



Gardens

Japanese knotweed: the global menace – and a possible solution

A single specimen introduced into the west as an exotic novelty has since become a plant invader that can destroy buildings



Fallopia japonica, or Japanese knotweed © Jason Smalley/Gap Photos

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by: **Matthew Wilson**

When I was a child, Japanese knotweed (*Fallopia japonica*) was one of my favourite plants. Not because — like the Victorian garden writer William Robinson — I admired its “large and noble tufts of lively green, which increase in beauty from year to year”. No, mine was a much simpler attraction. In the corner of a field on our flower nursery my father had made an earth berm to contain the water from a small ditch that trickled languidly in summer and flowed

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more purposefully in winter. The water gathered behind the berm, rarely more than a foot or so deep but sufficient to launch the rafts that my sister and I made from blocks of polystyrene packaging and pallet wood, lashed together with blue nylon rope.

The banks of this *Swallows and Amazons* enclave were overgrown with a miniature forest of Japanese knotweed. There was a multitude of ways in which these plants could be enjoyed by a small boy. The notched, segmented stems could be cracked open and the watery sap inside drunk — a perfect pick-me-up for any pirate. Stripped of leaves, a whole stem made an adequate raft mast, cutlass or dagger — or all three. The worst effects of a summer shower could be kept off by crawling into the middle of the patch where the big, heart-shaped leaves enmeshed like a roof. And the largest single leaves made a perfectly decent hat for a small head. That grove of knotweed was my tropical island jungle, my mangrove swamp, a place from where daring raids could be launched, or shelter sought whenever the enemy (my sister) got the upper hand in battle.

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Japanese knotweed growing in the Rhondda Valley, Wales © Alamy

As an innocent child I had no idea that I was communing with the horticultural Beelzebub. Japanese knotweed is without question one of the most damaging of all introduced alien plants. The International Union for Conservation of Nature and Natural Resources has listed it as a global plant pest. In parts of Australia it is illegal to have the plant on one's property, while in New Zealand it is classified with polite understatement as an “unwanted organism”.

In the US it is scheduled as an invasive weed in 12 states, and can be found lurking malevolently in a further 29. Two pieces of legislation cover it [in the UK \(http://next.ft.com/content/b77e7cd2-7001-11df-8698-00144feabdco\)](http://next.ft.com/content/b77e7cd2-7001-11df-8698-00144feabdco). The Wildlife and Countryside Act (1981) makes it an offence to “plant or otherwise cause Japanese knotweed to grow in the wild” — which includes allowing it to escape from a garden. And taking lumps of it to the local dump in a bid to get rid of it won't get you very far either; the Environmental Protection Act (1990) classifies it as “controlled

waste”. This is the Act that, until recently, also covered waste from the nuclear industry. It is fair to say that Japanese knotweed is taken very seriously wherever it has pitched up.



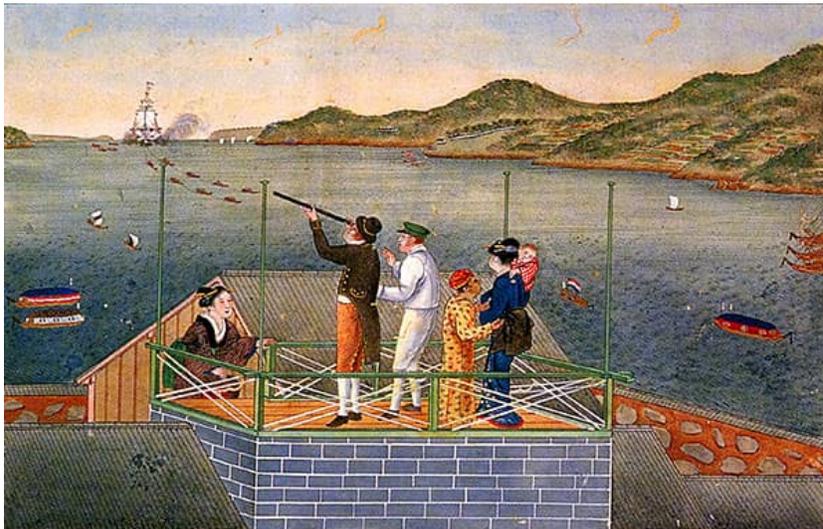
This is a plant that is perfectly adapted for world

