

The war on Japanese knotweed

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Once hailed as a ‘handsome’ import, this most rampant of plants has come to be seen as a sinister, ruinous enemy. Can it be stopped?

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When Paul Ryb found himself a new home, in 2014, no one told him about the danger lurking in the garden. The flat, in the north London neighbourhood of Highgate, occupied the ground floor of a two-storey, brown-brick building. It had two bedrooms and a modest extension, but its truly splendid feature was a big, corner-plot garden. Ryb, a former investment banker, bought the flat for almost £1.3m and moved in mid-autumn 2014. His eyesight is severely impaired, so even more than most homebuyers, he had trusted his surveyor’s report, which testified to the “excellent condition” and “very few defects” of the house. The next spring, though, when planting season began, his gardener took one look at the garden and gave him the bad news. He’d found three clumps of Japanese knotweed out there, which portended ruin for the garden. Refusing even to touch them, the gardener packed up his tools and left.

Knotweed spreads slowly but adamantly, and it can take over a patch of land until no other plants survive. Given time, the three stands of knotweed may have consumed Ryb’s garden, so he had little choice but to hire workmen who dug out and carted away the knotweed and the soil beneath, at a cost of more than £10,000. Then he sued his surveyor. In 2019, a court awarded Ryb £50,000 in damages, citing not just the expense he had borne, but also his investment in the house and knotweed’s aesthetic interference with his “ability fully to use and enjoy the land”.

Knotweed has been a British plant since the 19th century, but as a species, it is still called “invasive” – a word referring not only to its origins abroad, in Japan, but also to how it has run riot through the country. Through many countries, in fact: across much of Europe and North America, knotweed has conquered woods and pasture, asphalt and urban wasteland. Unchecked, knotweed grows audaciously: it can rise by eight feet in the course of a single summer month. One biologist told me that she regularly came across doubled-decker-sized colonies of knotweed during her fieldwork in northern France. Another expert, in Wales, recalled the biggest stand of knotweed he’d ever seen: a monster that straggled over 20,000 sq metres – nearly enough room to park four Boeing 747s. Some of the sites chosen for the 2012 Olympics had so much knotweed that it cost £70m to clean them up.

Lawn moss can be destroyed with iron sulphate, nettles can be pulled out, ivy can be chemically extinguished. Knotweed is nearly indomitable. It may be temporarily subdued – uprooted,

mowed down, defoliated – and it can be controlled with poison, but it cannot easily be slain. This is a plant that survives the hot lava flows of volcanic eruptions. It is so formidable that even sober experts sometimes compare it to the triffid, from John Wyndham's 1951 novel *The Day of the Triffids*. Wyndham's triffids are mobile, sentient beings that stalk the country, stinging to death any humans they encounter. Forced off their land by these alien, indestructible plants, a band of survivors has to decamp to the Isle of Wight.

Unlike the triffid, knotweed will not so much drive you off your land as devalue it – a dire enough fate in the current property market. According to one estimate, 5% of UK homes are afflicted with knotweed, potentially slicing £20bn off their collective value. The official form that owners fill out while selling their houses now includes a specific question: "Is the property affected by Japanese knotweed?" Dissembling, or even ignorance, can be costly. Earlier this year, a court extracted £200,000 in damages from a man who sold his London home for £700,000 without copping to the knotweed in the garden. Ryb's legal counsel was a firm named Charles Lyndon, which was set up by the lawyer Rodger Burnett, after he had himself discovered knotweed in his newly purchased south London home. ("I didn't know what it was. My mum had come down to do a bit of gardening," Burnett told me, "and she looked out of the kitchen and said: 'What have you done? You've got knotweed. You're an idiot.'") Burnett's firm has handled hundreds of such cases, and there are several other lawyers who specialise in knotweed claims. One barrister referred to them as "wheelbarrow chasers".

As knotweed fanned out across British homes and gardens, it went from being a horticultural headache to an economic menace. Over the past decade and a half, as British wages languished, the only real wealth that many people gained lay in the homes they owned, which appreciated every year almost too reliably, regardless of the economy's other strains and stresses. When knotweed started corroding the value of these houses, their owners panicked. Lawyers sharpened their pencils. Botanists turned into consultants. Parliament convened knotweed committees. It was as if the country, having cohabited with knotweed for a century and a half, suddenly woke up to the fact that it was overrun, and set about trying to kill the unkillable weed.

