

## **Understanding the epidemiology and impacts of bluetongue virus in South India with statistical and biological models**

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Application Deadline: 31<sup>st</sup> July 2010.

### **Project Description:**

In India, bluetongue virus, transmitted by biting midge vectors, imposes major constraints on sheep rearing, with subsistence farmers in the South being most severely affected by periodic, monsoon-driven outbreaks. Vaccines are expensive and vector control is currently the only option for disease management. The studentship will try to identify the key drivers of outbreaks of bluetongue virus and its *Culicoides* vectors in South India from local to regional scales, seeking to generate predictions of spatio-temporal risk to improve disease management, especially vector control.

Specific questions:

- What are the main determinants of the abundance and seasonality of key vectors in farms in South India?
- Can larval breeding sites of key vectors be mapped using high resolution satellite imagery?
- Can precise relationships be established between demographic rates and environmental conditions of key vectors and can they be used in vector population models exploring vector control scenarios?
- What are the relative roles of intrinsic (e.g. herd immunity) and extrinsic factors (e.g. weather, including monsoons) in driving epidemics of bluetongue in India? Is it possible to forecast epidemics?

Each year the student will spend 5 months each at the CEH Edinburgh and the Zoology Department, Oxford University, UK, and 2 months in India. This PhD is part of a joint BBSRC/DFID/Scottish Initiative “Combating Infectious Diseases of Livestock for International Development”. The student will interact with scientists from the Institute for Animal Health, UK, and the All India Network Programme on BTV, India. A multi-lingual candidate able to work in both North and South India is preferred. The student will be trained in remote-sensing, vector surveys and field-based habitat mapping, analysing landscape and climatic drivers from remotely-sensed data and modelling spatio-temporal patterns in vector-borne diseases. The student must therefore have basic computing skills and an aptitude to learn relevant new skills.

### **Further Information:**

To apply for this project please send a CV and covering letter explaining why you are suitable for this project with details of two referees to the contact supervisor.

Funding is for candidates from India only.

The project will be supervised by Dr Bethan Purse, Centre for Ecology and Hydrology, Edinburgh and Prof. David Rogers, Zoology Department, Oxford University.

**References:**

All India Network Programme on Bluetongue

<http://ainpbt.org/achievement.html>

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Chaves LF, Pascual M (2007) Comparing Models for Early Warning Systems of Neglected Tropical Diseases. *PLoS Negl Trop Dis* 1(1): e33. doi:10.1371/journal.pntd.0000033

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