Urban Ancient Woodland in Britain's Modern Landscape

Conference or Workshop Item

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Why study Urban Ancient Woodland?

Ancient woodlands are those documented as having continuous forest cover since 1600 AD with archaeological features and indicator species that signify their antiquity. They cover around 2.5% of the UK[1].

As urban development expands, more ancient woodland sites are being affected by urbanisation.

New UK planning policy drivers such as 'Biodiversity Net Gain' depend on an improved understanding of the regional and national context of high biodiversity habitats.

UK Ancient Woodland coverage in 2020 (ha)				
England	Wales	Scotland	N. Ireland	Total
364,315	94,965	148,153	2,700	610,134

Classifications of ancient woodland

- **Ancient semi-natural woodland (ASNW)**
  404,688 ha in England, Scotland, Wales & NI.
- **Plantations on ancient woodland sites (PAWS)**
  202,747 ha in England, Scotland, Wales & NI.
- *Long-established woodland of plantation origin (LEPO)*
  204,612 ha in Scotland and NI only (not included in these figures or further calculations).

We investigated the distribution of ancient woodland in the UK and assessed the land use surrounding these sites to identify '**urban ancient woodlands**'.

Impacts of urbanisation

Although ancient woodlands are protected in the planning process, they can become islands within an urban matrix and may be affected by [2,3]:

- **Increased visitor pressure**
  (disturbance, litter, soil compaction and erosion)
- **Pollutants**
  (acidification, eutrophication, particulates from roads)
- **Fragmentation/isolation of habitat**
- **Invasive species**
- **Changing hydrology**
- **Urban heat island effects on phenology**
- **Changes in management**
  (urban woodlands tend to be less neglected, but negative effects include tidying woodland edges and removing trees that may pose a danger to the public).

Methods used to analyse the distribution of urban ancient woodland in Great Britain.

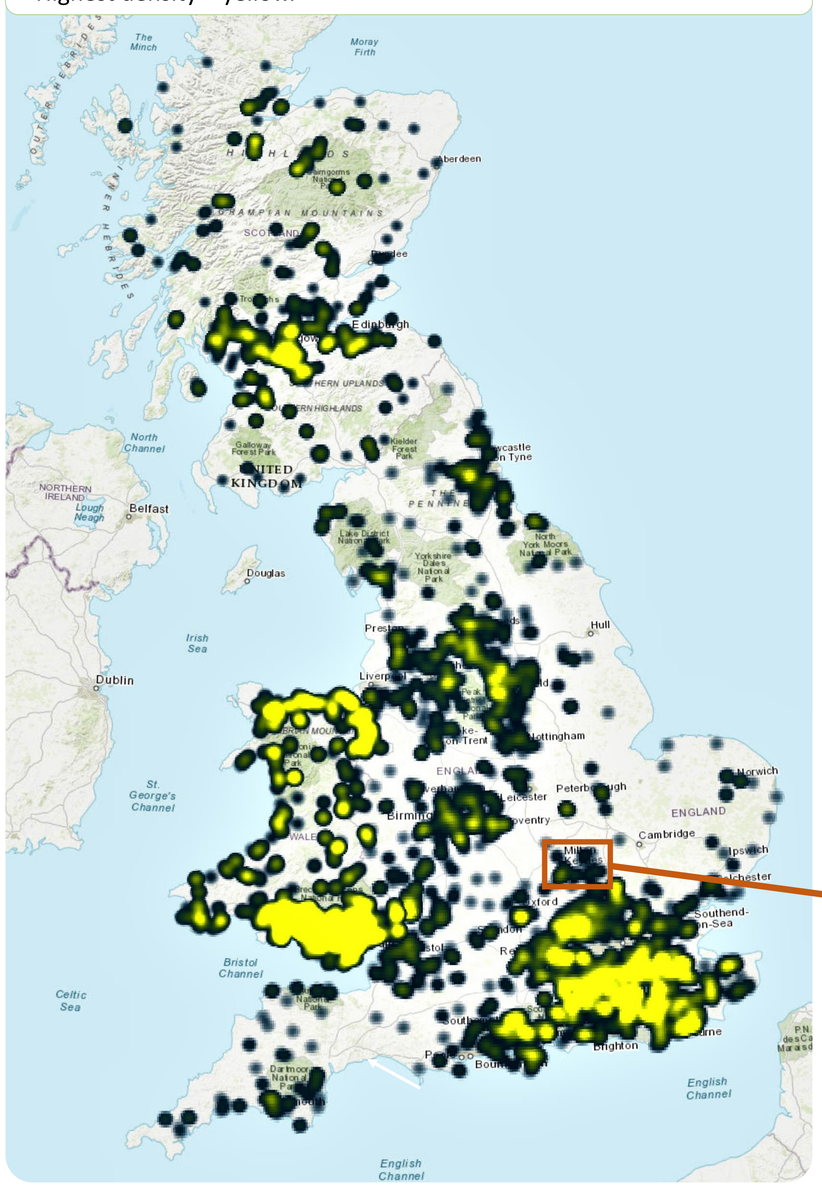
Feature data on ancient woodland from Ancient Woodland Inventories (AWI) for England, Wales and Scotland (AWI sites in Northern Ireland were not included in the analysis) were overlayed with CORINE Land Cover data (EEA, 2018) and major urban boundary features from the ONS and National Records of Scotland.

