

THE VALUE OF TREES IN STATELY HOME GARDENS

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What is the economic value of trees that grow in stately homes?

RESEARCH SUMMARY

Stately home gardens have a huge land coverage throughout the UK however, the benefits these gardens bring in terms of **ecosystem services** to their local communities and the UK as a whole is unknown. Researchers have either focused on more natural environments or city centres whereas stately home estates fall somewhere in between.

This project aimed to understand how Estate trees contribute to the local environment and to assist Estate team manage their natural resources to bring aesthetic pleasure to those who visit the garden, and also to aid with reducing air pollution and ensuring **carbon storage** are considered in future planning. Harewood House was chosen as a case study for this project, but with over 1,600 independently owned historic houses in the UK, and many more owned by different organisations their potential provision of ecosystem services for the UK is huge, if managed correctly. Findings from this research will have an impact on other similar Estate stately gardens across the UK and potentially worldwide.

Although some people would disagree with putting a value on nature and think it should be preserved for its environmental and social benefits showing that nature, and in this study, trees, have measurable tangible financial values raises awareness of their importance and ensures they are managed and protected appropriately.

In order to produce an estimate of the trees economic value in terms of **pollution remediation** and carbon storage, we chose two different gardens within the Harewood House Estate. Over 120 trees at were measured. One of quintessentially UK parkland, with large mature trees scattered among grassland and the other was a more formal garden, which was more densely planted with trees. Every tree in these two gardens was identified and its height, diameter and crown size was measured.

RESULTS

The results allowed determining the carbon storage potential of each tree and pollution absorption. This varies depending on the size of the trees, the tree species and the location in which it is growing. The research enables Harewood House to understand and demonstrate the value of its trees, not just as a home for wildlife and their aesthetic value but also in terms of the services they provide to the local area in terms of run-off avoidance, pollution removal and carbon sequestration. In addition, it provides them with a useful management tool for planning future planting and understanding the future potential value of different tree species and plant regimes that could be introduced.

We conservatively estimated that the total value of the trees at Harewood House is over £29 million for structural and carbon storage values with over £48K of annual benefits, which includes pollution absorption, avoided water run-off and carbon sequestration. Many of the larger individual trees had structural values of over £10K and a carbon storage value of over £300.

Unlike a naturally regenerating woodland or urban planted areas, where smaller, younger trees are more abundant than old large trees, at Harewood larger trees were most common and it is important that the replacement of these old, large and valuable trees is carefully managed if the services provided by the trees is to continue in the future.

WHAT'S NEXT?

It would be important to improve our understanding of the value of trees at Harewood by surveying a wider area and to continue the research to similar Estates throughout the UK. In addition to valuing the trees in these gardens it is important that we also consider the other ecosystem services these Estates provide both through their vegetation and soils and to understand their importance of providing living collections of important horticultural and native species.

We need to work together with a network of Stately Homes and the Treasure Houses Network, to fully understand the ecology and ecosystem services provided by these nationally important Estates.

The fieldwork and iTrees analysis was carried out by Joey Ting, from University of Alberta, Canada, a research exchange fellow, a scheme which enables Alberta students from all disciplines to pursue research related to energy and the environment. Joey was keen to gain research experience at the University of Leeds and was exceptionally hard working in the field, these kinds of student exchanges are extremely important for training future generations of scientists and sharing knowledge globally. Joey was supported by Trevor Nicholson who is the Head Gardner at Harewood House Trust and an important collaborator for the project.

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