Philipp Franz von Siebold © bridgemanimages.com

domination. It grows rapidly from an incredibly strong rootstock, so robust it is capable of pushing through tarmac and, reputedly, through concrete and building foundations. Try to dig it out and you'll find the roots go down deep and are near impossible to remove by hand. Leave a tiny fragment of root behind and — boom — back it comes. Allowed to spread unchallenged, it can colonise vast areas, not only potentially causing damage to the built environment but also wiping out native plants and displacing the wildlife that relies on them. The site of the 2012 Olympic Park (now Queen Elizabeth Olympic Park) in east London was flattened in the Blitz during the second world war. Huge tracts of abandoned industrial land offered the perfect opportunity for knotweed to spread unnoticed and unchallenged for 60 years. In order to rid

the site of this menace, the Olympic contractors launched a campaign involving the application of herbicide, physical removal (by mechanical excavator) and soil screening with vast, chuntering machines. The cost of this purification exercise has been estimated to be about £70m.

While the Olympic Park provides an extreme example of the war on Japanese knotweed, the annual cost to the UK of controlling and eradicating this pernicious weed is between £160m and £200m. There are no limits to the places the pest will get to: private homes, rail tracks, industrial estates, school grounds. Aside from the cost of disposal, its presence can have a significant impact on property values, pushing up insurance premiums and resulting in mortgage offers being withdrawn, despite conflicting opinions on its capacity to damage buildings.



'Arrival of a Dutch Ship' (c1820s) by Kawahara Keiga, showing Siebold at Dejima with his 'wife' Kusumoto Taki and baby daughter Kusumoto Ine © Nagasaki Museum of History and Culture

It wasn't very long at all after Robinson expounded its aesthetic qualities in *The*

Subtropical Garden (1879) that gardeners began to notice that those noble tufts had some rather unpleasant tendencies. By the early 1900s gardeners had expelled it from their borders, but it was too late. Japanese knotweed had escaped into the wild.



Kusumoto Taki © Geheugen van Nederland

It could have been so different, of course. From the late 1600s through to the early 20th century, plant hunters were exploring the limits of the known world and sending back seeds and

live specimens to their homelands. Of these many thousands of introductions, only a few have become menaces.

Japanese knotweed was introduced to Europe by the German botanist and physician Philipp Franz von Siebold. Born in 1796, Siebold was commissioned in the Dutch army and travelled as a ship's surgeon to Batavia (now Jakarta) in 1822. A year later, he was posted to the small island trading post of Dejima in Nagasaki. Siebold was one of a handful of non-native inhabitants on the island, and held the joint role of doctor and scientist. Eventually, he won permission to venture out of Dejima, enabling him to pursue his interest in plant hunting with

greater vigour. He also found time to “marry” a Japanese woman, Kusumoto Taki, and father a daughter, Kusumoto Ine. (The couple didn’t marry legally but under Japanese convention were said to be married.) Ine went on to become the first female doctor of western medicine in Japan.