Ancient woodland sites were categorised as:

1. within 100 m of any artificial surface
2. within 100 m of artificial surfaces (excluding green/recreational spaces)
3. within 100 m of 'urban fabric' (Fig. 1)
4. within 500 m of major towns and cities (population > 75,000)
5. within 100 m of major towns and cities
6. adjacent to major towns and cities
7. completely within boundaries of major towns and cities.

The size of the ancient woodland fragments was calculated and summed to find the total amount and proportion of woodland in each category (Fig 2).

Fig 1. Heat map of ancient woodland sites <100 m from urban fabric.
Highest density = yellow.



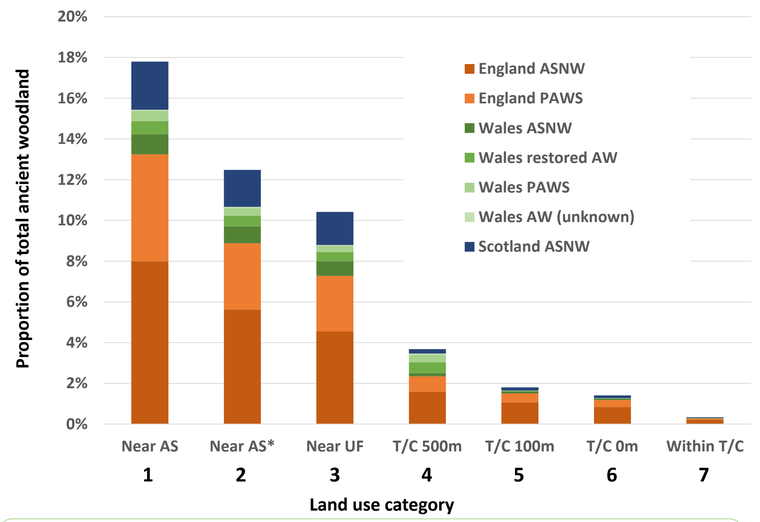


Fig 2. Proportion of UK ancient woodland near land in increasingly more urban land cover classes and near major towns and cities.

