



Graham Paul, Technical Specialist at Sherriff Amenity, offers some advice on two invasive species that are particularly difficult to exterminate!

# SPACE INV

Concern for our environment has never been more 'in the public eye' than it is today. Changes brought about by global warming are just one aspect of our concern. However, of equal importance, are changes caused by mankind to our natural environment in the range of plants, birds, insects and animal species that are found in the UK.

There is quite a long list of plants that can be found in Britain today that originated from outside these shores. Most of these were introduced in the 18th and 19th century by explorers and botanists who, at the time, had no knowledge of their potential impact on our natural flora and fauna. Today we are seeing the dramatic spread of some of the more aggressive introductions which are displacing our native plant-life and also the insects, birds and animals that live on them.

Two of these non-native species giving cause for concern are Japanese Knotweed (*Fallopia japonica*) and Indian Balsam (*Impatiens glandulifera*) also known as Himalayan Balsam. In this article I shall look in some detail at these two weed problems and highlight the strategies that have been developed to deal with them.

**Japanese Knotweed (*Fallopia japonica*)**  
Japanese Knotweed originates from East Asia (Japan, Taiwan, China and parts of Korea) and was first introduced into Britain in the 1850s when a Dutch nurseryman sent the plant to Kew Gardens. From here it has spread throughout the UK - initially from the sale and distribution of the plant to landscapers and gardeners but, in more recent times, it has spread in soils contaminated with small fragments of

the rhizomes e.g. soil movement during building works and from fly tipping.

Japanese Knotweed is a hairless perennial producing an extensive rhizome system that can reach up to seven metres from the plant down to a depth of three metres beneath the surface. It is this rhizome system that makes this plant so aggressive and difficult to control. The stems rapidly grow to a height of 2.5 metres and are hollow, 'bamboo-like' and flecked with red pigment. In the winter the stems will die off but remain erect and new shoots will sprout from the rhizomes in the following spring. The large, fresh green leaves are oval-triangular, truncated at the base and pointed with a red leaf stalk. Numerous small

greenish-white flowers approximately 3mm in size are produced late in the season on branched spikes. Once established it can quickly dominate large areas squeezing out all other plant life. Japanese Knotweed is a dioecious plant - it has male and female organs on separate plants.

In the UK we have only female plants so propagation by seed is not possible and, therefore, all our Japanese knotweed specimens are clones that have grown from rhizome fragments or from cuttings. We are now also aware that the rhizome fragments can spread by travelling down rivers and streams.

Only a small piece of rhizome (less than one gramme) is needed to generate a new plant.

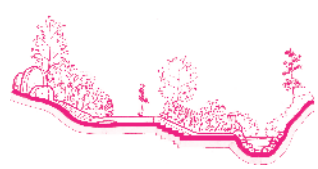
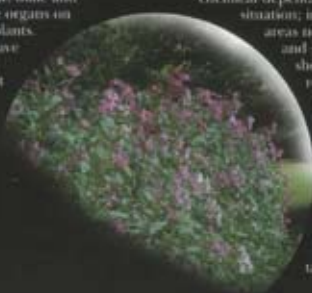
It is an extremely invasive and hardy plant. In its natural habitat in East Asia it can survive in harsh conditions in volcanic regions on poor, thin, acid soils with a pH of less than 4.0 and extremes of temperature, which in mountainous regions can fall below -55°C for long periods during the winter. It is, therefore, not surprising that it does so well in our comparatively gentle climate.

The British Government has been aware of the invasive problems caused by this species for some time, it is one of the weeds listed in Schedule 9 and subject to controls specified in section 14 of the Wildlife and Countryside Act of 1981. Whilst there is no statutory requirement under this act to remove Japanese Knotweed from your land, it is an offence to plant or cause the species to grow in the wild. The plant, prunings and soil contaminated with its rhizomes are classified as controlled waste and must be disposed of at 'licensed sites' or rendered safe by burning.

**Control of Japanese Knotweed**

This is not an easy weed to control, due to the extensive rhizome system that sustains the plant. Because there is no viable seed from UK plants we need to concentrate our efforts towards killing these underground rhizomes. Chemical control is the best method of eradication, although this may take several years to fulfil. Choosing the most suitable

chemical depends on the situation; in sensitive areas near water, trees and shrubs we should use non-residual translocated herbicides such as 2,4-D amine (e.g. Depitox) or glyphosate (e.g. Roundup Pro-bioactive) taking care to



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# ADERS

avoid spray-drift onto the foliage of desirable plants nearby. Where there is a need to preserve grasses e.g. to prevent soil erosion, then 2,4-D amine is the best option.

