

Llangollen whitebeam (*Sorbus cuneifolia*) survey 2017

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Introduction

In 2017, a survey of the rare tree Llangollen whitebeam (*Sorbus cuneifolia*) was commissioned to inform a conservation status assessment and reintroduction programme as part of a collaborative project between Chester Zoo, the Clwydian Range and Dee Valley AONB, Denbighshire County Council and Natural Resources Wales.

Sorbus cuneifolia is a very rare tree only known from two sites; 240 trees were reported on the limestone cliffs of Creigiau Eglwyseg and Castell Dinas Bran, Llangollen, Denbighshire in 1987 (Morgan 1987) and 2 trees were found at Blodwel Rocks, Shropshire in 2011 (Rich & Whild 2012).

A detailed survey of *S. cuneifolia* was carried out to assess the current status of *S. cuneifolia*, to assess any changes since 1987 and trial the use of a drone-mounted camera to assist with the survey of *Sorbus* on the cliffs.



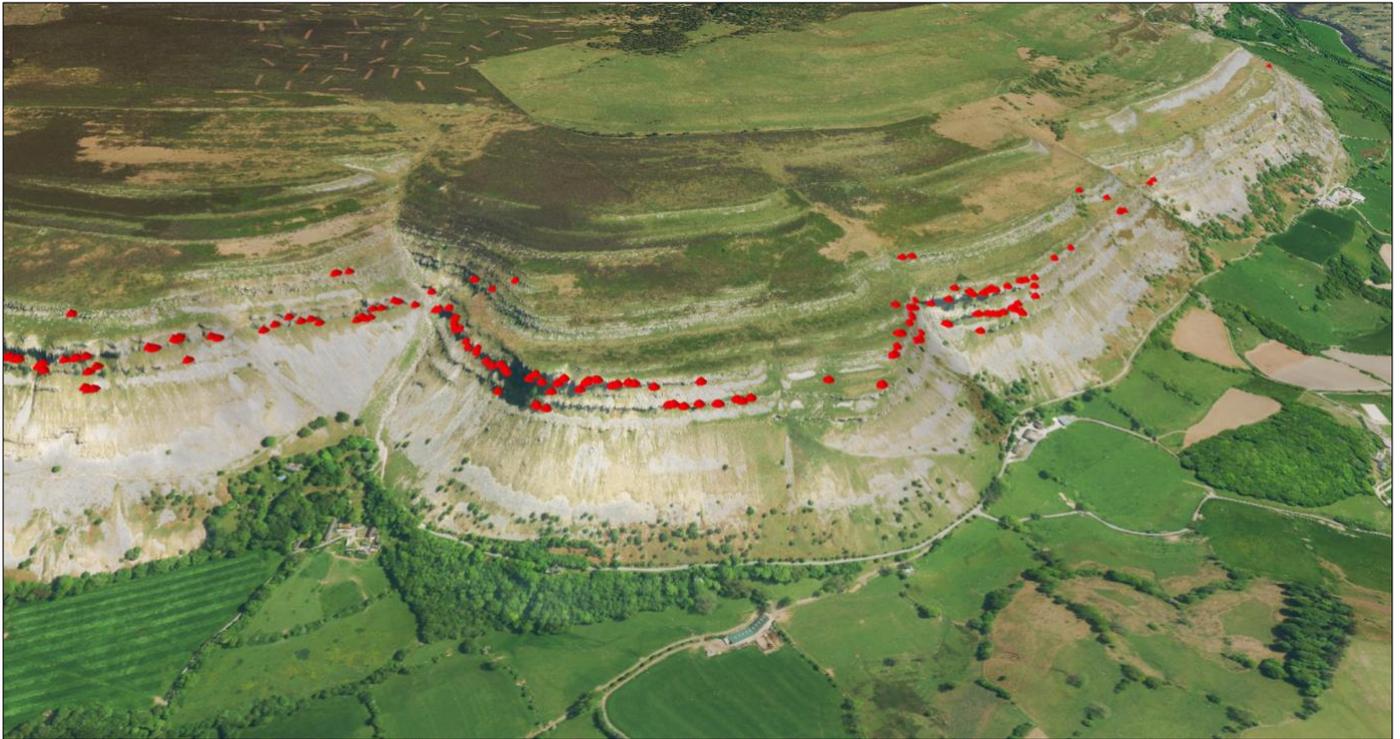
Methods

Field surveys were carried out 4-7 September 2017 by walking under the cliffs and recording *Sorbus* species with detailed GPS readings and notes on tree size, form and reproductive status. The results were compared with the population counts and annotated photographs reported by Vicky Morgan in 1987. A drone flown by Andy Goodwin (Remote Insight Ltd) was used to photograph a section of cliffs on 4 September and the resulting images analysed for whitebeams and compared with the field survey to assess whether a drone would help with whitebeam surveys.



