



## **Title: Does urbanisation and urban heat impact parasite burden and disease risk from the invasive grey squirrel in the UK?**

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As urban centres expand globally, wild animal populations become exposed to a range of new anthropogenic stressors, such as air, noise and light pollution which reduce immunocompetence and increase disease susceptibility. Urban areas are also the epicentre for the introduction of invasive host species with the potential to carry zoonotic diseases. Invasive species, especially mammals, can increase zoonotic disease risk by increasing the abundance of existing pathogens and parasites as well as introducing new ones into the environment and facilitating transmission. However, the relationship between urban-related stress on invasive species immunocompetence and zoonotic disease risk is still not fully understood. In this studentship we will employ invasive Grey squirrel (*Sciurus carolinensis*) populations living across the urban-rural gradient in the UK to investigate the impact of urban stress on grey squirrel immunocompetence, ectoparasite burden and Lyme disease risk.

We will specifically examine:

- a) whether grey squirrel stress and immunocompetence markers
- b) spatial distribution and abundance of tick carrying *Borrelia* vary across the urbanisation gradient
- c) how parasite burden and *Borrelia* levels in grey squirrel populations vary with cofactors such as landscape connectivity, ecological community, host/human density, and climate change.

This work will enable us to further understand the impact of urbanisation on zoonotic disease risk, the role of the invasive grey squirrel in the tick-borne Lyme disease dynamics and map tick-borne Lyme disease risk areas in the UK.

### **Training opportunities:**

The student will be integrated into a vibrant conservation organisation, providing the opportunity to train in a range of field, sampling, laboratory and modelling skills. They will have access to a range of opportunities to apply and disseminate their research through our science communication and policy making teams as well as directly inform conservation practice.

### **References:**

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