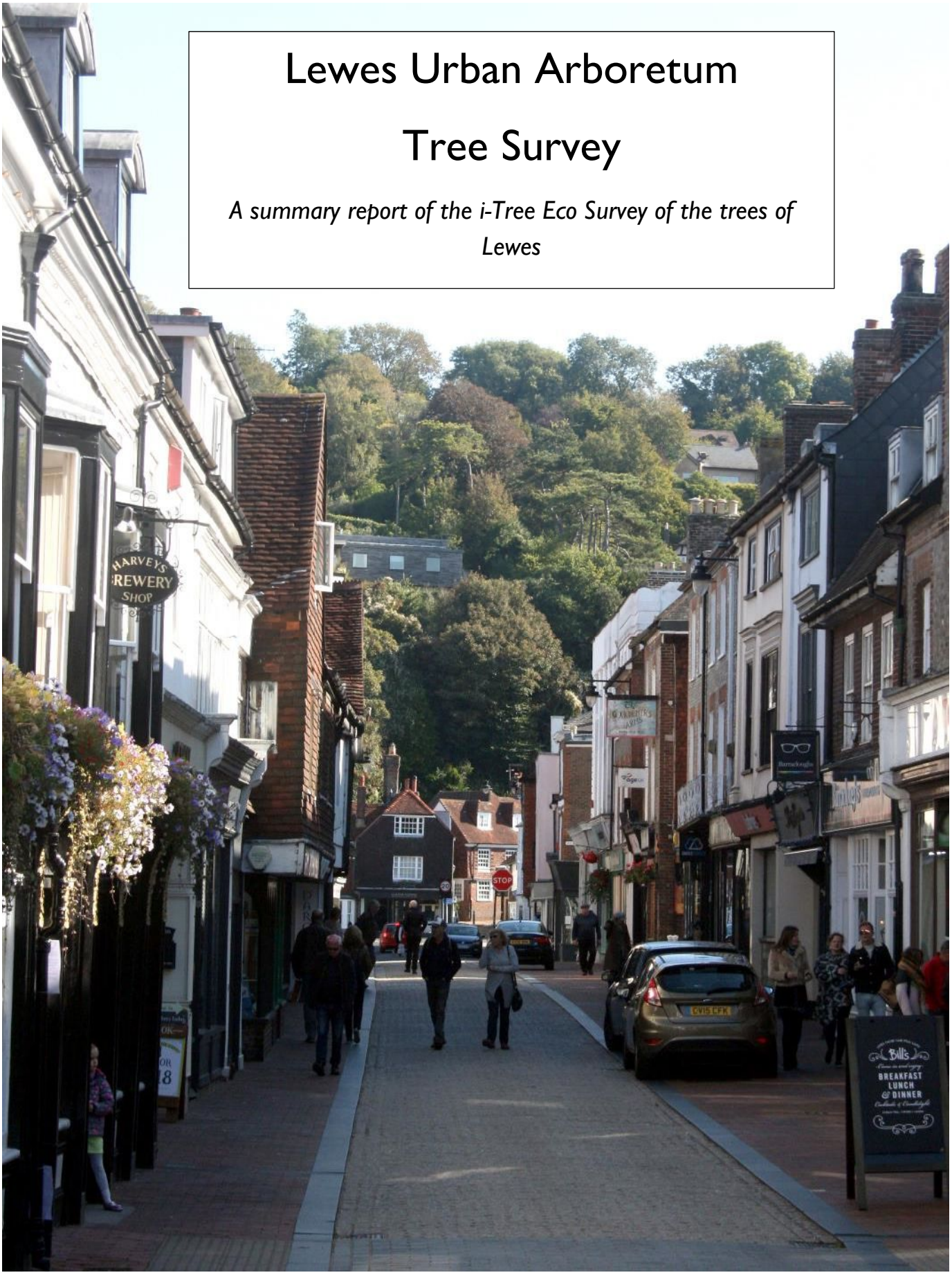
Lewes Urban Arboretum

Tree Survey

A summary report of the i-Tree Eco Survey of the trees of Lewes



Friends of Lewes – keeping our town special

Lewes Urban Arboretum i-Tree Eco Survey

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Lewes Castle and surrounding trees

What is Lewes Urban Arboretum?