On the ground, the state's soldiers against knotweed come in the form of people like Gethin Bowes, a stocky man with broad shoulders that look ideally contoured to bear a herbicide-spraying backpack. Until recently, Bowes worked for Caerphilly, a Welsh county borough skirted by the Rhymney River. (In April, after 18 years in the post, he quit to join an environmental management company, where fighting knotweed is still part of his job description.) It fell to Bowes to figure out courses of action for the 1 million sq metres of knotweed he'd mapped in Caerphilly. This was the largest knotweed monitoring project in the UK, perhaps in the world, and Bowes ran it almost entirely by himself.

Looking through Bowes' eyes, you see the world cleave into two: knotweed and everything else. One February afternoon, he gave me a tour of Caerphilly knotweed. In his Toyota pickup, we rode into town, past Caerphilly castle, down small village streets, and up into the hills speckled with sheep. On highways, he'd interrupt himself to point out, on the verges, knotweed stands he'd confronted. Frequently he pulled over, reached for his laptop and summoned old Google

Maps satellite-view images to show how much denser the knotweed had been six or eight or 10 years ago, before he had ridden to the rescue. As we drove through the villages, he'd sometimes slow down and look purposefully at stands of knotweed on private land that he couldn't get at without permission. "These bits really bug me," he said. Once, as we went around a traffic island, he said: "We excavated a lot of knotweed while building this road, and packaged it in a membrane and buried it under there." This is, it should be said, a legitimate method of knotweed control. Even so, he brought to mind a mob stoolie dishing about where the bodies lay.

Other hardy invasives in Britain, such as the rhododendron or the Himalayan balsam, spread through seed. Their propagative apparatus – the seed pods – are plain to see, easier to assail. Knotweed produces seeds as well, but its singular weapon lies out of sight. Beneath the earth is its rhizome, a network of stems that grow laterally, sending up new shoots wherever they can. Bowes described the rhizome to me as the plant's "battery", a dense store of energy. Even when it has been shorn of its stalks, or suppressed by weedkiller, or trapped below concrete, a rhizome can stay dormant for as long as 20 years, waiting for better days. This is why knotweed prospers – and why it preys on the mind. There is always the fear that it is merely lying in wait, ready to burst forth again.



An area of land in east London cordoned off due to knotweed infestation. Photograph: flowerphotos/Alamy

Disturbing the rhizome in even the mildest way provokes it to grow; shredding it is like lopping off the head of a hydra. Even a thumbnail-size fragment of it, resembling raw, orange-coloured ginger, can generate a whole new plant. (Hence the reluctance of Ryb's gardener to poke his knotweed and risk carrying rhizome bits away. "He knew they could infect his tools," Ryb told

me.) In excavating knotweed whole, as Ryb had to do, it becomes so vital to eradicate every last grain of rhizome that some surveyors have trained dogs to sniff it out underground. During such projects, Bowes carefully checks the blades of his machines and the tyres of his vehicles, making certain that they won't bear away any rogue rhizome pieces.

Bowes spent his boyhood "near brown water and brown mud", as he put it – on Wales's south coast, midway between Cardiff and Newport. Every winter, dry knotweed stems would wash down rivers, and he saw great rafts of these hollow canes collecting along the estuary shore. He didn't know it was Japanese knotweed at the time. His formal introduction to the plant came after agricultural college, when he was working at a landscaping company, taking on knotweed at building sites and other locations. At the time, he said, no one told him to be wary about the rhizome, and the most common methods felt largely futile. They'd cut back the plant every time it regrew, Bowes said, and they'd dose it with a herbicide like glyphosate, but they were only guessing about how and when to apply it. As the science developed, though, their efforts became more effective. Glyphosate is now the chemical that defines Bowes' working life.

When Bowes started in Caerphilly, in 2005, he was tasked only with preventing knotweed from overrunning native plants in the wild – along the banks of the rivers, and in pockets of woodland. But that was too narrow a front: knotweed was all over the county. Every major construction project in the region – highways, bridges, hospitals, railways – has had knotweed problems, and Bowes has dealt with nearly all of them. Bits of rhizome wash down the Rhymney, from knotweed stands upstream, and populate riverbanks. Knotweed blocks visibility on road verges, grows thickly in car parks and rears above the fences of private gardens. It may be successfully quashed on one plot of land, only to stretch laterally underground to spring up on the next plot over. Often, after a lull, Bowes found it had double-crossed him and reinfested the same plot. On a few occasions, Bowes has seen knotweed *inside* a building; once, a plant had found its way along a pipe or through a joint in the concrete to emerge next to a downstairs toilet.

