



# White-letter Hairstreak Butterflies and Resistant Elm Initiative 2022 NESST & SRWT

## Rationale/Scientific evidence/baseline data: Questions

### Why an elm project?

Elm trees support a wide variety of species, lichens, mosses and insects, including the White-letter Hairstreak butterfly. But elm trees have been and continue to be in trouble.

### What is the status of Elms (all sp) in Sheffield?

Dutch Elm Disease (DED) first entered Britain in the 1920's when it killed 10-40% of elm trees. A second epidemic from the 1960's resulted in the death of most mature native elm trees by 1980<sup>1</sup>. There are only about eight known mature English Elm (*Ulmus procera*), Field Elm (*Ulmus minor*), European White Elm (*Ulmus laevis*) or the hybrid cultivar Huntington Elm (*Ulmus glabra x minor*) trees in Sheffield that have so far not succumbed to DED (although please tell us if you know of any). These species only propagate by sucker growth so once a tree is gone, it is generally gone for good. There are more Wych Elm (*Ulmus glabra*), but again most of these are not mature, with only three known older Wych Elms.

Wych Elm propagates by seed. The vast majority of Wych Elms in Britain over 3 metres tall caught DED and died in the first and second waves of DED as Wych Elms are not resistant to DED. Trees under 3 metres survived as the elm bark beetle tends not to attack trees under that height or trunk diameter. However, the beetle and DED returned to Sheffield in about 2012 and is currently killing off all the (now 40 year old) trees that were saplings in Sheffield in ~1980s in the previous wave of DED. This is already being observed. If this continues we could in the next 10 years reach a stage where the population of Wych Elm in our area is no longer sustainable and there are insufficient mature trees to support species which rely on elms, we therefore need to act now to future-proof elms and the species which rely on them. Even by planting saplings or 1-1.5m high now, it may take several years for the trees to be large enough to support other species.

### What is the status of Elms (all sp) in Rotherham?

We do not yet have the data for Rotherham but it is likely to be similar to Sheffield.

---

<sup>1</sup><https://www.forestresearch.gov.uk/tools-and-resources/fthr/pest-and-disease-resources/dutch-elm-disease-ophiostoma-novo-ulmi/dutch-elm-disease-central-and-southern-britain/>



## **Do we have a map of the planted resistant Elms in Sheffield and Rotherham?**

NESST have a map of all those planted in Nether Edge and Sharrow. We are contacting Amey, SCC and RMBC to try and compile all data.

## **What evidence do we have about the varieties of resistant Elms?**

The Wingham variety of elm selected for this project is 100% DED resistant.

SRWT are hosting a separate trial in Greno Woods which is comparing how well eight clone varieties of DED resistant elms survive in which conditions (soil/climate/temperature/shade).

## **What is the relationship between Elm trees and White-letter Hairstreak (WLH) butterflies?**

WLH spend their entire life cycle on an elm tree. However they can disperse in the summer to establish new colonies. Colonies are formed around single elm trees or groups of elm trees and so it's highly impacted by DED and loss of these host trees. As the remaining Wych Elms are under threat, we need to act now to future proof the WLH population. This is especially important as the trees will need time to grow to be large enough to support the WLH butterflies.

## **What is the status of WLH nationally?**

In 'The State of the UK Butterflies' report<sup>2</sup> shows that the White-letter Hairstreak butterfly has suffered a national decline in both occurrence (-41% from 1976-2014 to 2005-2014) and abundance (-77% 1976-2014 to 2005-2014). The UK Butterfly Monitoring Scheme<sup>3</sup> shows a similar decline from 1976-2021 of -78% of the species in England. Encouragingly, the trend for the species has been moving upwards again in the last 10 years, but not enough to compensate for the losses since 1976<sup>4,5</sup>. It is worth noting that these long-term datasets only began during a catastrophic loss of elm trees in Britain.

