The Plan: Leveraging Social Media to Document Phenotypic Variation in British Red Foxes

Research Proposal · December 2024

1 author:

Hayley de Ronde
Black Foxes UK
6 PUBLICATIONS **1** CITATION

SEE PROFILE

The Plan: Leveraging Social Media to Document Phenotypic Variation in British Red Foxes

Abstract

Melanism, a rare genetic variation in red foxes (*Vulpes vulpes*), appears to be increasing in frequency in the UK. While anecdotal reports have highlighted this trend, systematic research is lacking. This paper proposes a methodology for using citizen science and social media data to document and analyse the prevalence and distribution of melanistic foxes. By outlining the potential benefits and challenges of such an approach, this paper aims to serve as a foundational framework for future studies.

---

1. Introduction

Melanism, a genetic condition resulting in dark pigmentation, is a notable but poorly understood trait in red foxes (*Vulpes vulpes*). Historically rare in the UK, the trait is thought to persist at low frequencies in wild populations. Recent anecdotal observations suggest an increase in melanistic individuals, raising questions about the genetic, ecological, and anthropogenic factors contributing to this phenomenon.

The role of citizen science in wildlife monitoring has grown significantly, particularly through social media platforms that enable widespread and rapid reporting. This paper outlines a framework for leveraging such tools to study phenotypic variation in UK fox populations, with a specific focus on melanism.

---

2. Background

2.1 Melanism in Red Foxes

Melanism is a recessive trait influenced by genetic and environmental factors. Previous studies in other species have highlighted its potential adaptive advantages, including enhanced camouflage and resistance to disease. However, its occurrence in foxes remains poorly documented, particularly in European populations.

2.2 The Role of Human Influence

Captive breeding, historical introductions, and habitat changes resulting from urbanisation may contribute to the presence and persistence of melanistic traits in the wild. Anecdotal evidence links the occurrence of melanistic foxes to regions with known captive escape events, but robust data are lacking.

2.3 Citizen Science in Wildlife Research

Citizen science has proven invaluable for monitoring elusive or rare wildlife phenomena. Platforms such as social media and dedicated reporting websites offer unprecedented opportunities to crowdsource data on species distribution, behaviour, and phenotypic traits. These tools are especially valuable for traits like melanism, which are conspicuous and easily identified by non-specialists.

---

3. Research Questions

This study seeks to address the following key questions:

1. What is the current geographical distribution of melanistic foxes in the UK?
2. How might the frequency of melanistic traits vary across different habitats (urban, suburban, rural)?
3. What role do captive escapees and anthropogenic factors play in influencing the prevalence of melanism?
4. How can citizen science methods be optimised to generate reliable data for phenotypic studies in foxes?

---

4. Proposed Methodology

4.1 Data Collection Framework

- **Social Media Monitoring:** Groups and accounts dedicated to wildlife reporting will be monitored for sightings of melanistic foxes.
- **Online Reporting Tool:** A centralised platform will be developed to enable the public to submit sighting reports, including photographic evidence and location data.
- **Community Outreach:** Public awareness campaigns will encourage participation, emphasising the importance of accurate and responsible reporting.

4.2 Validation and Verification

To ensure data accuracy, a multi-tier validation process will be employed:

1. Review of submitted evidence by trained volunteers or researchers.
2. Cross-referencing reports with independent accounts or photographic timestamps.
3. Categorisation of sightings based on confidence levels (e.g., confirmed, probable, unverified).

4.3 Analytical Approach

Once sufficient data are gathered, the following analyses will be conducted:

- **Geospatial Analysis:** Mapping of melanistic fox distributions to identify potential hotspots and ecological patterns.
- **Temporal Trends:** Examination of data for seasonal or annual changes in sighting frequency.
- **Habitat Categorisation:** Classification of reports by urban, suburban, or rural environments to assess habitat influences.

---

5. Challenges and Limitations

5.1 Data Reliability

The reliance on public submissions introduces the potential for bias or inaccuracies, particularly if submissions lack verifiable evidence. Strategies for mitigating these risks will be discussed.

5.2 Sampling Bias

Urban and suburban areas are likely to be overrepresented due to higher human population densities and greater use of social media. Techniques to adjust for this bias will be explored in future studies.

5.3 Ethical Considerations

The visibility of melanistic foxes could lead to unintended consequences, such as increased human interference or attempts to capture them. Public outreach efforts will emphasise ethical wildlife observation practices.

---

6. Conclusion and Next Steps

This paper provides a framework for studying melanism in UK foxes using citizen science and social media data. By addressing the outlined research questions and challenges, this approach has the potential to generate valuable insights into the genetic, ecological, and anthropogenic factors shaping fox populations. Future work will focus on how we went about implementing the proposed methodology, as well as collating ten years worth of data (2015-2025), in order to conduct in-depth analyses.