In some heavily infested spots, to his immense satisfaction, Bowes hasn't seen new growth in more than 15 years. "If I'm entirely honest, I'd thought at the beginning: 'Well, a year of this, and then I'm going to do something else,'" Bowes said. "Sometimes I can't believe I've spent such a long time playing whack-a-mole with knotweed."

In its biological vigour, Japanese knotweed is a Darwinian champion. It starves smaller saplings by towering over them and blocking their sunlight. Its leaf litter secretes chemicals to impede the germination of other plants. Contrary to popular opinion, knotweed shoots can't break through solid concrete or weaken the foundations of buildings, but they can push through cracks in bricks, concrete or road surfaces. During winter, knotweed loses its leaves, and its brown canes resemble slim, desiccated fingers of bamboo. At the hot height of summer, it is at its most luxuriant. Its leaves, shaped like cartoon hearts, can be bigger than a human hand, and its small, creamy flowers emerge in tufts just before autumn.

During his time with the Caerphilly council, Bowes' years followed a seasonal order. When I met him in February, he said: "I'll check my phone now, after a couple of hours, and I'll have

maybe two voicemail messages. By May Day, I'll come back to my phone and see 25 voicemails. All of them saying: 'I've seen knotweed here,' or 'There's knotweed growing here.'” Through the summer, until October, Bowes used to be out every rainless day – even weekends and bank holidays – spraying glyphosate, monitoring old sites that he'd treated, or reconnoitring new and troubling stands of knotweed. “We skipped the day of the Queen's funeral,” he said. “The herbicide sprayer has a petrol engine that's quite noisy, so we thought it wouldn't be respectful.” It had been a perfect day for spraying, too, he added, regretfully. (This summer, for the coronation, the council had a battery-powered sprayer.)

The work was hot and exhausting. Sometimes, Bowes had to don his PPE – overalls, gloves, waders up to his chest – and scramble down a steep bank with a 20kg tank of glyphosate on his back, then walk along the shallow reaches of a river to reach his knotweed.



Japanese knotweed being treated. Photograph: Brian Harris/Alamy

Glyphosate, Bowes' preferred poison, is the most heavily used herbicide in history, but it is still a subject of contention. Extinction Rebellion wants it banned, the World Health Organization thinks it is “probably carcinogenic to humans”, and Monsanto, its manufacturer, has [lost lawsuits](#) over its health impacts. The US Environmental Protection Agency, though, insists that glyphosate is [unlikely](#) to be carcinogenic.

Bowes was cautious in talking about glyphosate, but he made the point that no other chemical works better. Glyphosate seeps through the leaves and canes into the rhizome, arresting its growth and, after many applications, forcing it into dormancy. Not using anything at all on knotweed, Bowes pointed out, would leave the environment and biodiversity to a far worse fate. In any case, on a sunny day, a spray of glyphosate on a knotweed leaf dries within minutes. He

described “good spraying weather”: dry and still, so the herbicide isn’t carried on the wind, but not too hot, lest it evaporate before being absorbed.

During bad weather, Bowes would sit in his office to pore over more satellite images, looking for the tell-tale burst of lime-green that suggested a knotweed stand. Then he would go out into the field and “ground truth” it: confirm that it was, in fact, knotweed, so that he could add it to the vast swathe of Caerphilly knotweed that he had mapped and memorised. “We could literally drive around for a week like this, showing you knotweed,” he told me. “You could get overwhelmed and just give up. But I think to keep on it is the answer.”

Over the years, Bowes has developed a curious intimacy with his quarry. Once he cooked young knotweed into a crumble. The shoots had the texture of rhubarb, he said, but were “much more earthy and not very nice”. He has spent nearly two decades scuffling with this plant, yet it defies his absolute mastery, leaving him half admiring, half leery. We often assume we understand more about the natural world than we really do, or have more power over it than we actually possess. That overconfidence is invariably punctured: knotweed covers a country, a virus escapes a wet market, a forest burns. At that point, we realise we know too little – and yet, to mend these worst results of our ignorance, we have to try imposing our will on nature all over again.