Some time ago Friends of Lewes received a bequest to fund the planting of trees in Lewes. This gave the late Paul Millmore, an active member of Friends of Lewes, the idea of creating a "Lewes Urban Arboretum" to include all existing tree stock in the town and whatever additional plantings might be added. Our vision is to change the way we look at Lewes: so that we do not merely think of having trees in the town, but of proudly belonging to "**a town in the trees**".

This project is managed by the Trees Sub-Committee of Friends of Lewes and since 2012 our volunteers have successfully planted 39 mature street trees around the town.

This tree planting has been funded by several generous legacies, donations from members of the public, and through successfully applying for grants from Tesco Bags of Help Scheme, the Chalk Cliff Trust and Lewes District Council. We have also match-funded a joint project with East Sussex County Council to replace the Elms on St. Anne's Hill, High Street, lost through Dutch Elm Disease, with four disease-resistant Elms.

We continue to work with groups of residents across Lewes to plant trees where they have requested them and to gain their support in looking after trees where we know they need replacing. You may contact us via e-mail: arboretum@friends-of-lewes.org.uk or find out more by visiting our website pages: : https://friends-of-lewes.org.uk/natural-environment/lewes-urban-arboretum/

Our planning for tree planting has been guided by David Saunder's initial survey of significant trees in Lewes, in 2012, partially funded by a grant from South Downs National Park. His survey report, (available with an interactive map on our website), documents the existing stock of significant trees in the town and recommends potential planting sites and species. This i-Tree project aims to build on this knowledge and inform our planting further.

Some of the members of the Trees Committee of Friends of Lewes, after planting 12 native trees between Abergavenny Road and Heron's Court, March 2017.

Photo: David Saunders

What is an i-Tree Eco Survey and what might it tell us?

This summary report aims to share the headline information from the i-Tree Eco Survey of Lewes carried out by The Trees Committee of Friends of Lewes and their many volunteer helpers.

Background of i-Tree

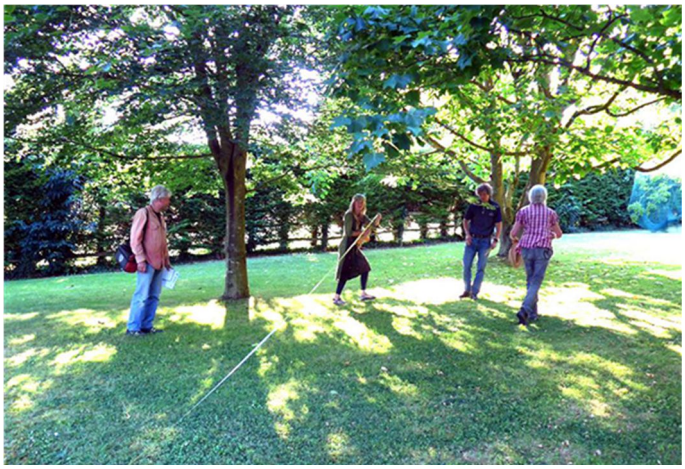
(from the i-Tree website: https://www.itreetools.org/about.php)

"i-Tree is a state-of-the-art, peer-reviewed software suite from the US Department of Agriculture Forest Service that provides urban and rural forestry analysis and benefits assessment tools. The i-Tree tools can help strengthen forest management and advocacy efforts by quantifying forest structure and the environmental benefits that trees provide. For a single tree or an entire forest, i-Tree provides baseline data that can be used to demonstrate value and set priorities for more effective decision-making."

Although there are many people who recognise the benefits trees offer, for example, to our wellbeing, to biodiversity and to the environment, others may be indifferent and have concerns for falling branches or slippery autumn leaves. By sharing the i-Tree Eco Survey we hope to explain the full value of trees to the wider community.

Our i-Tree Eco Survey results were calculated from data collected in a field-based assessment of 206 random plots within Lewes town boundary during the summers of 2014 and 2015 and verified and updated in 2018. The tree attributes assessed during each plot analysis included:

- Canopy cover
- Crown width
- Percentage of crown cover missing
- Stem diameter
- Height of tree
- Any dieback
- Species
- Ground cover
- Land use



Keith Sacre, (Treeconomics), leading one of the sessions of i-Tree training

Photograph: Neil Merchant

What is the value of the trees in Lewes?

The structural value of the trees in Lewes

Canopy

The i-Tree Eco Survey tells us that Lewes has approximately 64,560 trees, giving us a tree canopy cover of 11.5%. At 57 trees per hectare, we are close to the current national UK average of 58 trees per hectare for urban environments. The total leaf area of our trees is calculated as 7.6 sq. km.