---

<sup>2</sup> <https://butterfly-conservation.org/butterflies/the-state-of-britains-butterflies>

<sup>3</sup> <https://ukbms.org/>

<sup>4</sup> <https://ukbms.org/species/white-letter-hairstreak>

<sup>5</sup> <https://ukbms.org/official-statistics>



### **What is the status and distribution of WLH in Sheffield?**

Data from the last 10 years (obtained from the Sheffield Biological Records Centre and Nature Counts Databases May 2022) reveal only 37 records. Records are not evenly distributed geographically and show a bias towards the location where knowledgeable recorders live.

### **What is the status and distribution of WLH in Rotherham?**

Data from the last 10 years (obtained from Rotherham Biological Record Centre Aug 2022) reveal only 9 records. Much of the WLH mapping was conducted by one local natural historian in the early 2000's.

But the local records we do have support an indication that WLH is likely to occur in every woodland where there is a good population of Wych Elm as well as roadsides and field margins containing mature elms.

**How important is it that we put resources into future proofing the local populations of WLH in a local, regional and national context?** For example vs habitat management/creation for other species of butterfly.

The WLH is the "showpiece" species reliant on elms, but there are many more. With elm habitat a fraction of what it was pre-1964, so all the elm reliant species of insect, moss, lichen etc have declined hugely. Adding elm back to the landscape doesn't just support the WLH showpiece species, it also supports these other species too. It's about biodiversity. It is worth noting that the cultivars are strictly speaking non-native, but the WLH is at risk with no large elm trees.

### **Are disease-resistant elms utilised by WLH?**

Yes they are, although some are better than others<sup>67</sup>. We have chosen Wingham which is a variety of Field Elm.

### **How many trees are needed to support a viable population of WLH and how close together do they need to be? How far does the WLH fly/disperse?**

We know that a single tree can support a colony (from the Chelsea Road Huntington Elm in Nether Edge, Sheffield), but this is a 120 year old tree with a large canopy. We suggest therefore that a larger number of smaller trees would be viable (such as the groups of Wych Elm

---

<sup>6</sup> <https://docslib.org/doc/2710182/disease-resistant-elm-cultivars-their-potential-role-in-the-conservation-of-the-white-letter-hairstreak>

<sup>7</sup> <https://resistantelms.co.uk/elms/ulmus-lutece/>



in Norfolk Park in Sheffield). As stated, the saplings will need time to grow large enough to support the butterflies as they prefer to breed on flowering trees, although suckers can be used.

Information on the colony structure is sparse, but one marking experiment has shown a population numbering several hundred with adults regularly moving between trees up to 300m apart. Many colonies are restricted to a small group of trees, but dispersal appears quite common and individuals have been seen several kilometres from known breeding sites, with females dispersing to find Elm trees for breeding<sup>8,9</sup>.

### **Should we be targeting areas or would a 'scatter-gun' approach work?**

The priority would be to plant near to existing vulnerable Wych Elms for the reasons outlined above, particularly those that are known to currently host WLH. However the addition on resistant Elm trees across Sheffield and Rotherham would be a positive step for nature and as described, WLH have the ability to disperse.

### **What age will the trees need to be to start supporting the WLH?**

WLH predominantly form colonies on trees that are capable of flowering. Females oviposit on these trees and then the caterpillars hatch before the leaves break on the trees and for their first instar are completely reliant on the flowers for food (Ben Keywood, pers comms). This could take 15-20 years, but with the right cultivar in the right conditions, elm trees can grow very rapidly so it may be a much shorter time. For example a small cutting made by Paul Selby of the Chelsea Rd Elm reached 12 foot in 6 years and is supporting flowers. Similarly, the Ulmus New Horizon saplings planted by Amey since 2018 have doubled in height to around 14 foot, from around 7 foot, in just 4 years.

