

Dartington Estate Agroforestry project - butterfly survey 2017

Summary and notes for Dartington Biodiversity Volunteers Meeting, 17 October 2017

Introduction and background

The brief was for a volunteer to carry out a butterfly survey in connection with the Agroforestry project at Broadleaves Field at Dartington, located to the south west of Dartington Hall Gardens and south of Upper Drive. In essence, this is a multi-cropping and multi-tenanted agricultural scheme that involves the cultivation of trees and crops alongside each other by different interested parties.

The site

The Agroforestry project covers a field extending over some 48 acres. It is dissected by a service track and on each side, at an angle to the track, the field is planted out with rows of saplings of elderflower, a variety of apple and Sichuan pepper trees. In 2017, the wide bands between each of the tree rows have been sown with red clover, which has subsequently been harvested.

Aims of survey

The butterfly survey was instigated in order to provide base data to help measure the levels of biodiversity on the site, and in turn to provide some evidence of the ongoing impact of the agroforestry project.

Method

The survey was carried out on 15 consecutive weeks between June and September in 2017. The site was divided into 8 transects, each of which were walked as part of the survey. For each transect, the number and species of butterfly were recorded on a survey sheet. Wind, temperature and cloud cover were also noted. Transects were identified around the perimeter field margins and internally along the service track and the rows of selected tree species. Depending on the level of butterfly activity to be recorded, the survey would typically take between one and a quarter and two hours.

Survey findings

The total number of butterflies recorded during the survey period was 691. The highest weekly total was 160 (4 July) and the lowest was 2 (19 September). 17 different species of butterfly were identified during the survey period. The largest range of species identified in any week was 12 (20 / 25 July) and the smallest range was 2 (19 September). The three most frequently occurring species were the Meadow brown (329 - 48%), the Ringlet (148 - 21%) and the Large white (52 - 8%). The three most infrequent species were the Small copper (2 - <1%), the Brimstone (3 - <1%), the Comma (5 - 1%) and the Marbled white (5 - 1%).

Note: The number and range of species of butterflies identified would have been greater if it had been possible to start the survey at the beginning of the season in April.

Some conclusions

These totals were distributed across transects in a very uneven way – the largest numbers by far (642 - 93%) were recorded along the field margins and the track dissecting the field. Only 49 (7%) were found along the rows of recently planted trees, of which the elderflower attracted the most

(19) of any individual tree species. However, butterflies recorded in these locations appeared to be 'in transit' rather than to be feeding specifically in the tree belts.

It was noticeable that butterflies were not attracted to the flowering clover in the broad agricultural strips. Instead, these flowers were hugely attractive to a large number and type of bees. A variety of moths appeared to be sheltering within the clover foliage. It was noted that the clover crop had become particularly invasive, both within the individual tree belts and the wildflower habitats of the field margins. This may have implications for food sources for butterflies in subsequent years. It may be mutually beneficial both in terms of the future productivity of the fruit trees and the improvement of the butterfly feeding habitat to consider under-planting a mix of wildflowers to attract pollinators.

Suggestions for the future

Start the Broadlears Field butterfly survey in April 2018 to ensure full season (in accordance with Butterfly Conservation best practice)

Extend number of transects by two in Broadlears Field to include (a) the remainder of the field perimeter (to the north and east) and (b) the perimeter of the small copse within the field

Consider instigating a butterfly survey at Queen's Marsh (new water meadow). Water features and associated planting can support a wide range of butterfly species (Berry Pomeroy Castle pond example)

Introduce an annual reporting / monitoring system for butterfly (and other) survey material to enable time-series data comparison, identification of trends / biodiversity 'performance' - a means also of raising profile of volunteer surveys and enabling information to be placed in public domain?

BACKGROUND STATISTICS

Range of species identified and numbers counted (in brackets):

Small skipper (29); Brimstone (3); Large white (52); Small white (20); Green-veined white (9); Small copper (2); Common blue (8); Red admiral (13); Small tortoiseshell (8); Peacock (14); Comma (5); Speckled wood (6); Marbled white (5); Gatekeeper (32); Meadow brown (329); Ringlet (148); Painted lady (8)

Distribution of butterflies (number) by transect:

Transect 1 (field margin): 362

Transect 2 (field margin): 207

Transect 3 (field margin): 36

Transect 4 (central service track): 37

Transect 5 (elderflower): 19

Transect 6 (apple): 14

Transect 7 (Sichuan pepper): 9

Transect 8 (apple): 7

Steve Turner - Dartington Volunteer (October 2017)