View of Lewes from Landport Bottom

Our total canopy cover increases to 18.7% if shrub cover is also included, using the i-Tree Canopy Study. However, to reach the Forestry Research recommendations of **20% tree canopy cover** for an urban setting, we need to both plan for further tree planting and maintain the health of our current trees.

Species

The most dominant tree species throughout Lewes are:

- Sycamore at 17%.
- Wild Cherry at 6.5% and cultivated Cherry at 5%
- Beech at 6%
- Horse Chestnut and Ash at 4.8%

Pair of Sycamores on Brighton Road

There are 84 different species in Lewes in total and the most common include: Silver Birch, (3.7%), Rowan, (3.7%), Field Maple, (3.7%), Norway Maple, (3.3.%), Holly, (3.3%), Crab Apple, (3.3%), and Lime, (1.5 %). It is calculated that we have 0% invasive trees. This information helps us to plan for diversity and resilience to climate change and invasive pests.

The functional value of the trees of Lewes

Health

The trees of Lewes produce approximately 1,500 tonnes of oxygen per year.

The Paddock

Trees improve our air quality, as well as their undoubted benefits in making attractive focal points, blocking winter winds, providing shade and evaporative cooling, and giving food both for us and a wide range of wildlife. This effect of reducing annual average air temperature may become increasingly important with climate change, since higher temperatures and the associated higher levels of air pollution can lead to greater than usual stress on the body and aggravate the symptoms of those with chronic heart and respiratory conditions.

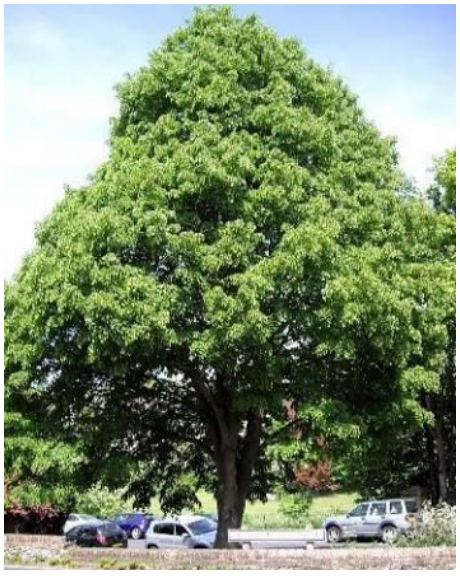
Research suggests that trees also increase property value and have a generally beneficial effect on the health and wellbeing of us humans.

Environmental benefits

Air Quality

Recent weather and pollution data suggest that our trees and shrubs remove 12.6 tonnes of air pollution per year.

Poor air quality can lead both to decreased human health and damage to the natural ecosystem. The pollution which the trees remove from the air includes ozone, sulphur dioxide, nitrogen dioxide, carbon monoxide and particulate matter.



Lime tree at junction of De Montfort Road and Bradford Road

Carbon Sequestration and Storage

The trees of Lewes sequester 600 tonnes of carbon, (from carbon dioxide), in their new growth every year.

Plane tree, near Aldi

As a tree grows it stores more carbon by holding it in its tissues: our trees store about 14,000 tonnes in total.

This carbon storage figure is equivalent to the annual carbon emissions from 10,100 cars and 4,140 homes.

Healthy trees keep this carbon in storage, so good tree maintenance is extremely important to our town.

Preventing run-off of water

The trees and shrubs of Lewes help to reduce water run-off by an estimated 21,400 cubic metres a year, which has a value to our community of about £32,000 per year.

That is enough water to fill Pells Pool more than 12 times.

Surface run-off of water can not only cause flooding but also contributes to pollution of our streams, wetlands and rivers. This problem increases with the large areas of impervious surfaces in our urban setting: the dominant impervious ground cover in Lewes is tarmac, (23.4%), and building, (21.5%). Where there are trees and shrubs, not only do they intercept run-off, but their root systems also promote infiltration and storage of water in the soil.

River Ouse

Replacement costs

The structural value of all the trees in Lewes is about £47 million: that is the estimated cost of having to replace all of them: which is about £2,700 worth of trees for every Lewes resident.

Liberty Tree, top of Castle Banks

Our trees also have the functional values of:

- £827,000 for their carbon storage;
- £37,000 for their carbon sequestration;
- £32,500 for their role in avoided run-off;
- £46,700 for their pollution removal.

