



Project title: Dung fungi and DNA: recording the decline of reptiles on oceanic islands
(Ref: OP20315)

One Planet Research Theme:

Climate & Climate Change | Earth System Processes | Anthropocene | Environmental Informatics

Lead Supervisor:

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Key Research Gaps and Questions:

1. What distinguishes reptile presence or absence/extinction in sedimentary archive based on evidence from dung spores and sedimentary DNA?
3. How are human impacts on island reptiles expressed in sedimentary records of dung fungi, pollen and DNA?
3. What is the dung fungal diversity on reptile dung?



Project Description:

Island colonisation by people has routinely led to the extinction of animal species or the decimation of populations. Many oceanic islands on trade routes were first occupied transiently by ship crews as a means of resupplying fresh food, and only colonised fully later on. Though ephemeral, in many cases this had a devastating impact on animal populations, such as large tortoises. Human colonisation was often accompanied by the introduction of livestock, pets and pests, leading to further adverse impact on native animal communities.

Dung fungi from mammalian herbivore faeces have been relatively well studied, increasing our understanding of extinctions and husbandry practices. Dung fungi on reptile dung has been reported, but has not been used to throw new light on the processes of extinction and colonisation of oceanic islands. Similarly, DNA extracted from sediment cores has been used successfully for investigating mammal and plant responses to human activity. This proposed ONEPlanet PhD project seeks to further developing these techniques to detect specific reptile dung fungi alongside DNA of reptiles and dung fungi.

The project will involve overseas fieldwork including sediment coring on an island such as Reunion, Mauritius or the Canaries, analysis of the core using palaeoecological and statistical methods, and laboratory work cultivating fungi on reptilian dung from zoos and wildlife parks in the UK. The candidate will acquire skills in geographic and ecological fieldwork, statistics and palaeoecological and sedimentological laboratory analysis.

Prerequisites:

A successful candidate will have a degree in Earth Science, Biology, Geography, Archaeology or other relevant discipline. An interest and understanding of mycology would be beneficial. Full training will be offered over the course of the PhD, but some lab experience would be desirable. No aversion to excrement is necessary!

For more information, please contact matthew.pound@northumbria.ac.uk.