

## Wider application

All three of these extraction methods are suitable for small woodlands with limited access. In woodlands with high nature conservation value it is particularly important to keep disturbance to a minimum.

The public appreciation of heavy horses may outweigh other commercial considerations, though small-scale forwarders are likely to be more cost-effective, and well suited to a wide range of urban and urban fringe woodlands. Site evaluation, public consultation and advance publicity are all essential, whichever extraction technique is employed.

## Further information

### National Urban Forestry Unit

This leaflet is one of a series produced by the National Urban Forestry Unit. NUFU provides a national focus for the exchange of information and good practice in urban forestry.

If you would like further information on other case studies or their application, or if you have examples of good practice to share with others, please contact:

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### Further reading

**Forestry Commission (1993)**

*Horse Extraction in Thinnings* Technical Development Branch, report 13/93, Forestry Commission

**Forestry Commission (1997)**

*Small-scale Mechanised Extraction* : case studies Technical Development Branch, report 2/97, Forestry Commission

**Forestry Commission (1997)**

*Log Chute Extraction of Broadleaved Crops* Technical Development Branch, technical note 10/97, Forestry Commission

**Forestry Commission (1997)**

*Evaluation of the Vimek Minimaster* Technical Development Branch, technical note 11/97, Forestry Commission

**Forestry Commission (forthcoming)**

*Evaluation of the Alstor 8x8 Mini-forwarder* Technical Development Branch, Forestry Commission

**Sidbeck H (1995)**

*The Horse in the Forest* Holm Lacey College, Hereford, (translation from Swedish) *uit Garden*

**Waterson J (1993)**

*Working Horses in British Forestry* *Forestry and British Timber* August 1993, Miller Freeman UK Ltd

Photographs: James Tennant and Severn Gorge Countryside Trust

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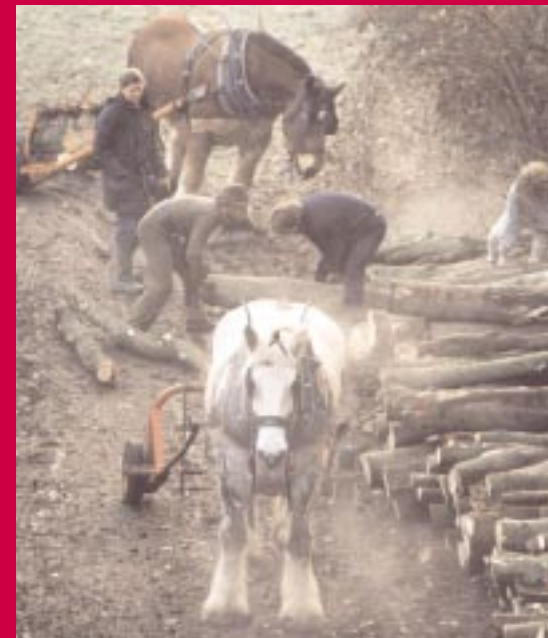


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# Urban Forestry in Practice

## Timber extraction from small woodlands



CASE STUDY 10

# Timber extraction from small woodlands

## Introduction

In small urban or urban fringe woodlands there is often a need for selective felling of trees to improve access, to create glades, to provide space for new planting and to generate income from the timber. Timber extraction should be carried out with the minimum amount of damage and the cost should be kept as low as possible. This calls for alternatives to the heavy machinery which is usually used in large scale forestry.

## Specific example

### Project name and location

**SEVERN GORGE, IRONBRIDGE**, Shropshire, UK

Grid reference: SJ 680 035

### Project partners

- Severn Gorge Countryside Trust
- Forestry Commission, Technical Development Branch
- Marches Woodland Initiative

### Project objectives

- To extract timber with minimal disruption from woodlands of high ecological and landscape value in an area of high public use and on difficult terrain
- To compare alternative methods of small-scale extraction

### Project description

The woodlands are a mixture of ancient semi-natural and secondary woodland, much disturbed historically by industry and mineral working. They are an important part of the Ironbridge Gorge World Heritage Site and are highly valued by local people and visitors.

In many of the woodlands access for timber extraction is restricted to narrow paths. There is a need to minimise disturbance and to manage these woodlands sensitively. This means that conventional commercial forestry equipment is often inappropriate.

### Implementation

Three methods of extraction were tested:

#### Horses

Benthall Edge is a woodland Site of Special Scientific Interest at the very heart of historic Ironbridge. Heavy horses, pulling Scandinavian *timber arches*, were employed to extract selectively felled sycamore. The worksite was steep and slippery and involved working around industrial features and hauling timber across a narrow bridge.

The timber was felled and cross-cut on site into 2-3 metre lengths. Larger butts were moved as single logs whilst thinner material was bundled for extraction. The timber arches enabled most timber loads to be lifted clear of the ground, thus reducing drag whilst giving the horse and operator good control, even on steep descents.



*Timber extraction by horse needs skilful specialist contractors*

*Heavy duty polythene log chutes cause minimal damage, even on steep slopes*



### Results

#### Horses

Heavy horses provide one of the most environmentally sensitive means of extracting timber from small, inaccessible woodlands. They proved highly popular with local people and generated positive press, radio and TV coverage. Timber outputs varied, depending on the site, timber sizes and particularly the extraction distance, but ranged from 1.0m<sup>3</sup>/hour to 4.0m<sup>3</sup>/hour. Horse extraction is not a simple operation: the animals need constant specialist care and there are few contractors with the necessary skills, horses and equipment.

#### Small machinery

Both mini forwarders were effective in extracting timber. The *Alstor* caused very little ground damage and achieved outputs of 2.7 - 3.8m<sup>3</sup>/hour. The *Vimek Minimaster* was slightly less effective, but still achieved outputs of 2.4m<sup>3</sup>/hour.

#### Log chutes

The chute system enabled thinnings to be successfully extracted from a steep, vulnerable woodland bank, causing minimal ground damage. Few other environmentally sensitive and small-scale systems could be used on slopes of more than 30 degrees. However, this proved to be the least cost-effective of the three alternative methods, yielding 0.8 - 2.6 m<sup>3</sup>/hour.

#### Small machinery

*Mini forwarders* are wheel-based vehicles with low-pressure tyres to minimise ground damage. Timber is loaded onto a purpose-built trailer using a hydraulic arm and grab. Two examples, the *Alstor* and the *Vimek Minimaster*, were transported to site on a road trailer towed by a 4 X 4 pick-up. They were tested in several mixed broadleaf and conifer woods and on varying slopes. The timber was extracted in various lengths.



*Small-scale forwarders are surprisingly flexible on a range of site types*

#### Log chutes

Sections of polythene log chute were tested in Sutton Wood. The wood has steep slopes, heavy soils, rich ground flora and a badger sett adjacent to the working area.

Polythene log chutes were winched up the bank and then joined together. Felled timber was loaded into the chute for sliding downhill to a stacking area. A simple system of whistle signals was used to ensure safe communication between operators, where terrain or tree cover obscured visual signals. The chute assembly was periodically re-positioned to allow extraction from across the whole area.