Tees-Swale: Naturally Connected – Heggs-Castle Cluster BeeWalk report 2021

All of us love to see the upland hay meadows of Dales in flower, brightening up the landscape with a globe flowers' dense yellow, to the delicate purple of a Wood crane's-bill. These diverse upland hay meadows are important food sources for livestock throughout the year, massively important pollen sources for pollinators and habitats for rare species.

The successful and traditional management of upland hay meadows by farmers in theTees-Swale Naturally Connected project area has meant it is home to 60% of all upland hay meadows found in England, and an important feature of the landscape. As part of the work within the project we are working to restore upland hay meadows and begun the restoration process at Heggs Farm in Arkengarthdale this summer.

In the lead up to the hay crop being taken and meadow restoration carried out, pollinator surveys were carried out by a team of volunteers. Using their ID and survey skills, the volunteers carried out Bumblebee Conservation UK's BeeWalk scheme on a newly created transect at the Heggs-Castle cluster. The aim of this investigation is to see the long-term effects that hay meadow restoration may have on these pollinators, and to be able to assess the impacts of the restoration work carried out on their abundance.

What we found

During the 8-week survey period there was a marked increase in bumblebee numbers from the 22nd of June onwards, prior to this date numbers were less than 10, and these only found in the control section of the transect (for this transect the control consisted of permanent pasture and riparian woodland, both botanically rich). This increase around this date was mostly due to increases in two record categories: the white/buff tail record (a combined record due to the difficulty distinguishing the two species) and the Common carder (*Bombus muscorum*).

Table 1 – Total Bumblebee count per survey record (combined meadow and control)

Date of survey	Total Bumblebee count
31/05/2021	1
04/06/2021	3
07/06/2021	5
12/06/2021	2
15/06/2021	3
22/06/2021	13
22/06/2021	8
26/06/2021	11
28/06/2021	12
01/07/2021	11
05/07/2021	28
08/07/2021	54
20/07/2021	51

The unidentified bombus, white/buff tail, garden, red-tailed and common carder bumblebee were recorded more in the control than the meadow, whereas the tree bumblebee was found more in the meadow area than the control. The tree bumblebee (*Bombus hypnorum*) is typically a "woodland-edge" species, which may explain why more were found in the meadow than control areas due to the meadow's proximity to riparian woodland. The current annual trend of the tree bumblebee is a gradual increase in number of records further north, since the first record in the UK in 2001 (Whiltshire).

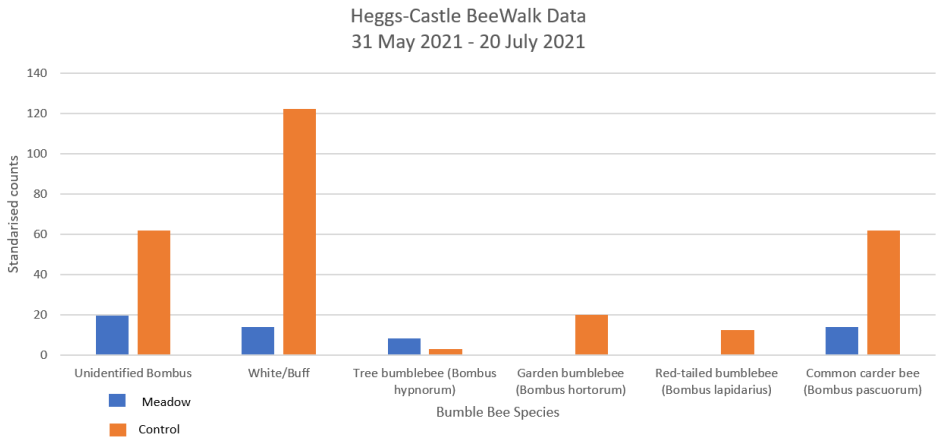

Figure 1 – The standardised counts for *Bombus* species at Heggs-Castle cluster. The control is the area of transect out of the meadow.

The most frequent species recorded were the unidentified bombus, and the white/buff tail record options. Due to these options being aggregates of multiple species, it is unsurprising that they were the most frequent records in both the meadow area and control area of the transect as they cover multiple species. The third most common record is the common carder-bee (*Bombus pasuorum*), a widespread and abundant species found in a range of habitats across the UK.

Figure 2 – Worker white tailed bumblebee (*Bombus lucorum*) on wild thyme. Photo taken Tees-Swale Naturally Connected volunteer Josie Kyme.

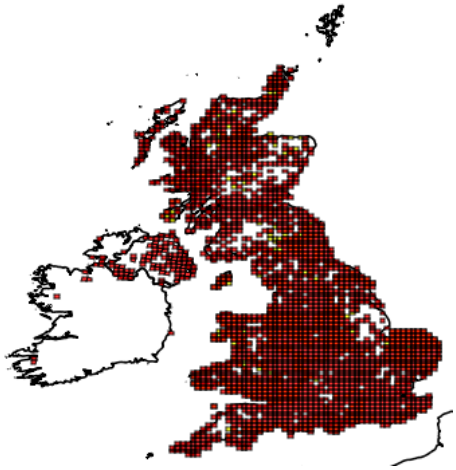

Figure 3 – Species distribution of common carder-bee (*Bombus pasuorum*), taken from NBN Atlas. Red: records 2000-present. Yellow: pre-2000 records.

What's next?

Next May, June and July the same method will be used to gather another 8-weeks of BeeWalk data on the same Heggs-Castle cluster transect and will be used in conjunction with the botanical meadow surveys of 2021 and 2022 (once done) to look at the effect of restoration on bumblebee species and numbers, botanical species in the meadow and the overall wildflower cover. The BeeWalk transect data recorded this summer (2021) prior to any restoration works will be used as the baseline for the investigation.