

# Wedge 'n' Sledge

*Getting difficult trees onto the ground safely.*

I came to the conclusion many years ago that the easiest and quickest way to clear trees is to use the largest possible tracked excavator. Unfortunately, much of the resulting timber is shattered internally. Likewise, the easiest way to tidily reduce a tree's crown is either to use an access platform, or, as we have done, to fit a basket on the front of a telescopic handler.

But there are situations where none of the above will work. As most of the trees we fell are for milling, the first excavator option is rarely suitable unless we want the root. Sometimes, due to extreme conditions, if we need to reduce the crown, we have to climb and either cut limbs, or partially cut limbs, so that the valuable part of the stem is saved. Then there are trees which cannot be accessed by machinery, and personally I would not be too happy to climb them.

How do we get them onto the ground safely? Generally, where the ground permits, we fell them in one go, but even this isn't straightforward.

What direction is given to us with regard to such trees? If you look over the current British work practice guidelines, it seems that they are more reminiscent of the Ten Commandments, but far more complex. They seem to be an endless list of 'Thou shalt not's'. There is very little in the way of help to teach fallers and tree surgeons

alternative techniques that rely on motor-manual methods. Added to this difficulty, there are the training institutes and organisations which issue certificates of competence after very brief periods of tuition. However, these fully certified fallers are still incompetent to fell dangerous or difficult trees. Then these very organisations pass the buck and say that training should be given on the job. It all smacks of hypocrisy. These organisations gain financially through these training/certification schemes, yet they don't prepare fallers/tree surgeons for the reality of their working lives. This contrasts with what happens in other parts of the world where motor-manual methods are still important, and where training is 'how to' rather than 'do not', with practical, pragmatic answers to difficult situations.

Many of the older, experienced cutters are retiring, without new recruits to replace them. This shortage of capable cutters is beginning to hit the industry.

In this article, and others which will follow, I shall try and show alternative techniques which are employed in other parts of the world. If anybody has any better ideas or disagreements, please write in to Forestry Journal and let the debate begin.

For this article I will discuss the felling of two trees. The first is an ash tree, with obvious butt rot, which should have been felled some time



*Leaning the wrong way and with dangerous dead branches threatening to fall off, this oak was successfully felled using a bottle jack.*

back. The tree surgeon involved advised the home-owner that not only was a severe crown reduction necessary, but, as the owner was going to place a gas storage tank near its base, it was obvious that the tree would need regular trimming of the regrowth. As this was not cost-effective, we were called upon to fell it. The problem with

felling such a tree, which was effectively a stem with several branch stubs, is in toppling it over. You can cut so far and maintain a hinge for control, yet it will not fall over. Due to the terrain it was impossible for us to safely position the skidder and secure a winch-line to pull it over. We could have used the old double-act of wedge and sledge, but



*(Left) The jack is already set into the jack-seat alongside the safety wedge, but the timber above the jack is beginning to buckle. (Right) A new jack-seat has now been cut into the trimmed butt.*

hitting it with a 14-pound sledgehammer can lose its entertainment value rather quickly. A much easier method is to jack the tree over.

Having gone half way into the back-cut, plastic or alloy wedges are driven into the cut to support the tree should it decide to sit back, and a seat is cut into the stump to place the jack in. As this was a rather simple tree to fell, I proceeded with the back-cut to its end, and removed the saw. The tree was now standing with only a hinge connecting it to the stump. At this point I started pumping the jack. Generally I place a steel plate on top of the jack to avoid the jack burrowing into the log's end-grain, but in this instance it wasn't necessary. As the jack is pumped, a steel wedge is driven beside it. This is mostly a safety precaution. For example, if a gust of wind blows the tree backwards, the sudden excessive force could 'pop' the jack. Regularly tightening this steel wedge supports the butt, as it avoids any excessive strain on the jack. The process continues at a steady pace – in fact the butt-end rose over six inches before the tree toppled over. Had I only used wedges, I would have had to double them up and even block the wedges up to ensure adequate lift, and considerable energy would have been spent pounding the wedges. The jack made it much easier.