In the archives at Kew [Gardens](#), there are volumes called Inwards Books: old, fat, marvellous ledgers listing the plants received by the gardens over the centuries. One of these books records the arrival, on 9 August 1850, of a set of 40 plants from a nursery in Leiden. The nursery was run by a German doctor named Philipp Franz von Siebold, who, after a stint in Japan, had brought back sheaves of exotic plants – among them knotweed, which, in an act of self-advertising, he’d named *Polygonum sieboldii*. In that 9 August entry, written out in spidery cursive, *P. sieboldii* shows up as item 34. It is the earliest available record of knotweed’s arrival on British shores.

From the outset, Britain’s relationship with knotweed has been cast by commerce – or, more specifically, by the country’s successive modes of commerce: the colonial, the industrial and the post-industrial. Colonialism’s grasping hands stretched into the botanical world, and the same acquisitive spirit that brought knotweed to Britain also brought rubber and cinchona trees to Kew, wisteria to the English garden, and rhododendrons to Scottish forests. At the time, no one had a sense of foreign plants as invasives, as agents that could overwhelm the balance of domestic ecosystems, says Keith Alcorn, a historian of gardens. Through the second half of the 19th century, knotweed vendors praised the plant’s ability to stabilise sand dunes, bear flowers suited for bouquets and feed cattle. And when, in this same period, the wild gardening movement began, its founder, William Robinson, recommended knotweed for looking “handsome in rough places in the wild garden”. Alcorn told me: “I haven’t come across any writing from before 1921 that said: ‘On no account allow this plant.’”

One scholar referred to what happened next, in the early and mid-20th century, as “the escape”: knotweed breaking loose of well-tended gardens and multiplying through cities and countryside alike. It prospered on riverbanks, in cinder tips and untended lots. In south-east Cornwall, in the interwar period, knotweed became known as Hancock’s Curse, after it spread out of a private

garden owned by a man of that name. Inadvertently, people helped the knotweed along by moving around vast quantities of earth in which pieces of rhizome lay hidden, like a sixpence in a Christmas pudding. In Welsh coal country, around the tin mines of Cornwall, alongside roads and highways, next to shipyards and railroad tracks – everywhere that industrial activity went, knotweed followed.

A 1977 paper, published in the Botanical Society's journal, shows the takeover in four maps. In the first, apart from a cluster of black knotweed dots in western Wales, Britain is largely free of the plant around 1900; in the fourth, from 1976, England and Wales are festooned with knotweed, and the dots have climbed so far north that even the Orkney and Shetland Islands aren't spared. The Wildlife and Countryside Act, in 1981, made it an offence to cause knotweed to grow in the wild, promising a £5,000 fine or six months in prison for the breach. It was like using a towel to stop the tide coming in. A 2021 study divided the island of Britain into 3,893 equal squares by area. Knotweed had affected 3,134 of those squares. Along with other relative newcomers like Himalayan balsam and giant hogweed, knotweed has crowded out plants that have flourished in this corner of the world for millennia. The climate crisis and the erasure of habitats haven't helped. When thousands of botanists recently surveyed Britain and Ireland's biodiversity, [to compose a plant atlas](#), they found that half of all native plants have declined over the past 20 years.

All of this might have remained largely invisible to the urban public, as nature's developments often do. Who pays attention, after all, to the flora on a railway embankment as it flashes past the train's window? But then knotweed began to hurt house prices, and the property market, hard-headed and beady-eyed, decided it would brook no knotweed.



The root system of Japanese knotweed, pictured near the River Taff in south Wales. Photograph: Dimitris Legakis/Athena Pictures

In 1986, Philip Santo began working with Abbey National building society as a surveyor, valuing homes before it issued a mortgage. If Abbey National funded a house purchase in south-western England, anywhere between the M25 and Land's End, chances are Santo or the surveyors he managed had run their gaze over the property. And that was how, in the autumn of 1995, he came upon his first residential knotweed: a small stand just outside a house in Dorset. "I may have mentioned it in passing in my report," Santo recalled. He didn't recommend any steps to deal with it – partly because, at the time, no one knew how best to deal with knotweed, but also because it wasn't yet a pressing concern. The knotweed remained on the Dorset house's doorstep.

