Video: Could towns and cities become forests one day?

Transcript

If you live in a British town or city today, you probably still encounter trees in your day-to-day life. You might be aware of efforts to increase the number of trees around you. But can we really call a collection of trees along streets, in parks and gardens an urban forest?

6000 years ago, most of Britain would have been covered in a mosaic of woodland and open heaths, bogs and grasslands. Wolves, bears and lynx would have roamed the landscape alongside more familiar wildlife. As human populations expanded and brought agriculture, forests were cleared to make way for livestock and crops.

Settlements expanded and over the subsequent millennia developed into towns and cities. Large carnivores were hunted to extinction, whilst many other species of animals and plants were lost as the landscape changed.

Today, although only about 6% of the land in Britain is urban, almost 85% of the population lives in towns and cities. The ancient woods that once covered much of Britain now make up a tiny proportion of the landscape, and even less in these urban areas.

If you live in a British town or city today, you probably still encounter trees in your day-to-day life. You might be aware of efforts to increase the number of trees around you. So, as more trees are planted in them, could cities become forests again? Rather than say - you live in a town, could you one day say you live in an urban forest?

Urban conditions are tough for most living things, including the trees that grow there. Urban expansion leads to habitat loss too, and although the percentage of urban space is small, the impact is large.

Think of a motorway which may only be 30 metres wide, but produces light, air and noise pollution and acts as a lethal barrier for wildlife, that runs for tens or hundreds of miles.

High nitrogen levels from exhaust fumes also load soils with nutrients that promote a few, fast growing species, while slow-growing, hard to establish species, are edged out.

Urban areas also tend to be hotter and drier than rural ones, and habitats are fragmented, broken up by inhospitable man-made surfaces of concrete or tarmac. Urban trees are usually planted in limited soil, some with reduced access to water. It's not surprising that many die young with some studies reporting average lifespans as low as fourteen years.

Several common urban trees are so widely planted because they can cope with these difficult conditions, but they aren't all originally found in Britain. In the northwest, a variety of the native Black poplar tree has become known as the Manchester Poplar because it grew so well in the damp, sooty conditions of the industrial parts of England, but other commonly planted species like horse chestnuts have been introduced to Britain.

The mix of species planted on streets, in parks and gardens that makes up what we call the 'urban forest' supports far less wildlife than our original ancient woodlands, however it still provides many benefits for society.

Urban trees keep places cool, take pollution out of the air and absorb carbon. We call these 'ecosystem' services. For example, trees can reduce the risk of flooding. When it rains, this rain falls on trees' leaves and branches from which it's more likely to evaporate back into the air, rather than land on hard surfaces and run straight into drains.

With trees reducing environmental risks like these, even by a small amount, they can also reduce the costs that society and individuals incur to control them. A study in Newport, south Wales assessed the annual ecosystem services value of trees there at £2.2 million, in Wrexham the value was over £1.4 million annually.

Trees provide other benefits to people too. There is increasing evidence that having access to green space, and particularly trees, is beneficial for human wellbeing. Meanwhile large, old trees provide connections to the history of our urban areas and are living links to our past and culture.

Our work with the Universities of Loughborough, York and Forest Research, have shown how people in Cardiff, York and Milton Keynes view these social and cultural values as important, and possibly more important than the pollution removal, flood risk reduction and carbon storage that are easier to measure.

So, going back to the original question, could these urban trees become a forest?

Surprisingly, despite the harsh environments, there is higher canopy cover in towns and cities than in the wider countryside. In England and Wales, urban areas have about 16% canopy cover, compared to 13% in the countryside. In a city such as Milton Keynes, tree canopy cover is over 20% on average, that’s the definition used by many organisations of a forest; some parts of the city exceed 30% canopy cover.

But can we really call a collection of trees along streets, in parks and gardens an urban forest?

The answer is ‘not really’, but maybe we can use what we know about semi-natural systems to improve urban habitats and make them more like natural ones.

A forest is more than the trees. It’s the interactions and connections between species, a forest is a dynamic habitat that changes through time and over years, supporting diverse communities of other organisms.

Think of it like a circuit board, made of many different components. Each component might be fully functional when tested on its own, but the circuit won’t work unless the connections are in place. Ecosystems that are diverse, complex and well connected are more resilient to stresses from things like pollution and climate change.

For example, our research on butterflies in urban woodlands has shown how structural complexity is critical to supporting species diversity.

Generally, large patches of habitat support more species than small ones, but we have found that some large areas of urban woodland don’t support as many species as we would expect. When looking at areas that do support a diverse range of species, we realised they were the more complex woodland sites. By this I mean, they had a mix of large, tall trees, mid storey and low-level scrub, as it creates many more environmental niches for a variety of butterfly species to exist in.

With humans dominating our landscape, we are never going to recreate the prehistoric ancient woodlands, but there is a lot we can do to conserve and improve our urban forests.

We need to challenge ourselves to make more of our urban green spaces and to make them as good as they can be for people and nature. As a growing human population, increasing urbanisation and the effects of climate change put more pressure on our environment, it is more important than ever that we learn from nature and work with local people towards improving diversity and resilience of urban forests.

If we get it right, our urban forests may become the ancient woods of the future.