### **Has anyone else tried this elsewhere/or is thinking about it?**

Yes. Resistant elms have been planted in Sussex, Herefordshire, Hampshire and Isle of White(6) and Derbyshire. The Sussex project<sup>10</sup> (by Sussex Wildlife Trust, Sussex Butterfly Conservation, and the Brighton National Elm Collection) is a strategic level project and also targeted to help WLH. The Herefordshire project was carried out by tree wardens<sup>11</sup>. The Derbyshire Project is being coordinated by Derbyshire Wildlife Trust, Butterfly Conservation and

---

<sup>8</sup> <https://butterfly-conservation.org/sites/default/files/white-letter-hairstreak-psf.pdf>

<sup>9</sup> <https://www.zonacharrua.com/butterflies/Britain%20-%20Satyrium%20w-album.htm>

<sup>10</sup> <https://butterfly-conservation.org/in-your-area/sussex-branch/elms-for-adur-hairstreaks-project#:~:text=The%20Elms%20for%20Adur%20Hairstreaks,the%20White%20letter%20Hairstreak%20butterfly>

<sup>11</sup> <https://htreewardens.org.uk/projects/elm-planting/>



is involving Friends of Allestree Park<sup>12</sup>. There are other small scale efforts across the country but we do not know of any asking the wider public to get involved.

### **How much space does an Elm tree need to grow and what conditions does it need?**

Elm prefers free-draining (not too wet) and neutral/basic conditions. Public land is suitable, but large gardens are also. Gardens that are large enough to support large tree such as Oak, Ash and Sycamore could support an Wingham Elm which is roughly the same size of about 20-30m in height and around 8m diameter canopy. Grounds of businesses and other other organisations may also be suitable. The Elms will grow larger than the buckthorn which was the focus of our public project last year (Buckthorn for Brimstones). The saplings that will be for sale are also much larger - about 3m tall when purchased.

### **How does this fit with the Sheffield Trees and Woodlands Strategy and the Sheffield Street Tree Strategy?**

This project would contribute to the following actions from the Sheffield Trees and Woodlands Strategy<sup>13</sup>

*“Action 18: We will aim to maintain diverse and sustainable tree cover through the planting of new trees in appropriate locations.*

*Action 19: We will develop an appropriate strategy for future tree planting across the city. This will be informed by the findings of the i-Tree survey.*

*Action 20: We will follow the ‘Right Place - Right Tree’ guidelines<sup>14</sup> when considering new tree planting.*

*Headline Action 21: We will plant at least 100,000 additional trees and replace trees on a 2 for 1 basis in our greenspaces and woodlands over the next 10 years.”*

There are also aims in The Sheffield Street Tree Strategy<sup>15</sup> to increase species diversity in the tree stock. We do not yet know if this project could contribute to the street tree stock but just under 50 resistant street tree elms have been planted in Nether Edge, Sharrow, Sharrow Vale and Carter Knowle as part of the work of Nether Edge and Sharrow Sustainable Transformation (NESST). These 50 trees make up around 2.3% of the local street tree stock. The aim of NESST is to reach around 5%, which will be around 120 trees, over the next five years.

Rotherham does not yet have a Tree Planting and Woodland Creation Strategy but is currently exploring funding options to create one as part of the South Yorkshire Woodland Partnership.

---

<sup>12</sup> <https://www.friendsofallestreepark.org.uk/news/news-items/73-elms-for-butterflies.html>

<sup>13</sup> <https://www.sheffield.gov.uk/parks-sport-recreation/trees-woodlands-strategies>

<sup>14</sup> <https://treecouncil.org.uk/wp-content/uploads/2021/06/Right-tree-in-the-right-place.pdf>

<sup>15</sup> <https://www.wildsheffield.com/getinvolved/sheffield-street-tree-partnership/street-tree-strategy/>



### **Are any SRWT reserves suitable and connected enough for new trees?**

Yes. Carr House Meadows, Carbrook Ravine, and Greno Woods are all suitable locations in the immediate future if people would like to buy a tree but do not have anywhere suitable for it to go. Each site could carry up to 10 elm trees.

### **What about Sheffield Council land?**

We are in discussions with SCC to see if they may be able to accommodate any in places that currently contain Wych Elm and/or White-letter Hairstreaks. Possible sites include Norfolk Park, High Hazels Park, Lynwood Gardens and Clay Wood.

### **What is the best way to monitor the success of the scheme?**

This is a long-term project

We can record the number and location of trees planted.

We could also monitor the decline of non DED-resistant Elms in Sheffield (including Wych Elm)

Monitor WLH populations - how?

And monitoring or Chelsea Park/Rd elms and other standards/heavy standards across Sheffield