

**Speaker: Eleni Matechou (University of Kent)**

**Date: 08/03/2022 at 13:15 on Microsoft Teams**

**Title: New models for DNA-based single and multi-species monitoring**

**Abstract:**

DNA-based surveys, and in particular environmental DNA (eDNA) surveys, are becoming increasingly adopted as a monitoring tool by researchers, practitioners and organisations. eDNA surveys include two stages, the sample (eg soil, water, leeches) collection stage and the laboratory analysis stage, where DNA of species in the sample can be detected. However, observation errors can occur in both stages of DNA-based surveys and current practice when interpreting eDNA data is based on ad-hoc rules that can differ between research groups and labs.

In this talk, I will present a new statistical framework that we have developed, specifically designed for eDNA data. The new models allow us to account for all sources of error and to infer the probability of species presence at each surveyed site in surveys targeting single species and changes in within-species relative biomass in surveys targeting multiple species. I will demonstrate the models using two real data sets: a data set collected using water samples in the UK as part of a monitoring effort for great crested newts and a data set collected using leech-ingested bloodmeals in the Ailaoshan reserve in Yunnan, China.