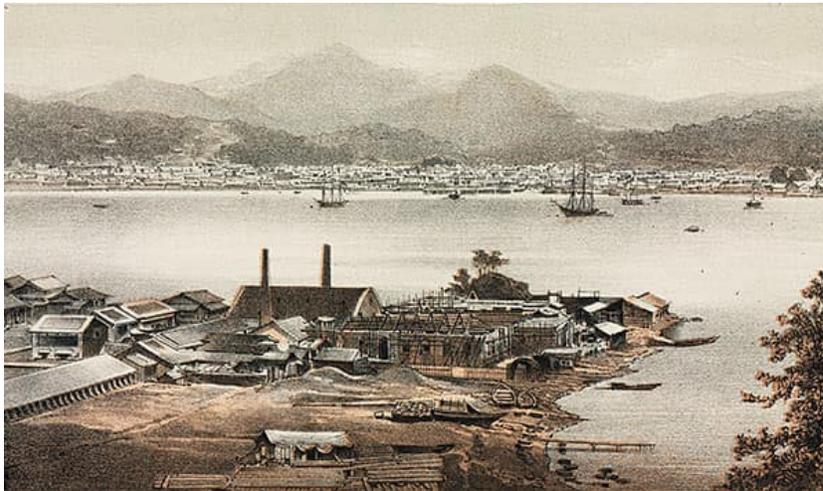


Hydrangea otaksa, from Siebold's book 'Flora Japonica' © Mary Evans/Natural History Museum

Siebold set up a glasshouse and small botanical garden at his home and began collecting indigenous plants with the help of a team of Japanese plant hunters. Unbeknown to the authorities, he was also sending plants (and animals) back to the Netherlands, including such garden favourites as species of hosta, wisteria, magnolia and hydrangea. He smuggled out viable seeds of tea plants — a commodity the Japanese had vigorously guarded — to Batavia. From here the seeds were distributed throughout Java, establishing the tea industry there and breaking Japan’s monopoly.

Eventually his buccaneering approach to local law caught up with him. In 1829 he was discovered to be in possession of detailed maps of Japan, accused of being a spy for Russia and expelled from the country.

Siebold returned to the Netherlands with a collection of more than 12,000 specimens, which remain the subject of research today. Among these was a female plant of *Fallopia japonica*. Every bit of wretched stem and root of Japanese knotweed outside Japan is descended from, and genetically identical to, that one plant.



Nagasaki Bay, Japan, in 1867 © Science & Society Picture Library/Getty Images

Siebold could not possibly have predicted the calamitous outcome of his introduction, because the one place where Japanese knotweed isn't a problem is Japan. There it is a pioneer species, often establishing on volcanic scree where nothing else will grow. Here, the natural pests, diseases and fungi that are absent elsewhere in the world help to keep it in check, ensuring it remains nothing more than a fairly common and unremarkable wild plant, forming large and noble tufts of lively green.



Magnolia sieboldii © Yooniq Images/Alamy

How to beat the pest

Although legislation varies throughout Europe and the US, there is one unifying piece of advice; if Japanese knotweed is on your property, seek specialist know-how.

Control of the pest often involves chemical herbicide whose application requires careful timing to coincide with flowering if it is to work effectively. One cycle of herbicide is unlikely to make any significant impact and, typically, treatment can continue for two or three years.

In extreme cases, mechanical removal and soil screening may be required to prevent reinfestation. The cost of treatment for an average London garden can range from £2,000 to £6,000 or more.



An expert tackles Japanese knotweed in Cornwall, UK © Alamy

In the UK the Royal Institute of Chartered Surveyors categorises the degrees of severity of risk posed by Japanese knotweed, largely based on the proximity of the plant to buildings and neighbouring boundaries. There are conflicting opinions over the amount of damage the plant can cause, with the RICS challenging the extent to which it can “invade” buildings. Nonetheless, mortgage lenders may refuse to approve a mortgage when Japanese knotweed is present at the higher end of the risk scale, or stipulate removal by professionals before lending being released.

Yet there is room for cautious optimism. Trials of *Aphalara itadori*, a tiny, sap-sucking psyllid bug, have found that it inhibits the growth of Japanese knotweed, leaving it weakened and less able to exploit its invasive abilities. In future it is possible that large enough colonies of *Aphalara* could be established to provide a genuine, natural alternative to the chemical control method that is, at present, a central part of any eradication regime.



Aphalara itadori, a bug that inhibits the weed's growth

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Photographs: Jason Smalley/Gap Photos; Alamy; Nagasaki Museum of History and Culture; bridgemanimages.com; Geheugen van Nederland; Mary Evans/Natural History Museum; Tim Cuff; Science & Society Picture Library/Getty Images; Yooniq Images/Alamy

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