The monitoring of the hedges is by one annual visit in summer using fixed-point photography and measuring growth rates. The translocated hedges showed no evidence of die-back but had abundant new growth of up to 400 mm in April 2007, some 6 months after translocation (Figure 14), and both the translocated hedges and the oak tree showed healthy new growth in 2008 and 2009.



Figure 14. Hedge at wolverhampton in April 2007, some 6 months after translocation

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Conclusion

Translocation is not a new technique. Individual trees have been moved since at least 1700 by wealthy landowners. Techniques were devised by landscape designers such as Capability Brown to dig up mature trees while maintaining the root system and move them on specially designed machines (Mabey, 2007).

Habitat translocation can be used in a planned and designed way through the application of guidance such as the UK Highways Agency *Design Manual for Roads and* Bridges (Highways Agency, 2001) and the Ciria best-practice guide to habitat translocation (Anderson and Groutage, 2003).

The tree case studies presented in this paper demonstrate that important ecological habitats can be retained during the development of a site, even rearranged and in different locations. Habitat translocation is an effective technique that enables mature and complex ecological resources to be retained on a site or in the vicinity of a site. This maturity provides landscape structure, visual screening and habitat diversity more quickly than habitat creation using seeds or nursery materials.

The retention of a habitat within a site allows ecological functions associated with the habitat to be retained within a site – for example, the habitat connectivity and wildlife corridor provided by a hedgerow. Translocation can generate ecological resources for new habitat creation schemes – such as moving wetland vegetation from an existing pond to a new one – and ensures that native species of local provenance are used rather than imported plants.

The success or failure of habitat translocation depends on four critical factors

- Matching the environmental context of the receptor site to that of the donor site
- Using appropriate plant and machinery for the habitats being moved
- Translocating habitats at the right time of year
- After-care and monitoring as with any newly created habitat

There is a growing evidence base for both success and failure in habitat translocation which underpins the application of these critical factors to the particular set of circumstances on any given site. Habitat translocation has a much chance of success as habitat creation. The probability of a successful outcome can be established by reference to experience and to published case studies so that the reasons for success or failure can be identified (Anderson and Groutage, 2003 ; Box, 2003 ; Bullock , 1998).

Monitoring of habitat translocations over the long term is very important in identifying the success of both the translocation techniques and subsequent management of the habitats, thus allowing remedial actions to be implemented. Furthermore, the data from such monitoring will result in greater understanding of the ecological and engineering limitations associated with habitat translocation, improved and cheaper habitat translocation methodologies, and an increase in the likelihood of success.

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