



How can studying Soay sheep on St Kilda help conservation and farming in the Welsh uplands?

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#### Introduction

The feral population of primitive Soay sheep on the remote island of St Kilda, in the North Atlantic Ocean, provides a unique research resource where scientists have been studying related evolutionary genetics and population dynamics for decades. The island is covered in vegetation typical of many upland areas along the west coast of Britain. Diet studies have not previously been undertaken on the island due to the challenges associated with determining diet composition by free ranging animals. However, as there are no competitors nor predators the population is naturally regulated and co-dependent on the availability of resources such as food availability and nutritional quality, providing an ideal system to study plant-herbivore interactions.



Question: Can faecal DNA metabarcoding determine the quantitative composition of herbivore diets down to species classification?

#### Methods

Regular non-invasive faecal sampling from known individuals for DNA meta-barcoding to determine botanical composition of consumed diet.

## **Research & Aim**

This study is specifically addressing unanswered questions associated with plant - herbivore interactions. The aim is to further validate the the application of faecal DNA metabarcoding to fully determine diet composition in herbivores.

## **Project Outputs**

Provide insight into how dietary preference of sheep differ at e.g. different ages and times of the year. This information will increase our understanding of interactions between diet choice, immunity, gut bacteria and parasite burden in both wild and domesticated herbivore populations.



# Knowledge gained will improve:

- Further decision making & development of predictive models used for ecosystem conservation management.
- Support optimal grazing regimes within extensive sheep systems.
- Support reducing the need for anthelmintic drugs whilst improving animal nutrition via grazing management.
- Provide knowledge to avoiding overexploitation and depletion of habitat resources.



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