The second tree was an oak tree, which was nearly dead, with a heavy volume of dead branches and considerable rot affecting the sapwood. If wedges were heavily pounded into this tree, enough vibration might be produced to cause one of the branches to fall and possibly injure or kill me. The tree's natural lean was downhill, but

to fell it in that direction may have broken it up too much, making the extraction more difficult, so it needed to be felled across a steep slope. This lessened breakage, but, due to the branching, it would probably just sit upright.

The tree measured some six feet in diameter but suffered from Wireitis, a disease common in old hedgerow trees, where a tree has been used as a fence post with wire being stapled to it. This tree had had several strands of wire stapled on either side of it for some time. The first three to four feet contained considerable callusing, and if this was trimmed back the butt would be around four feet in diameter, but the risk of wire damage to the chain would be too much. We used the old Stihl 084 with a 42-inch bar to make the under-cut and start the back-cut. Once again sod's law came into action and I hit the wire. Some time was spent trying to file the teeth back into order. In reality the teeth would need to be ground. After hitting more wire the big saw was packed away as it would no longer cut without the chain being properly ground, so I had to use the Husqvarna 372 with a 24-inch bar. Having wedged the back-cut to keep it open, I cut the seat, inserted the jack and started pumping.

This time I placed a steel plate on top of the jack to ensure even pressure on the butt-end. Slowly but surely the back-cut opened. Unfortunately, the callused wood above the jack was not sound. Having secured the cut by placing two steel wedges on either side of the jack, pressure was released and the back-cut could be seen settling on the steel wedges. The only option was to cut the large

calluses off the tree's base in order to reach sound wood. Thankfully, I was able to cut these without hitting any wire. A new jack seat was cut into healthy wood, pressure was pumped into the jack, the wedges were repositioned and the back-cut gradually opened.

At this stage the back-cut was re-cut with the smaller saw to try to ensure that all the wood behind the hinge had been cut. Then the pumping began in earnest, with the steel wedge continually being tightened as the jack lifted the butt. The tree tipped in favour of the guided direction, at which time yours truly did a sharp exit to avoid any dead, falling limbs. The result was a fully healthy heart, but the sapwood was mostly pure mush and most of the branches shattered or broke while falling.

By using the jack I was able to fell the tree in a controlled manner minimising risk to myself and saving as much wood as possible. Had I only used wedges to drive the tree, there would have been a high possibility of limbs falling on my head. This was the safest way to fell the tree as it was unsafe to climb.

The equipment I have used so far has been two 20-ton heavy-duty jacks, one being a low profile and the other a standard height. In the United States you can purchase tree jacks specially made for the purpose, with some, notably Silvey treejacks, being able to lift up to 60 tons per jack on a double jack system. But, at about £1500 per set, I won't be rushing out to buy any.

We have used jacks to push trees against their natural lean. On one site when I started to use this technique I had 15 large, rough spruce to fell. They had grown on the edge

of a large clearfell, were heavily branched, and leaned out from the forest into a neighbouring field. My cutter thought that I was mad, and that he would have to come to my rescue with the skidder to clean the resulting mess from the field. One by one each tree was felled inwards into the clearfell, in a controlled manner in a very short time, to the surprise of my cutter. In such circumstances I leave a slightly thicker hinge, and once the tree is committed to its intended falling direction, I cut the hinge thinner prior to the tree's descent. If the hinge is cut too thin to start with, the trees can readily 'pop' and fall uncontrollably backwards, which tends not to be too good for the old blood pressure!

Maintenance of the tools used is essential, as steel wedges readily burr over, due to repeated use. They should regularly have their heads ground to remove the burrs.

If you are felling a particularly valuable tree, which you don't want to cut a jack-seat into, two wedges work better than one for heavy driving. Driving the wedges alternately makes it easier. For a very heavy driving job, place two steel plates on either side of the wedge and it will drive easier as the steel plates will prevent the wedge becoming embedded in the log's end-grain.

For further details of such techniques refer to:

*Fallers' and Buckers' Handbook* (Workers' Compensation Board of British Columbia).

*The Fundamentals of General Tree Work* (GF Beranek).

*Tree Falling – A Procedural Approach* (D Douglas Dent).

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(Left) The downed tree, with a little too much hinge wood left in the centre due to too short a chainsaw bar. (Right) Tools of the trade (left to right) plastic wedges, alloy Highlift wedge, steel plates for use with the steel wedges, a jack plate, a heavy duty low-profile jack, and a normal height jack.