

To whom it may concern,

As part of my PhD with the University of Glasgow I am aiming to create a tool combining satellite imagery with help from the public to protect priority habitats and at-risk species across Scotland. The project will focus on locating areas of species-rich grassland which have declined by 97% since last century, in hopes of conserving species that use that habitat such as the Northern Brown Argus butterfly. The butterfly itself has also seen large losses in population size by nearly 60%, whilst its range has restricted by nearly 30%.

For the project, I have located a range of sites where butterfly transects already exist with Butterfly Conservation. I will be working closely with Butterfly Conservation; however, certain other measures are needed for my own project. Here, field measurements will be beneficial to calibrate this data with the satellite imagery. These measurements would include some removal of vegetation or soil if permission were granted. The measurements I would need to take include:

- 6 samples of 50 cm by 50 cm square plots (totalling at most 1.5 m<sup>2</sup>/6 large freezer bag's worth) of above ground vegetation. The samples would theoretically cut all vegetation in these small plots (except if rare species are identified) above the soil using grass scissors.
- One small soil sample size (of 96.21 cm<sup>3</sup>/a tube's worth at most 2.5cm wide and 10 cm long) in each 50 cm by 50 cm plot (totalling at most around a spade's worth). The samples would theoretically be collected with a soil corer.

Other measurements would not include the physical removal of any features but would record coverage of plants, solar reflectance data of plants, vegetation height, soil pH all within the 6 sample plots. These will be done visually and with the use of relevant portable equipment. If possible aerial images from an unmanned aerial vehicle would be advantageous with appropriate licensing in place. This would take an aerial image of 6 50 cm by 50 cm plots at a low height. However, if not possible, permissions for the vegetation and soil samples are of greatest need.

The sampling will be along a 1 km zigzag transect, with each section 200 m long. At the end of each section a 50 cm x 50 cm square quadrat will be placed to take the soil and vegetation samples. The transect is to be laid randomly on the site. If there are areas deemed unsuitable for the transect, these will be avoided and a representative area may be selected. Permission is also sought from land owner's, with enquiries already made and waiting on scheduled monument and SSSI approval.

These measurements are vital to understand the species richness and diversity of the habitat, as well as indicating the overall habitat condition to see what is suitable for protecting the Northern Brown Argus. These measurements would help in the conservation efforts of many threatened butterfly species and allow the identification of species rich grasslands through satellite imagery, with the potential for this method to be applied globally.

I would not only like to request permission to access the sites but also if it were possible to collect these measurements listed above please.

Yours sincerely,

Samantha Suter