But in the years thereafter, property valuations soared. The average house price in [England and Wales tripled](#) between 1995 and 2016. By the end of that two-decade span, the stakes had grown so great, Santo said, that the difference between two otherwise-identical houses – one with knotweed, the other knotweed-free – could run to tens of thousands of pounds. And still, remarkably for a plant that had been in the country for 150 years, no one knew the precise degree of peril that knotweed posed to the house's structure, or to adjoining plots. How close could knotweed get before it eroded the value of your home? How could knotweed be beaten back? If a lender had to repossess a knotweed-infested house, how much less would it be worth?

Banks dislike such uncertainty. In 2010, Santander, a major mortgage lender, announced that it would no longer finance the purchase of any homes in which knotweed had been found. "They were saying: 'We don't know the risk, therefore we will not lend,'" Santo said. Other banks followed Santander's example, to public alarm. It didn't help, Santo added, that the media often got knotweed wrong, portraying it as a plant that destroys houses.

In 2012, trying to help banks weigh the risks of knotweed, the Royal Institution of Chartered Surveyors (RICS) published a protocol deeming any knotweed within a seven-metre radius to be a threat to property values. It was too cautious, Santo said, but the literature on this was sparse; they had to rely on a figure published in a single scientific paper decades ago. Banks began lending again, based on the RICS protocol, but at a stroke, the seven-metre guideline affected millions of homes. And the essential problem of how to tackle knotweed remained. At his desk at RICS, where he consulted, Santo kept fielding calls from valuation experts around the country. "They'd say: 'I've seen knotweed. What do we do about it? How do I advise my client?' And again, nobody knew. Nobody knew what to do."

On the northern hem of Cardiff, by the river Taff, is a five-hectare parcel of land where generations of knotweed have risen and died over a decade. It is the world's largest controlled experiment in dealing with knotweed, and Dan Jones has been tending to it since 2011, when he began a PhD in knotweed management. Jones now runs a consultancy, Advanced Invasives, and he has the patient but morose air of someone who has heard a lot of bad ideas about tackling knotweed. "I've seen people pour boiling water on it, or salting it. I mean, knotweed grows in salt water," he said. "The salt will kill everything for ever, except the knotweed."

The only way to know what precise strategy of attack works best, Jones decided during his PhD, was to conduct trials. So he found this place: a former sports field on the grounds of a listed home, where the knotweed had enfeebled the walls of the derelict changing rooms and was closing in on the house itself. The homeowners let Jones turn their land into a giant lab. In photos and videos that Jones shot in 2012, the knotweed is chest-high and impenetrable. It had killed off everything else in its vicinity. As he sank more than 200 fence posts into the soil to mark off square test plots, the only other living thing he encountered was a lone earthworm.

In some months, particularly during the growing season, Jones comes here daily, digging and spraying and scheming. The February day Jones took me to the site was filthy: a wind that drew tears, and mizzle that turned the earth to mud. We walked between the plots, down narrow paths that Jones had cleared. “In the summer when I first began,” he said, “by the time I’d cut the knotweed off three of these paths, it would be back up at knee height at the place where I’d started.”

In these plots, Jones had tracked the varying advantages of 19 different experiments. Mowing the knotweed, with a machine or a brush cutter, made it worse, he found, because it spread nuggets of diced-up rhizome all over the field, where they took hold and grew anew. He experimented with a range of herbicides. (One of them, picloram, had been used by the US, under the code name Agent White, to defoliate jungles during the Vietnam war.) When glyphosate showed the most promise, he tried injecting it into the knotweed’s stalk, spraying it on the leaves, and pouring it down the throats of sawed-off stems.



Dr Dan Jones in his field of knotweed next to the River Taff. Photograph: Dimitris Legakis/Athena Pictures

Jones published his best regimen in a 2018 paper: a dose of glyphosate every autumn, either sprayed on the knotweed or injected into its stem, repeated for anywhere up to seven years. The paper became knotweed canon. “It’s fantastic, what he’s doing. It’s just brilliant,” Santo told me about Jones’s work. “Suddenly we’ve got a way to treat it – how to not necessarily eradicate it, but manage it.”

