Assessing and communicating animal disease risks for countryside users

Many people take much pleasure from visiting the 'great outdoors' and there are an increasing number of campaigns to encourage more people to experience green spaces, thereby improving their health and well-being. Although there is considerable evidence of the benefits of countryside use, risks are inevitably incurred, including the possibility of acquiring a disease from wild animals (known as a zoonotic disease, or zoonosis). Little is known about how best to warn users about animal-related diseases and encourage appropriate behaviour without causing alarm. This project explores the possible impact of zoonotic diseases on the development of recreation in rural areas, within an overarching framework of risk communication. It focuses initially on Lyme disease, an infection caused by a spiral bacteria *Borrelia burgdorferi* that is found in a number of wild animal hosts and which can be transferred to humans by infected ticks. Lyme disease is an ideal subject for a case study because it is relatively well understood and incidences of it appear to be increasing in the UK (currently nearly 2000 cases a year), however project results will be relevant to other zoonoses. This three-year project is funded by the Rural Economy and Land Use Programme (RELU) and will run until 2010.

"Some pathogens that infect wildlife can also cause human disease. The perceived risk of acquiring such an infection is known to reduce people's willingness to interact with wildlife, and to increase their support for measures such as culling wildlife or physically separating wildlife from people through fencing... Understanding the drivers of public attitude is therefore vital to develop communication strategies that would encourage proportionate media and public responses to any novel pathogen"

Sutherland *et al.* (2008)

Background

Forest Research is leading this interdisciplinary project, which involves the Universities of Oxford and Surrey. Research includes analysing future risk of disease transmission, developing an understanding of public users' and land owners/managers' perception of risk, identifying possible responses of public and private organisations and the potential behavioural responses of individuals to precautionary advice. FR's Social and Economic Research Group (SERG) leads two major aspects of the project:

- organisation and facilitation of Practitioner Panels
- research into how organisations communicate risk

Objectives

This research aims to:

- understand the prior awareness, preventative knowledge and reactive action of stakeholders, including the public, workforce, land managers and those who have contracted the disease
- develop and analyse scenarios that assess the likelihood of an increase in Lyme disease resulting from changes in environmental factors
- develop appropriate risk assessment methods
- propose a communication strategy, identifying the various audiences that need information

Methods

The role of SERG is to:

- facilitate three Practitioner Panel (PrP) meetings over three years
- undertake a desk-based survey to identify internet information sources for ticks and Lyme disease
- conduct approximately 20 face-to-face and telephone interviews with relevant health and safety, education or recreational representatives of organisations that provide precautionary information
- contribute to the collection of available leaflets on Lyme disease and to analyse their content
- co-supervise a RELU PhD at Oxford University titled 'Fine-scale habitat use of forests by human visitors: developing an agent-based model of risk of tick challenge'

The PrP is made up of a range of stakeholders involved in management or policy development of forests and wild lands in the UK. These include corporate health and safety officers and policy advisors, land owners/management groups, forest managers and NGOs promoting public access, and specialist interest groups. The role of the PrP is to evaluate the research findings, to identify ways of maximising the relevance and utility of the findings, and to guide ongoing dissemination.

To understand the present situation, SERG researchers will gather the views of public and private organisations on current Lyme disease risk and preventative information. We have conducted a preliminary survey of organisations that provide information on Lyme disease via the web. This will be developed through in-depth interviews with selected organisations on how they communicate risk and the constraints they face in providing information to their staff and other users of the countryside.

SERG's work feeds into, and will be informed by:

- Development of scenarios (Forest Research)
  A range of scenarios will examine multiple possible futures. This will facilitate discussions about potential changes and what management actions are necessary to promote or prevent potential future outcomes. The scenarios will be adapted throughout the life of the project to encompass research findings and results of stakeholder interactions.
- Risk analysis (University of Oxford)
  This analysis will examine the risk of transmission of Lyme disease to forest visitors. This involves gathering baseline data on the incidence of Lyme disease across the UK. Predictive modelling will be developed of the relative seasonal abundance and spatial scale of questing ticks at case study sites in Exmoor National Park, New Forest and Richmond Park to assess the risk of human contact with ticks.
- Research on risk perception (University of Surrey)
  This research will focus on (1) understanding the perspective of people with Lyme disease, for example the ways in which they make sense of the risk and of preventative behaviour; (2) understanding public and stakeholder perspectives (in relation to scenarios) to identify ways in which risk exposure and awareness can impact on behaviour; and (3) evaluating a range of precautionary information to identify the most appropriate media for communicating to different stakeholders.

Expected contribution of the research

The project will run until 2010. It is expected that the research will result in a greater understanding of how individuals, groups and organisations perceive and respond to the risks of Lyme disease. Computer models will be developed to predict the location of infected ticks. The evaluation of precautionary information will assist policy makers, countryside managers and users to communicate effectively the degree of risk and to encourage preventative action. Further information can be found at www.forestresearch.gov.uk/animaldiseaserisks

Partners

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Reports and publications

Sutherland *et al.* (2008) Future novel threats and opportunities facing UK biodiversity identified by horizon scanning. *Journal of Applied Ecology*, **45**, 821–833