As our trees grow in number and size, these values and benefits will also increase.

All base costs and species values are derived from the Royal Institute of Chartered Surveyors and Barcham's and Hillier's catalogues.

Some possible threats to the trees of Lewes

i-Tree identifies which insects and diseases may be a threat to the health, value and sustainability of urban trees. The greatest risk to trees in Lewes is identified as the Asian long-horned beetle, which can kill or damage many species of broad-leaved trees. Forest Research reports on the 2012 outbreak in nearby Kent, (see www.forestresearch.gov.uk), found that although the most important host was Sycamore, Field Maple and Horse Chestnut were also attacked. This has implications for Lewes since these species are among our most commonly recorded trees at 25.5% of our tree population.

Several significant Lewes Elms have already been lost to Dutch Elm Disease. i-Tree registers it as a lesser threat to 0.4% of our tree population only because of the smaller numbers of Elms remaining in Lewes, 0.4%. All our newly-planted trees are chosen to be disease resistant, e.g., *Ulmus* "New Horizon".

Ash dieback, (Chalara), has been recorded in the UK since 2012 and would have the potential to affect 0.4% of our tree population, causing leaf loss, crown dieback and bark lesions and even the death of the tree. There is a ban on the import of ash plants and seeds into the UK and a legal ban on the sale and movement of ash trees for planting within the UK. Current research indicates that older trees can resist ash dieback.

Recommendations for action

The analysis of the i-Tree Eco Survey data leads to the following recommendations to be considered when planting and maintaining trees in Lewes. By following these, we hope to both minimise the damaging effects of pollutants and water run-off and maximise the beneficial effects of trees for all living things.

We aim to increase tree canopy cover across the town towards the recommended minimum standards of 23% by:

- increasing the numbers of healthy trees by continuing to work with groups of residents to plant new trees and replace lost trees in their streets;
- choosing long-lived, low maintenance trees to prevent pollutant emissions from decaying trees and reduce emissions and energy costs from using machinery to maintain trees;
- looking after the resulting larger, healthy trees, since larger trees have the greatest effect per tree on carbon sequestration and will help to counter the extremes of heat or wind which are possible with climate change;
- planting trees in areas with a high-density population, or heavy traffic or where cars are parked: to reduce vehicular emissions and maximise tree air quality benefits;
- monitoring new developments to ensure that landscaping includes the sensitive and appropriate planting of trees in and around new housing, etc., and that mature trees are not sacrificed needlessly;
- choosing a mix of evergreen and deciduous trees to ensure year-round removal of particulate matter;
- planning for diversity and disease resistance in new plantings which take account of current and potential pest impact.

Norway Maples, Shelley Close

Acknowledgements

Thank you to all of the volunteers who helped with this project, for example: training volunteers to collect data; collecting and collating the data through the 206 site surveys; data input; delivering leaflets to residents to inform them of our project and ask for admittance to their gardens; verifying the data and revisiting sites in 2018 to update the survey, and compiling this summary report. They include:

- Jon Cornford and the students of Plumpton College
- Nick Jarvis
- Colin Tingle and other members of Lewes & Ouse Valley economics group, (L&OVE)
- The Trees Committee of Friends of Lewes, past and present:
  - Dean Bell, Lecturer in Forestry and Arboriculture, Plumpton College
  - Phil Green, FoL Executive Committee
  - Audrey Jarvis, Current Chair of Trees Committee
  - Nick Jones, MSc Arboriculture and Urban Forestry
  - Neil Merchant, former chair of Trees Committee, who was instrumental in initiating the i-Tree Eco Survey and organising data collection
  - James Newmarch, MSc, CMLI, Chartered Landscape Architect
  - Keith Sacre, Co-Founder of Treeconomics, who directed this i-Tree Eco Survey
  - David Saunders, MICFor
  - Peter Thurman, FArborA, MICFor, FIHort

A special acknowledgement to the late Paul Millmore, ESCC countryside manager, the UK's first Heritage Coast Officer, a member of both the Sussex Downs Conservation Board and later Joint Committee and an author and campaigner for the Downs to become a National Park with Lewes as a part of it. He was the inspiration for "Lewes Urban Arboretum".

Liquidambar leaves, Prince Edwards Road

All photographs by Audrey Jarvis unless credited otherwise