Alternatively, Roundup Pro-Biactive can be applied by direct stem injection at the rate of 2ml undiluted product per stem. Specialised injection equipment for this would need to be purchased but is relatively simple to use. A sharp needle attached to the equipment is pushed into the lower part of the stem. The needle is cross-bored a few millimetres from the shank to allow the chemical to move directly into the plant once the trigger mechanism has been squeezed. This method ensures that all of the chemical is targeted on the weed and adjacent grasses and other plants are unharmed.

In other situations, where there are no risks to water or valued vegetation, we can use herbicides with a residual action, such as picloram (e.g. Banthion) or triclopyr (e.g. Timbrel). Of these two residual materials, it is widely accepted that picloram produces the best results against Japanese Knotweed. It should be borne in mind that treatment with picloram will render the soil unsuitable for replanting shrubs and flowers for up to two years and triclopyr for six months, however, grass will be mostly unaffected by the spray.

In the initial stages of chemical treatment, the plant may sprout new growth from its rhizomes up to seven metres away from the original plant, so one needs to be ready to re-treat the new shoots as soon as possible after they emerge and before they can extend the rhizome system further.

Cultural control of Japanese Knotweed is possible by cutting and burning the aerial growth and carefully excavating the soil to remove all traces of the rhizomes, but remember, only one tiny piece left behind can cause the problem to recur. The environmental cost of removing soil to a depth of three metres and replacing it with fresh soil makes this exercise impractical. Where it involves grassed areas, control of Japanese Knotweed can be achieved by regular mowing, which gradually weakens the rhizome system and eventually the shoots will stop emerging through the turf.

**Indian Balsam** (*Impatiens glandulifera*) also known as Himalayan Balsam.

Indian Balsam, a relative of the blue lizzie, is the tallest annual growing wild in the UK, often reaching a height of three metres. It was first introduced into Britain in 1839 by John Forbes Boyle who collected plants from all over India and sent some of them to the Horticultural Society of London. It was originally named *Impatiens Boylei* after the collector. It is a very handsome plant with dark green leaves and attractive fragrant flowers that range in colour from dark purple through pink to white.

It thrives in damp soils so is mainly found along the banks of rivers, ponds and lakes although it will survive on drier soils but with a less vigorous growth habit.

The main problem with this plant is that, like Japanese Knotweed, it tends to dominate and squeeze out all other vegetation and, with a relatively shallow root system, there is little to hold the soil together when it dies back in the winter. This makes the riverbanks more prone to erosion and can cause flooding in extreme cases.

The plant produces large numbers of seeds in pods that 'explode' on touch, scattering them over a wide area, which allows the plant to spread quickly. Many of the seeds, which remain viable for 18 to 24 months, will be carried downstream creating new colonies wherever they reach the shore. The large number of flowers providing nectar attracts many butterflies and bees from the surrounding area drawing them away from native species growing nearby and it has been demonstrated that this can result in a lower seed set for these indigenous species.

**Control of Indian Balsam**

Indian Balsam is somewhat easier to control than Japanese Knotweed as it only spreads by seed. If we can remove the seed reserves by carefully cutting down the plant or by chemical weeding before flowering then it can be eradicated from an area within three years. However, it is necessary to locate and control the source upstream first to ensure complete removal of the infestation.

Cutting to prevent seed production needs to take place just before the onset of flowering and, to be effective, it should be as low to the ground as possible, taking away the lowest layers and back to avoid stimulating rapid re-growth. This will need to be repeated each year until the seed reserves in the soil have been depleted.

Chemical control with glyphosate or 2,4-D can be undertaken in the early spring when the young shoots are emerging. 2,4-D might prove the best choice as it would leave any grasses behind to stabilise the river banks. Direct stem injection with glyphosate may also be useful, providing access to the stems is possible without unnecessary risk to the operator.

Special care should be taken when spraying tall plants with herbicide, as light winds can cause the spray to drift back onto the spray operator or onto other vegetation. Always read the product label before using chemicals and consult the Environment Agency before applying herbicides near water.

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Illustrations (4-6):  
 Japanese Knotweed encroaching on a school playing field.  
 Indian Balsam  
 Site in East London which was virtually overrun by Japanese Knotweed, but was reclaimed by chemical treatment in just three years.

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