

The effects of deer carcasses on upland food webs



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Background

- Wild red deer are an iconic species in Scotland
- They are important for hunting, tourism and provide venison
- However, at high densities their grazing impact can be detrimental to some habitats
- As a result deer are shot for both sporting reasons and to control population size and carcasses are removed from the hill

There is increasing interest among some stakeholders in leaving some carcasses from culled deer on the hill because:

- of the logistical constraints of extracting carcasses in some areas
- interest in the potential ecosystem benefits of leaving carcasses on the hill, to benefit biodiversity

However, there are strong motivations to remove carcasses so they can be used for venison and not wasted.



Aims and Objectives

To quantify the environmental effects of leaving deer carcasses in the Scottish uplands.

It is well accepted that decomposition and nutrient cycling of organic materials are critical processes that influence the structure and functioning of ecosystems worldwide. However, few studies have quantitatively addressed the decomposition and associated effects of vertebrate carrion.

Hypothesis

Estate management influences the guild of vertebrate carrion feeders present and therefore affects carcass decomposition rates.

This has consequences for how nutrients from the carcass enter the upland food web.

This project will address two complimentary but independent questions;

1. What are the spatial and temporal effects of deer carcasses on upland terrestrial food webs, and
2. How does estate management, e.g. predator control, influence the rate of decay, release of nutrients and subsequent effects on upland terrestrial food webs?

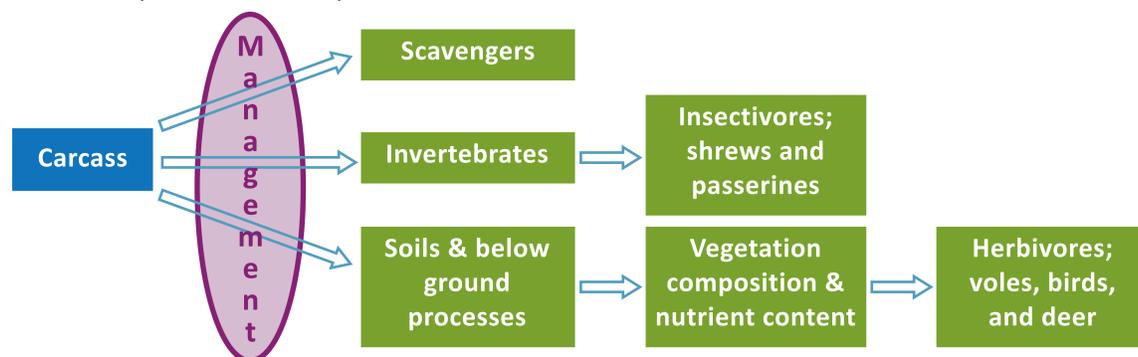


Figure 1: Shows the nutrient and energy flows (blue arrows) and responses (green boxes) investigated in this study. Management will influence the relative strength of flow of nutrients from the carcass to scavengers, invertebrates and the soil.

Preliminary Results

- Pit fall trapping of insects shows that carcasses have a substantial but very localised influence on invertebrates (Fig 2).
- The results of a one year camera trapping study show that a range of vertebrates species used carcasses; red fox, otter, pine marten, and golden eagle while ravens were the most common and frequent visitors (Figs 3a-e). Mountain hares and red grouse were often recorded feeding close to carcasses.

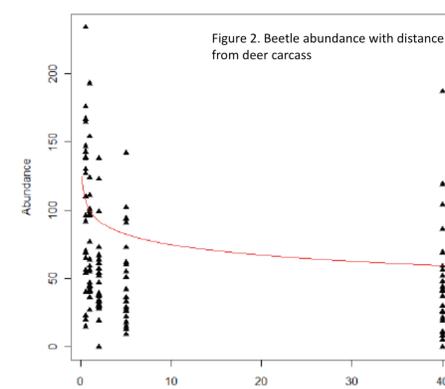


Figure 2: Beetle abundance with distance from deer carcass



Acknowledgements:

Special thanks go to the estates, landowners and land managers for their logistic support.

References:

A. Braga, J. (2012) On the impact of carcasses on invertebrate biodiversity: an exploratory survey in Scotland. Unpublished MSc project report. University of Aberdeen.

Next Steps!

We aim to monitor carcasses on land with different management practices to quantify how this affects the relative strength of nutrient flow to scavengers, invertebrates and the soil.