Milton Keynes and surrounding area

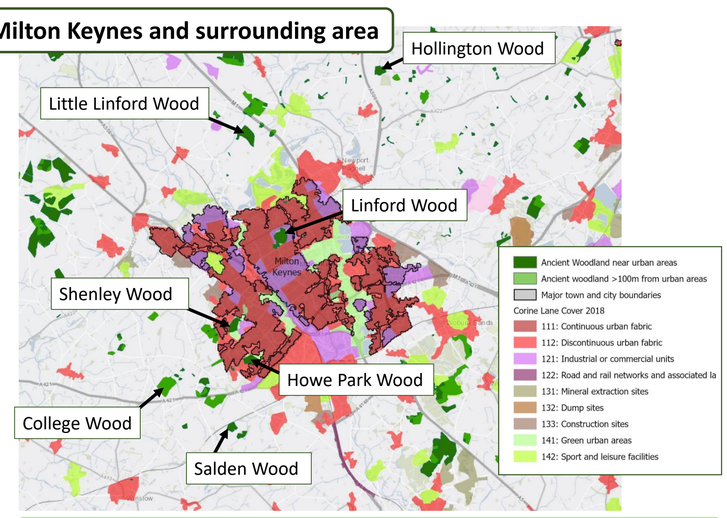


Fig 3: Study sites and urban land cover around Milton Keynes

Analysis of historic records of plant species from urban and rural woodlands in Milton Keynes: an area of rapid urbanisation in the last 50 years.

Historic records of vascular plants from three urban sites in Milton Keynes and four rural sites in Buckinghamshire (Fig 3.) illustrate the threats from urbanisation.
A high proportion of the species found only in the urban woodlands were non-native species, which is possibly due to introduction of species from urban gardens (Fig 4).

	Urban			Rural			
Site	Howe Park	Shenley	Linford	College	Hollington	Little Linford	Salden
No. of records	1356	1234	2990	1227	355	1630	354
No. of species	248	264	466	366	121	311	144

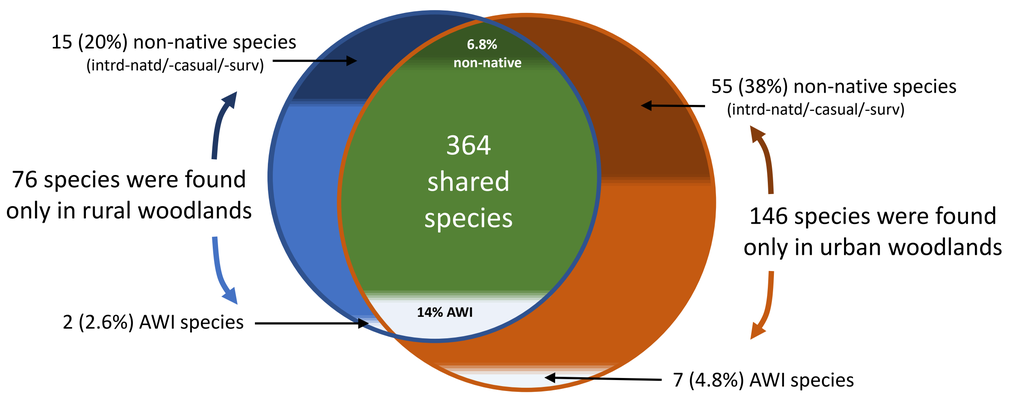


Fig 4. Venn diagram of vascular plants species lists for urban and rural woodlands.
A total of 586 species were recorded across the seven woodland sites. Proportions of ancient woodland indicator (AWI) and non-native species in each category are shown.

Key findings

- **10.4% of ancient woodland is within 100 m of urban fabric.**
  Concentrated in SE England, S and N Wales, The Pennines and S Scotland (44,189 ha in England, 9,202 ha in Wales and 9,890 ha in Scotland).
- **1.8% of ancient woodland is within 100 m of a major town or city boundary.**
- **Urban sites can be of floristic importance, but may be under greater threat than rural sites from introduced non-native species.**

Future work

Future studies will focus on ancient woodlands in Milton Keynes and rural comparators (Fig 3) using historical data, new ground flora surveys and tree ring analysis to provide insights into threats, management and conservation of existing urban ancient woodlands. The results will support developers, planners and conservationists in protecting ancient woodland as urbanisation increases.

References:
1. Reid, C. et al. (2021) *State of the UK's Woods and Trees 2021*, The Woodland Trust.
2. Corney, P. et al. (2008) and 3. Ryan, L. (2014), *Impacts of Nearby Development on the Ecology of Ancient Woodland*, The Woodland Trust.

Buckinghamshire and Milton Keynes Environmental Records Centre
The Parks Trust Milton Keynes
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