations outweigh the losses they inflict on young stock. And while wildlife reservoirs may in some cases (as now with bovine TB) amplify the presence of pathogens that threaten livestock, in other cases such as Lyme disease, a diversity of wildlife hosts may actually dilute the threat. Various contributions considered the underlying ecological processes, behavioural characteristics and husbandry factors associated with variation in the impact of different species, populations and individuals. The costs to agriculture and of control measures were assessed. Here information was patchy. There is, for example, limited evidence of the economic impact of wild herbivores on domestic herbivores. One estimate of the full damage to agriculture from wild mammals was £180 million (Gorman). The overall costs can thus be seen to be small relative to the total costs of our food, although they may be significant for particular groups of farmers and in certain areas.

As well as these traditional human-wildlife conflicts, the symposium also explored other and novel ways in which humans and wild animals interact through the food chain. Land abandonment and agricultural deintensification are encouraging increases in the populations of large herbivores, including deer. At the same time, the

movement of people into the countryside is leading to different types of encounters introducing more ambivalent attitudes to wildlife than farmers have traditionally demonstrated towards agricultural pests. Human-human conflicts over wildlife are beginning to overlay human-wildlife conflicts.

Reform of agricultural policy is also placing more emphasis in the management of the land for biodiversity and environmental protection. Various papers looked at the role of wildlife ecology in guiding this process. Analysis suggested that existing agri-environment schemes had had mixed performance (Sutherland). Co-ordinated advice and farm management changes across riverside farmland in West Sussex, that have successfully reconnected water vole habitats, demonstrated the potential for “a directed and holistic landscape-scale approach to biodiversity protection on farmland” (Macdonald et al). This raised interesting questions about how such lessons might be mainstreamed into the design of schemes and measures in a way that was capable of being efficiently targeted and delivered. Getting the incentives right for farmers was important, but in the medium term training and the encouragement of attitudinal changes were needed (Edward-Jones). The development and marketing of products and tourism based on wildlife open up opportunities for producers to benefit commercially from wildlife conservation (Buller).

A set of papers covered work on infectious diseases at the wildlife/livestock interface. This is the area in which actual and potential costs may be high. The average cost of a new TB breakdown on a farm is £14,000 (Ward et al), and the public costs of TB control and research is currently running in excess of £100 million, which is up three-fold in four years (Bennett).

For zoonoses, the risks to human health bring an added dimension of concern. The recognition that diseases such as TB and Influenza may be endemic in wildlife, and the heightened public concern over these diseases give a new imperative to understanding the interactions between wildlife, livestock and people. The impossibility or the undesirability of eliminating wildlife reservoirs mean that, as one speaker said, “Since wildlife and their infections will always be with us, understanding the dynamic of risk is essential” (Begon).

The management of the exposure of livestock populations to wildlife disease reservoirs is thus one of the most critical challenges of disease control. One paper (Ward et al) reviewed farming practices that influenced disease transmission between wild and domestic mammals and identified changes in practice (removal of wildlife carcasses; feeding stock indoors; keeping feed clean and secure from wildlife; etc) that could reduce the risk of disease transmission. Another paper presented approaches to predictive modelling of the wild animal-livestock disease interface to assess the risk of disease transfer at the landscape scale (Pfeiffer).

The counterpart of wildlife disease risk is the role of wildlife as bio-indicators of ecosystem health. One paper examined the potential of insectivorous mammals – particularly bats and shrews - as indicators of the quality of agricultural ecosystems (Pocock et al). Another paper tracked the enlarging focus of the monitoring of animal sensitivities towards chemical contamination of the environment, from the reporting and analysis of wildlife deaths mainly intended to highlight the risks to non-target species of agricultural pesticides, to include new chemicals of concern including veterinary pharmaceuticals and their risks to riparian mammals (Shore et al).

### Reflections<sup>1</sup>

In reflection on the two days, it would seem that the form of the interactions between wild mammals and the human food chain is being shaped by two sets of tensions. On the one hand, there is:

- Increasingly intensive regulation of land and management of the environment, and increased human control within those regulatory and management practices (driven by stronger technological capabilities and legal powers in responses to heightened concerns and pressures)

Versus

- A drift towards marginal land going out of production, driven by subsidy changes, with uncertain outcomes for management of such land.

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<sup>1</sup> I am indebted to my colleague Andrew Donaldson for helping me clarify these issues.

On the other hand, within the first trajectory noted above (intensive regulation) there is a second tension:

- Management and regulation for food chain security / public health risk minimisation (farming for biosecurity, rather than biosecurity for farming)

Versus

- Management and regulation for landscape and biodiversity conservation

In this second tension, the first element implies the need for a rigid boundary around any animal system connected with the human food chain, to subject everything within that boundary to human control. This could militate against the conservation of more 'natural' ecosystems as a co-produced public good. Where might this leave environmentally ethical approaches to food production?