

# The Effect Of The Urban-Rural Gradient On Potential Vector-Borne Disease Risk In Scotland



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## 1) Project Rationale

Insect-borne diseases are a significant cause of morbidity and mortality throughout the world.

Climate change is driving these diseases into new temperate regions across Europe, with the UK potentially being at risk in the coming decades.

The vast majority of research into British insect vectors has been conducted in England and Wales; therefore, there is a knowledge gap concerning Scottish populations (figure 1).

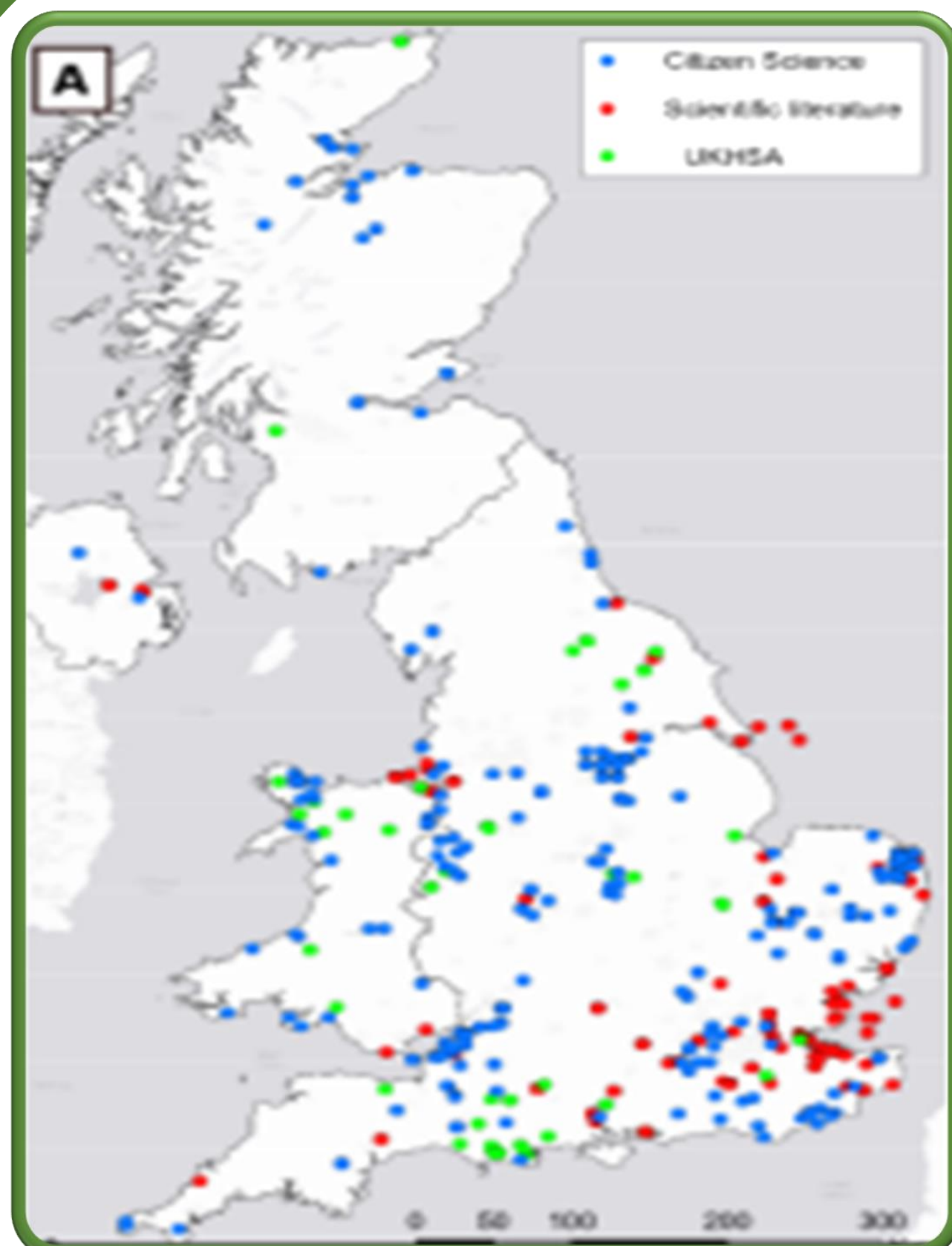


## 2) Research Aims

1) To test the efficiency of different trapping methods for insect vectors within an urban and rural area in West Scotland.

2) To investigate how the composition, abundance and ecology of dipteran vectors (mosquitoes, midges, blackflies) vary across an urban-rural gradient in Scotland.

3) To analyse how vector borne disease (VBD) transmission in avian populations varies across an urban-rural gradient in Scotland using avian malaria as a model system.



**Figure 1:** Mosquito surveillance conducted in the UK.



**Figure 2:** Main trap that will be used throughout the study.



**Figure 3:** Proposed sites of surveillance throughout the study.

## Methods

- The ecology of different insect species will be assessed using mosquito traps (figure 2).
- This will be conducted across an urban-rural gradient of 8 sites between Kelvingrove Park and Loch Lomond (figure 3).
- Environmental data, human/bird activity, and the pathogen prevalence in avian species will also be recorded at each site.

This proposed method will allow for assessment of the risk of VBD spillover from avian reservoirs to humans along an urban-rural gradient in Scotland.