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Soft Felling and Translocating Bat Roosts in Trees – Arboricultural Considerations

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There is a risk that some of the terminology used routinely by ecologists is unclear to contractors and others tasked with carrying out practical habitat management. This could lead to delays, incorrect work and ecological damage. This is discussed in the context of soft felling of trees where potential roost features need to be protected through translocation of tree sections to receptor trees.

To provide meaningful recommendations in relation to soft felling, ecologists need to ensure that we are understood, that we understand what we are asking arboricultural contractors to undertake and the financial implications this work has for the client.

Introduction

The term 'soft felling' is often used by ecologists when making recommendations for work on trees that contain bat roosts. But what is soft felling? Are our recommendations understood by the arboricultural industry?

In this article we describe 'soft felling' and explain the practicalities and limitations with the aim of helping ecologists make more informed recommendations in order to protect and translocate roosting features.

Soft felling options

There are two broad interpretations of soft felling. The first involves softening the impact of a falling tree to enable the roosting feature to be retained intact. This can be achieved by laying material, such as brash from tree works, beneath the tree before it is felled or inserting a series of cuts on the underside of limbs to enable the wood fibres to 'fold' as the tree falls, thereby dissipating gravitational forces. Whilst this method is relatively straightforward, quick and may allow the feature to be removed intact, the

Figure 1. Winching a roosting feature into place.

level of disturbance is too high for use when bats are present. In addition, this method would be unsuitable for removing certain features such as hazard beams (longitudinal splits in limbs) as even the reduced force of impact on the ground would cause the feature to break.

The second option involves the sectional dismantling of a tree using a rigging rope or a crane to lower the selected feature from the tree rather than allowing the section to fall under its own weight. It offers far greater control and allows features to be removed safely. There are limitations, however: the arboricultural contractor must be highly skilled; the disturbance to the section may be too great to be used when bats are present (bats should be allowed to disperse naturally or be excluded using a one way gate or similar technique before works commence); and the architecture of the tree may prevent this technique from being effectively applied. The main advantage is that the greater control of descent enables features to be removed intact for translocation to the receptor tree.

Sectional dismantling and tree rigging

Working from the top down, sections of the tree are removed until the tree is small enough to be felled. Sections can be 'hand cast' (thrown from the tree by the climber) or lowered by securing a rigging rope or attaching the section to a crane. Rigging is most often used because of the high costs of using a crane as well as potential site access issues for machinery.

Rigging is a complex operation that requires an understanding of forces and moments if it is to be undertaken safely. During typical rigging operations little concern is given to the twisting of the section being removed or potential pendulum impacts with other parts of the tree; however, this must be considered carefully when removing a roost feature.

Practical considerations

The time needed to plan and undertake tree works involving roosting features is likely to be much greater than for normal tree felling operations. This has implications for the cost and time needed to carry out the tree works.

1) Architecture of the tree

When rigging sections out of a tree, a rigging rope is tied to the section to be removed and attached to the tree via a pulley system and friction device to enable the piece to be lowered out of the tree. The architecture of the tree will have a significant impact on the level of control over the lowering operation. If the pulley can only be located beneath the section to be removed, there is a high likelihood of pendulum swing and possible impact with another part of the tree, making it unsuitable for the removal of roost features.

2) Safety of the tree

In order to undertake any soft felling operations, the tree itself has to be safe. If the structural condition is such that it cannot either be climbed or used to lower sections, the operation would require the use of machinery such as a Mobile Elevated Work Platform and crane.

3) Equipment

A basic rigging system uses just a rigging rope and an operative on the ground controlling the descent using the friction of the rope wrapped around the tree. However, there is a large range of rigging equipment available, which can provide the operator with greater control when lowering and lifting sections.

4) Sections to be removed

Normally, during rigging operations the length of the piece to be removed is determined by the climber based on the space available to lower the section, how much control is needed and the likely weight of the section. By controlling the length, the climber can ensure that the piece can be lowered to the ground safely without overloading the rigging system.

However, there is less scope to make such adjustments when removing roosting features that need to be taken down intact. Removing greater lengths of timber will place additional loads on the rigging system making the operation more difficult.

Translocation of bat roosting features

Before considering whether or not to translocate a roosting feature, the likely efficacy and longevity of the mitigation should be considered. The following are the key aspects:

- **Whether there are suitable trees nearby on which the feature can be erected**. This would include consideration of the original and destination height, orientation, aspect and exposure of the feature within the tree as well as implications for future monitoring, if required. When re-erecting roosting features, the architecture of the tree will have implications regarding how a feature can be installed and, indeed, if at all – just as it does when removing a feature from a tree (Figure 1).
- **Attachment method**. Given the unusual and highly variable nature of resurrecting roosting features in trees, a bespoke attachment method will be required. This should take into account difficulties for future tree safety inspections (changes in tree load dynamics, attachment point or material failure and locations of targets – people or property – beneath the tree); the lifespan of the attachment material (including provision for loosening as the tree grows); and whether a non-invasive attachment method can be employed to limit damage to the tree. On certain sites this may fall under the Construction (Design and Management) Regulations 2015. Advice from an arboriculturist should be sought on the consideration of current and future safety management.
- **Longevity of tree section based on characteristics of wood substrate**. Roosting features taken from species of tree with non-durable heartwood or ripewood (e.g. willow or beech) will decay faster than a feature from a tree with durable heartwood (e.g. oak) and may only last a couple of years.
- **Whether other mitigation/ compensation measures would be more practical, longer-lived or more effective**. Re-erecting roosting features may not always provide the best mitigation. Figure 2 shows a re-erected feature and bat boxes; monitoring has shown that the boxes have been used as frequently as the feature and are likely to last longer.

Figure 2. Translocated roosting feature. Whilst bats have continued to use the translocated feature, the bat boxes have also been used by the same number of bats.

Recommendations

It is important that arboriculturists understand the recommendations made by ecologists in relation to tree work.

Use a suitably qualified and insured arboricultural contractor for any operation to remove a roosting feature and ensure they are aware of the method by which the feature within the tree is to be removed. Wherever possible, use an arboriculturist who has experience of working with bats.

Ensure that soft felling is clearly explained and discuss the way in which the sectional dismantling and rigging will proceed. Make sure that the feature of interest is clearly identified; once this has been safely removed from the tree, it may be possible to proceed with the remaining tree works using standard felling techniques.

Before undertaking a translocation, ensure that it is fully thought through, including efficacy of mitigation and future safety implications.

References and further reading

Arboricultural Association website: www.trees.org.uk. Provides advice on engaging arboricultural contractors.

Climbing Arborist website: www.climbingarborist.com. Provides easily accessible 'how to' video guides for a range of tree work topics including rigging.

Donzelli, P.S. and Lilly, S.J. (2001). *The Art and Science of Practical Rigging*. International Society of Arboriculture, Champaign, Illinois. A detailed text on the practicalities of rigging.

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