TB Wildlife Reservoirs: Are badgers really different?

BovineTuberculosis Workshop
University of Glasgow
9\textsuperscript{th} -10\textsuperscript{th} May 2013
• What makes a good wildlife reservoir?

• TB in Other UK Wildlife

• Possible Suspects

• Are badgers really different?
What are the characteristics of an effective wildlife reservoir?

- Maintenance or Non-maintenance?
- Overlapping Distribution
- Contact Likelihood
- Ecology
  - Interspecific
  - Intraspecific
  - Diet
  - Life span
  - Social Behaviour
- Prevalence
- Pathology
  - Mortality
  - Excretion
  - Behaviour
- Abundance
- Behaviour

TB Wildlife Reservoirs
Bovine tuberculosis infection in wild mammals in the South-West region of England: A survey of prevalence and a semi-quantitative assessment of the relative risks to cattle.
Delahay et al., 2007. The Veterinary Journal
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Possible Suspects
TB Wildlife Reservoirs

- Contact with cattle possible
- Contact with badgers possible
- Disease present
- Very widespread

- Gross pathology rarely detected
- Prevalence low 2.04 - 4.69%
- Low likelihood of excretion
FOX (VULPES VULPES)

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TB Wildlife Reservoirs
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- Extensive Pathology
- Potential to shed large bacterial load
- Chronic Infection
- Long lived (10-15 years)
- Low Prevalence 0.12 – 3.64%
- Patchy distribution
Extensive Pathology – generalised widespread infection
Potential to shed comparable bacterial load
Widespread and common
May feed in open farmland / farm visits
Chronic Infection observed
Long lived
TB Prevalence 0.47 – 1.92%
Less gregarious

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TB Wildlife Reservoirs
Extensive Pathology – generalised widespread infection

Potential to shed excrete similar bacterial load to badgers

May feed close to open farmland

TB Prevalence 2.67 – 6.53%

Chronic Infection observed

Long lived

Widespread but patchy distribution
TB Prevalence 1.08 – 14.38%

- Chronic Infection observed
- Widespread but clumped distribution
- Little evidence of generalised widespread infection
- Likelihood of contact with cattle lower than other deer species
- Likelihood of excretion lower than other deer species
- Generally solitary

TB Wildlife Reservoirs
Muntjac
(you might have to take our word for it...)

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TB Wildlife Reservoirs
WILD BOAR (SUS SCROFA)

Pathology – high proportion with generalised lesions (Spain)

Contact opportunities with cattle

TB Prevalence (Spain 46-62% but much higher densities)

Chronic Infection

Aggregations between individuals

Bovine TB found in wild boar for first time in UK

Scientists discover TB in wild boar, raising fears among farmers that boars and badgers could be contributing to disease in cattle.

TB Wildlife Reservoirs
TB Prevalence 9.76 - 12.21%
- Long lived with disease
- Infection may be linked to increased ranging behaviour
- Widespread
- Excrete *M. bovis* effectively through multiple routes
- Lots of shared space with cattle; pasture & farm buildings
- Social animals, barrier or facilitator?

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**TB Wildlife Reservoirs**
• Risk from deer species (esp fallow and red) potentially substantial, where abundant

• Wide variation in deer densities, localised risk

‘The role of some deer species in the epidemiology of TB in cattle may become more significant in parts of the UK if deer populations continue to expand in geographical range and abundance’ (Ward et al. 2009)

• High levels of uncertainty – are deer a maintenance reservoir? Future role of wild boar?

• Badgers tick lots of the boxes!

• But dynamic epidemiological picture....
References

• Bovine tuberculosis infection in wild mammals in the South-West region of England: A survey of prevalence and a semi-quantitative assessment of the relative risks to cattle. Delahay et al., 2007. The Veterinary Journal

• The Status of *Mycobacterium bovis* Infection in UK Wild Mammals: A Review. Delahay et al., 2002. The Veterinary Journal


• The state of tuberculosis in European wild mammals. Gortázar et al., 2012. Mammal Review

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