Population sizes

In 2017, a total of 315 trees of *S. cuneifolia* were recorded, of which 307 were at Creigiau Eglwyseg (with another 9 which were either *S. cuneifolia* or *S. rupicola*), and 8 trees at Blodwel Rocks. A tree of *S. cuneifolia* at Castell Dinas Bran was removed in the 1990s.



The small increase in the *S. cuneifolia* population at Creigiau Eglwyseg since the 1987 survey is probably mainly due to differences in recording, as we found *S. cuneifolia* in very similar places and in similar proportions to Morgan (1987). The increase is probably largely due a wider area being surveyed, more detailed survey of the narrower cliff paths and especially more confident recording of uncertain trees. An increase in the population could have also occurred as some new regeneration was apparent, but it is clear that *S. cuneifolia* has not declined.

The increase in number of *S. cuneifolia* trees at Blodwel Rocks from 2 to 8 is due to previous recording error with some mistaken for *S. anglica*; a survey using rope access is required to assess the population properly.

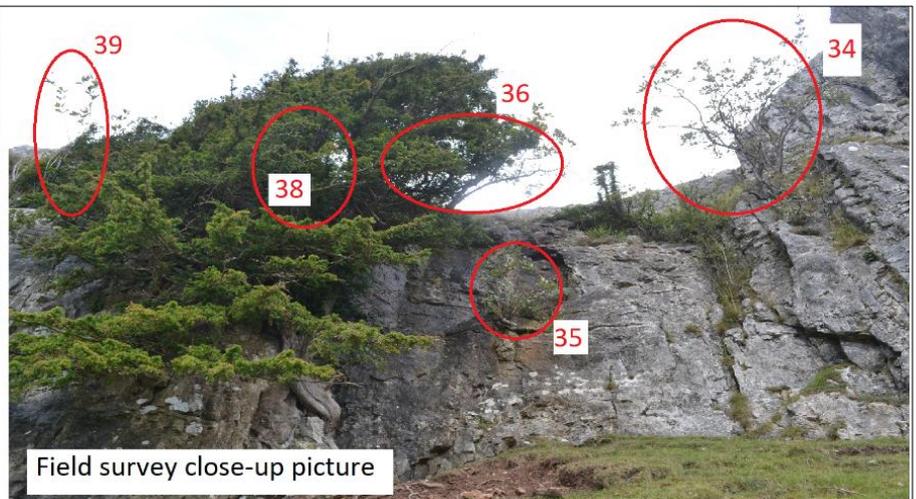


Was the drone useful for whitebeam surveys?

This is the first time a drone has been used to survey cliffs for whitebeams. Drones have the potential to be very useful for surveys of cliffs where access is difficult or dangerous, and to be able to provide photographic records of trees *in situ*. However, the drone pictures were not sufficiently detailed for recording individual whitebeams, as flying constraints meant it could not get close enough to photograph trees in enough detail for identification to species (or sometimes even to *Sorbus*), small trees were missed and some trees were hidden by other woody vegetation. Drones could provide high quality photographs of cliffs which can be used to mark individual trees in detail.



Drone survey picture



Field survey close-up picture

Comparison of whitebeams visible in drone survey pictures and in close-up field survey pictures for same 8 m length of cliff; more trees were seen and identified correctly using field surveys.

References

- Morgan, V. (1987). *Sorbus anglica* Clwyd. Unpublished survey report to Nature Conservancy Council.
- Rich, T. C. G. & Whild, S. J. (2012). The Whitebeams (*Sorbus*) of Blodwel Rocks. *Shropshire Botanical Society Newsletter* **24**: 10.