

# Cut and inject herbicide control of Japanese Knotweed *Fallopia japonica* at Rocky Valley, Cornwall, England

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## SUMMARY

Highly invasive, non-native Japanese knotweed *Fallopia japonica*, was successfully controlled, although not completely eradicated, by cut and inject herbicide application in a coastal valley in south-west England. In areas cleared of knotweed infestation, native flora including bluebells *Hyacinthoides non-scripta*, successfully re-established.

## BACKGROUND

Japanese knotweed *Fallopia japonica*, introduced from Japan in about 1850, is now Britain's most pernicious introduced weed. It has spread from gardens through fly tipping and vegetative propagation, and in some areas has formed extensive stands, including on a large number of National Trust properties.

For some years, Japanese knotweed had been controlled with some success by foliar spraying. There are, however, a number of concerns about the impact of foliar spraying, most notably due to the detrimental effect on surrounding vegetation, particularly in gardens with rare and expensive plants, and on sites of high nature conservation value. Research was therefore undertaken, looking at a new way of controlling knotweed using a cut and injection method. The work compared a variety of herbicides known to have been successful in controlling knotweed using foliar spray methods and also investigated the effect on the surrounding ground flora and shrubs/trees.

At one National Trust property, Rocky Valley in Cornwall, south-west England, complaints were received about Japanese knotweed. Extensive areas of knotweed were present on both sides of the valley. The infestation was well established and in places plants had grown to over 3 m tall, including dense stands 25 m long by 10 m deep, plus lots of smaller patches. It was also

spreading (usually during floods, when rhizomes were detached) downstream.

Not only was the knotweed thought to be destroying important native wildlife, it was additionally levering apart a historical building (not National Trust), impeding pedestrian access along a footpath and causing a flood hazard by colonising the centre of the river and impeding water flow. It was therefore proposed that a cut and inject herbicide method be used in attempt to reduce the extent of knotweed coverage and control future spread.

## ACTION

**Study site:** Rocky Valley, a steep-sided rocky gorge, is situated at the village of Tintagel in Cornwall, southwest England. Much of the area is designated a Site of Special Scientific Interest and is also a candidate Special Area for Conservation (under the European Directive on the Conservation of Natural Habitats) as it has valuable maritime flora and fauna, and is of high geological importance. It also has a number of sites of archaeological importance. Secondary woodland has developed away from the sea.

The southern side of the valley is owned by the National Trust. The northern bank is owned by two private landowners. A well-used public footpath runs down the south side of the gorge, where it links to the South West Coast Path.

**Initial consultation:** The National Trust started the process by consulting neighbouring landowners, as well as the Environment Agency, who consented to the use of Roundup Pro-Biactive herbicide for the cut and inject method of control.

**Cutting and injection of knotweed:** National Trust wardens commenced work in early September 1999. One person cut the knotweed stems just below the first node (usually about 8 to 10 cm above ground level) using loppers and was followed up by another person with a spot-gun applicator. Five to 10 ml of Roundup Pro-Biactive solution (5 parts water, 1 part herbicide) was applied into the hollow stem. A dye was added to the herbicide which stained each treated stem, thus ensuring that none were missed. Two people could cut and treat a solid patch of Japanese knotweed measuring approximately 25 m x 25 m, on rough ground in one day.

The cut knotweed debris was stacked on polythene to prevent propagation (as new plants may arise even from small stem fragments scattered on the ground) on site, allowed to dry and burnt about six weeks later.

## CONSEQUENCES

**Effectiveness of cut and inject treatment:** The site was re-visited in the spring 2000 to look for signs of Japanese knotweed re-growth. It was estimated that in some of the larger stands, approximately 90% had not re-grown at all. On many of the treated patches where there had been

only occasional stems of knotweed, none were evident. It was noticeable that where the soils were thin, the kill was even more effective. Any re-growth tended to be distorted with a red tinge, and leaves were narrower and arrow-shaped, compared with the typically broader leaves of healthy plants. The stems were also much thinner and lower growing than prior to treatment.

**Re-growth treatment:** Re-growth was allowed to grow to provide a good leaf area and was then carefully spot sprayed with Roundup Pro-Biactive - the thin re-growth stems prevented further injection. Since 1999, the site has been checked for knotweed annually, and any new growth is spot treated. There are unfortunately areas upstream where the landowners do not wish to control the knotweed, which therefore provides a source of re-infestation.

**Re-establishment of native flora:** The treated patches, which were virtually devoid of plant life, now have a flora similar to that outside the infestation. There tends to be more woodland species and cock's-foot *Dactylis glomerata* in early years. In the spring following initial treatment, native bluebells *Hyacinthoides non-scripta*, herb robert *Geranium robertianum* and campion *Silene* spp. were beginning to grow between the dead knotweed crowns.

**Annual monitoring and control:** The knotweed cannot claim to have been eradicated from Rocky Valley, but at least 99% of the south side of the gorge is now clear. The National Trust Management Plan for the property requires an annual check and control as necessary.

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