Above ground, the effects were dramatic. The leaves withered and dropped off. The stems turned brown and brittle. But in the mud, the rhizome never died. It merely went dormant, ready to grow again if it was ever cut up or propagated. Total eradication, Jones realised, was a pipe dream. At his site, some of his test plots hold just stray stands of dead knotweed canes, and alders and willows have flourished. The lawn behind the house – once held hostage by knotweed – is neat and grassy. But when I admired it, Jones said, in the manner of a man never willing to let his guard down: “A woman brought her dogs here, and the dogs sniffed it out underground. It’s all still there.”

Other, more expensive options exist. The UK’s knotweed management industry does more than £165m worth of business every year. John Butcher, a surveyor with Japanese Knotweed Ltd, a firm specialising in the control of invasive weeds, sometimes tells his clients – stricken homeowners and property developers – about encapsulation. The knotweed is cut down, and its roots and soil dug out, but since even this will not finish off the plant’s will to live, it is sealed into a membrane of fabric and copper foil, soil and all, and the package is then reburied on site. “The copper prevents the rhizome from breaking out,” Butcher said, like a warden of his jailbird. The most extreme method is excavation, in which Butcher’s staff haul knotweed waste away to a specially licensed landfill. It can be expensive; Butcher’s company once billed an excavation project at £1.4m. “Even so,” Butcher said, “some developers just want the knotweed gone completely.”

Every so often, someone thinks up a technique that is more fanciful: a £3,000 thermoelectric device, like a cattle prod, that promises to boil the rhizome, for instance, or dousing a garden in diesel, or setting goats loose to graze on the knotweed. In recent years, the Department for Environment, Food and Rural Affairs has conducted two small, careful trials to see if imported insects could curb the growth of the plant. (The first failed; the second is ongoing.) In the Netherlands, I learned from Chris van Dijk, a researcher at Wageningen University, one company sinks pipes a metre deep into the soil, circulates liquid chilled to –30C, and freezes the rhizome over a week, so that it rots as it later thaws. Experts like Jones tend to regard these solutions with raised eyebrows. At their worst, they don’t work; at their best, they’re impractical, given the sheer scale of knotweed infestation across Britain. Jones trusts in glyphosate.

The success of such investigations, by Jones, Bowes and others, has calmed the consternation of the early 2010s. Last year, as part of a more nuanced protocol, RICS revised its seven-metre guidance to three metres. Knotweed is still an intransigent entity, but we can control it better. At the same time, it has become the focus of so much commerce – of valuations, protocols, damages and bank scrutiny – that its identity as a natural being, as a plant rather than a pestilence, can slide out of sight. When Jones was growing up in Cardiff, he’d come across knotweed in a brownfield site, next to a rugby ground. “We used to make bases in the knotweed – like little caves that you could hide out in,” he said. “It grows so quickly that, in the summer holidays, you

can make really good bases.” It was the only moment, out of all our conversations, when he sounded anything other than adversarial towards the plant. Once, I asked him if he found knotweed in bloom, with its sprays of cream-white flowers, beautiful in any way. Jones grimaced. He couldn’t see it at all.

In Japan, knotweed has an altogether more poetic name: *itadori*. One translation of the word is “tiger cane”, perhaps referring to the way a stand of tall dead canes resembles a tiger’s striped back. Its native ecosystem imposes more limits on knotweed. Silvergrass and bamboo vie strongly with it for water and soil nutrients. A species of psyllid, an insect not much bigger than the head of a nail, feeds exclusively on knotweed sap, weakening and killing the plant. Even so, itadori grows luxuriantly, ever ready to annex neglected land. When the photographer Koichi Watanabe was a boy, living outside Osaka, he passed a deep wood of black locust trees along the river on his way to school. One year, the trees were all cut down. The very next spring, the riverbank swarmed with a plant that Watanabe didn’t recognise, its buds like asparagus tips and its leaves shaped like hearts. Itadori, rife as life.

