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## G. NON TECHNICAL SUMMARY (NTS)

**Project title:** Epidemiology of parasite infections in wild bird populations

**Duration of project - years:** 5

**Duration of project - months:** 0

**Purpose of the project (as in ASPA Section 5C(3)):**

(a) basic research: **YES**

(b) translational or applied research with one of the following aims:

(i) avoidance, prevention, diagnosis or treatment of disease, ill-health or other abnormality, or their effects, in man, animals or plants: **YES**

(ii) assessment, detection, regulation or modification of physiological conditions in man, animals or plants: **NO**

(iii) improvement of the welfare of animals or of the production conditions for animals reared for agricultural purposes: **NO**

(c) development, manufacture or testing of the quality, effectiveness and safety of drugs, foodstuffs and feedstuffs or any other substances or products, with one of the aims mentioned in paragraph (b): **NO**

(d) protection of the natural environment in the interests of the health or welfare of man or animals: **NO**

(e) research aimed at preserving the species of animal subjected to regulated procedures as part of the programme of work: **YES**

(f) higher education or training for the acquisition, maintenance or improvement of vocational skills: **NO**

(g) forensic inquiries: **NO**

**Keywords:**

birds, wildlife, disease, malaria, trichomonas

**Describe the aims and objectives of the project (e.g. the scientific unknowns or scientific/clinical needs being addressed):**

The overall aim of this work is to improve our understanding of how parasites and diseases are transmitted in wildlife populations. We want to understand how changes in the environment – such as changing food availability or climate – affect parasite transmission, and how this can be managed for species conservation. There are four main objectives:

1. How do changes in climate or food availability affect the interactions between birds, their parasites, and the vectors that transmit parasites?
2. How does the diet of birds influence parasite transmission?
3. How does infection vary through the lifetime of individuals?
4. When do birds first become infected by parasites and, if infection happens in the nest, how does this

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affect the subsequent behaviour and survival of individuals?

**What are the potential benefits likely to derive from this project (how science could be advanced or humans or animals could benefit from the project)?:**

The proposed work will provide novel insights into how parasite infections fluctuate within and between individuals in wildlife populations. The work will look at both vector-borne parasites such as avian malaria, and directly-transmitted parasites such as *Trichomonas gallinae*. The work will look at how parasite transmission is affected by the distribution and availability of food resources, and will have practical implications for management of declining wildlife.

**What types and approximate numbers of animals do you expect to use and over what period of time?:**

In order to gain an accurate estimate of disease prevalence in avian communities, we need to collect samples from a large number of individuals although, where possible, we will minimise sample sizes through the use of statistical methods to aid analysis. We will sample a maximum of 200 of the majority of species (actual numbers will be far below this for the majority of species, and the numbers sampled will depend on those available at our study sites). We will sample a maximum of 500 individuals from 5 species over the duration of the project these are: yellowhammer, linnet, turtle dove, hawfinch, and mute swan

**In the context of what you propose to do to the animals, what are the expected adverse effects and the likely/expected levels of severity? What will happen to the animals at the end?:**

The protocols involved in screening birds for parasites are widely used and are known to cause minimal suffering. All samples will be collected from each bird within a short space of time, at the capture site. Each bird will then be re-released into the wild without delay. No adverse effects are considered likely.

**Application of the 3Rs**

**Replacement:**

We wish to examine the dynamics of parasite infections in wild populations, so we cannot carry out this work without using wild animals.

**Reduction:**

In order to gain an accurate estimate of disease prevalence and how this fluctuates within and between individuals, we need to collect samples from a relatively large number of individuals although, where possible, we will minimise sample sizes through the use of statistical models to aid analysis.

**Refinement:**

We are using species of bird within which previous work has identified that the relevant parasites are present in a large enough proportion of individuals that we can achieve our objectives.

The protocols followed in order to screen birds for parasites are well-established, and known to cause minimal harm.

Birds will be captured and handled by experienced individuals with the relevant licences, and will be released as soon as the required samples and measurements have been taken.