Endemic Elms

Introduction

The elm has a deep and mythical rooting in our history. In Celtic mythology, the elm was associated with the underworld, with elves and faeries that were said to dwell in the boughs of the trees. Elm timber is also a key part of our past, as its strong and flexible wood was used for all manner of items: from boats to wheel covers, and even coffins. Today the story of the elm tree more often brings melancholy, as we think of Dutch Elm Disease which nearly wiped out our elm trees in Britain. This story is far from the complete picture though, and elms remain a quintessential part of the landscape. Our area is especially important for elms and we hold several species found nowhere else in the world.

Dutch elm disease

Dutch Elm Disease first spread to Britain in the 1920s. Although the initial epidemic died down, a more aggressive species of Dutch elm disease fungus was accidentally introduced into Britain in the 1960s, leading to the death of over 25 million trees. They do however remain abundant and diverse trees over much of Britain. This is especially true in eastern and central England, where they may constitute 10-30% of total tree cover (B. Eversham, 2020, pers. comm.).

A large and striking specimen of curve-leaved elm *Ulmus curvifolia*. Globally, this species is confined to north Hertfordshire, Cambridgeshire and Essex. Photo © Brian Eversham

The naming of elms

The history of elm classification and naming in Britain has been controversial and remains unresolved. Prior to the Flora of Great Britain and Ireland (Sell and Murrell, 2018), the classification of elms (genus *Ulmus*) in Britain has ranged from one variable species to seven species, often with numerous named hybrids and varieties. Largely based on Armstrong (1992), Sell and Murrell (2018) describes 62 different elm microspecies – species that differ in minor features - from Britain and Ireland. 58 of these are thought to be native and 40 are new to science.

There are discrepancies between whether or not these are indeed separate microspecies, but they appear to inhabit different ecological niches and may even support different invertebrates (Eversham, 2020). If our rarer elm-feeding insects, such as white-letter hairstreak butterfly *Satyrium w-album* and white-spotted pinion moth *Cosmia diffinis* are to be conserved, we need to know which elms they are using.

Moss's elm *Ulmus mossii* is widespread in Britain but is not found anywhere else in the world. Photo © Brian Eversham

Are these species native?

The origins of elm species are also unclear. It is unknown whether one species colonised after the last Ice Age and others were introduced by humans over subsequent millennia. Alternatively many could have arrived naturally before the English Channel opened and Doggerland vanished.

Elm pollen trapped in peat and lake sediments dates back to before humans had a major influence on the environment. Their rich insect fauna, as diverse as many native trees, also suggests a long native presence. The unusually high diversity of elms in central England and the south-west suggests that national colonisation may be more likely than repeated human introduction (B. Eversham, 2020, pers. comm.). The geographic routes that other species have assumed to arrive converge in central England, where elms from different areas of mainland Europe may have met and repeated hybridisation added to the diversity. A final argument in favour of native status is that most English elm species appear to be absent from mainland Europe. 50 of the 58 microspecies considered native by Sell & Murrell (2018) are listed as British endemics.

Ash dieback

Ash dieback is set to change the way that our woodlands look forever. It is a serious disease of ash trees caused by the fungus *Hymenoscyphus fraxineus*. The disease causes leaf loss and crown dieback in affected trees and can lead to the death of the tree. For safety reasons we will have to fell large areas of ash.

Although this will be a major loss to our woodlands, we have to be forward-thinking and see the opportunities that this brings. It will enable us to diversify our woodlands and the felled trees will be host to large numbers of saproxylic (dead wood associated) invertebrates and fungi for years to come.

Find out more about our approach
wildlifebcn.org/ash-dieback

Elms in the Beds, Cambs and Northants area

15 of the 58 native elm microspecies that were described new to science in Sell & Murrell (2018) were from sites in the BCN area. Three of these sites were Trust reserves (*U. cantabrigiensis* and *U. sylvatica* from Buff Wood, and *U. crenata* from Hayley Wood). It would be valuable to safeguard these populations for future study. There is a strong bias in favour of Cambridgeshire because both Sell and Armstrong were based in Cambridge, but much of the difference is real. At least 44 of the 58 are recorded from the BCN area, and nine of them appear to be confined to the BCN area, and a further seven are rare outside our area.

Laxton Elm, *Ulmus crassa* at its type locality in Laxton, Northamptonshire. There are only three known trees of this species anywhere in the world. Photo © Brian Eversham

Scientific Name	English Name	Population Estimate	Notes	Status
Ulmus cantabrigiensis	Woodland Elm	2	Probably 80-100	Confined to BCN
Ulmus coriaceifolia	Leathery-leaved Elm	2	Probably 60-80	Confined to BCN
Ulmus crassa	Laxton Elm	1	3 trees known	Confined to BCN
Ulmus crenata	Hayley Elm	2	Probably 30-50	Confined to BCN
Ulmus longidentata	Jagged-leaved Elm	3	600-700	Confined to BCN
Ulmus madingleyensis	Madingley Elm	2	Probably 20-30	Confined to BCN
Ulmus platyphylla	Bassingbourn	2	Perhaps 10-20	Confined to BCN
Ulmus serratifrons	Burred Elm	4	3000-5000	Confined to BCN
Ulmus sylvatica	Hatley Elm	2	Probably 10-20	Confined to BCN
Ulmus atrovirens	Dark-leaved Elm	2	50-100	Rare outside BCN
Ulmus cuneiformis	Wedge-leaved Elm	3	700-900	Rare outside BCN
Ulmus longicaudata	Long-tailed Elm	3	700-900	Rare outside BCN
Ulmus incisa	Cut-leaved Elm	1-2	Probably 10-20	Rare outside BCN
Ulmus minor	Cambridge Elm	4	6000-8000	Rare outside BCN
Ulmus obesidens	Fat-toothed Elm	1	Probably 5-10	Rare outside BCN
Ulmus oblanceolata	Narrow-leaved Elm	3	500-600	Rare outside BCN
Ulmus mossii	Moss's Elm	4	1000-5000	Widespread, described from BCN
Ulmus procera	English Elm	5	Potentially 50,000-100,000 (very common as scrub)	Widespread, described from BCN

British population estimates for the species that the Bedfordshire, Cambridgeshire and Northamptonshire area is especially important (Eversham, 2020). Only *Ulmus procera* is thought to occur outside of Britain. Population estimate categories: 1 = single figures, 2 = 10s of trees, 3 =100s of trees, 4 = 1000s of trees, 5= 10,000s or more

Note that population estimates are for Britain; only *U. procera* is believed to occur outside of Britain

Conclusion

Our area is home to a wide diversity of elm species, many of which are found nowhere else in the world and are globally rare. Many of these species are present in the woodlands that we manage and by protecting these woodlands for the future, we can protect these elms. Further research is needed to confirm genetically how many elm species we have in Britain and their origins.

References

Eversham, B. (2020). *Conservation Status of Elms in Central England*. Unpublished.

Sell, P. and Murrell, G. (2018). *Flora of Great Britain and Ireland Volume 1, Lycopodiaceae - Salicaceae.* Cambridge University Press.

Moss's elm *Ulmus mossii* is widespread in Britain but is not found anywhere else in the world. Photo © Brian Eversham