For 20 years, Watanabe has been roving the world, photographing knotweed. He calls his project [Moving Plants](#); it fascinates him that plants, so easy to regard as rooted and stable, traverse geographies simply by getting entangled in the lives of humans. His knotweed groves are always centred in long horizontal panoramas, he said, so that the frame can include signs of human existence as well. His earliest photos were taken in the vicinity of Osaka, and across the island of Hokkaido. By and large, the inhabitants of these areas, and indeed of the rest of Japan, regard itadori with indifference, Watanabe said. The plant’s ornamental value is very slight; he has only ever seen it in a flower shop once, in Kyoto. Some supermarkets stock itadori leaf tea, itadori jam and itadori pickles – products that derive an unexpected utility out of knotweed. For Japan’s civic authorities, although maybe not for its public at large, knotweed is certainly a pest, if only one of several. Routinely, it has to be cleared from riverbanks and farms, Watanabe told me. “We do think it’s a weed. It’s just that we don’t want to kill it everywhere,” he said. “When I heard the words ‘eradicate’ or ‘kill’ in England, I was shocked.”



Japanese knotweed growing in Maplecrest, New York, photographed in 2007. Photograph: Koichi Watanabe

One possible reason for this forbearance is that knotweed, restrained by its habitat, rarely invades the gardens of Japanese homes. Daisuke Kurose, a plant pathologist who mapped knotweed across southern and northern Japan, said he'd never seen knotweed in private properties, even in the countryside. "As a result, people usually don't care too much about it," Kurose, who now works in Surrey for the agricultural non-profit Cabi, told me. "I used to give lectures to university students, and I'd ask them if they knew what itadori is. Most of them would guess that it is a kind of bird, because 'dori' is so similar to the Japanese word for bird." When he came to Cabi, Kurose said, he always felt a twinge of regret that the word "Japanese" was appended to the weed that made people's lives so hard. "But at the same time, I felt bad for British people, too, because I know knotweed is strong and difficult to eradicate."

Watanabe has followed the trail of knotweed to the UK, Poland, the Netherlands and both coasts of the US. He hasn't visited France or Sweden, where knotweed has spread widely. In Sweden, where the plant is called "parkslide" and where it has been found as far north as 65 degrees latitude, the milder winters to come will only encourage knotweed further. Jonathan Lindgren, an executive at Villaägarna, an association of Swedish homeowners, told me about his increasingly frantic conversations with municipalities beset by knotweed. "They try a lot of things. Like, some of them started trying to get pigs to eat knotweed. But usually these projects end in silence," Lindgren said. "What I hear, though, is that knotweed is a growing problem and a losing battle." One of Lindgren's chief exasperations is that knotweed contains resveratrol, a compound also found in wine and hyped for its health benefits. "Some circles here are so fascinated with knotweed that they almost think it has spiritual properties," Lindgren said. "So there are YouTube videos and blogs where people recommend how to grow knotweed, or how to make pie out of it. I mean, imagine: people are growing knotweed on purpose!"

Chris van Dijk, the Dutch knotweed researcher, often spots knotweed growing out of the cracks of Amsterdam's canals, the rhizome enlarging the damage so much that, he fears, "parts of the walls will collapse and fall into the water". Rotterdam's harbour was plagued by such thick knotweed colonies that they had to be excavated, he said, "and they now have a depot of 120,000 cubic metres of contaminated soil". One Watanabe print shows a geyser of knotweed erupting out of other foliage in Leiden. In Poland, Watanabe said, he found the worst cases of blight he'd seen in any country, the plant sometimes invading wheat fields or choking irrigation canals. The most extreme of Watanabe's photos give the impression of some colossal digestive action frozen mid-process. In one eerie photo, shot in upstate New York, knotweed has engulfed the base of a house, pouring in through one side and out the other. Only the house's upper floor is visible; left untended, it too will vanish into the innards of the knotweed stand.

Touring these sites, Watanabe wrote in 2015: "I caught the odd feeling that I had come to the future world from which human beings had departed. Vegetation would be renewed year after year if people were gone and constructions were demolished. Hybridised itadori would be the main creature in this area." But these didn't feel, to him, like outtakes of a vegetal apocalypse. Instead, Watanabe developed a silent communion with his subject, admiring the way its leaves

shook in the breeze, and eventually learning to sympathise with it. Too often, he told me, people speak about knotweed as if it were a virus: “It appears in the metaphor of ‘itadori infestation’ or ‘itadori as pest’.” The truth is, he said, that humans are responsible – for setting knotweed loose across the planet, and then for losing their minds about its presence. “The itadori is not guilty,” Watanabe said. “It is just living.”