Japanese Knotweed Guidelines

Name: Japanese knotweed

Latin name: *Fallopia japonica* (Houtt), (*Reynoutria japonica, Polygonum cuspidatum*)

Occurrence: Japanese knotweed is an invasive rhizomatous perennial introduced to the UK from Japan between 1825 and 1841 as an ornamental plant and as cattle fodder. In its native habitat, Japanese knotweed is a pioneer species found on volcanic larva, river gravels and managed pastures. In the UK it was reported as a garden escape in the late 19th century and naturalised populations were recorded in the early 20th century. Initially it was most prevalent in South Wales, perhaps due to the moist climate, but it is now widespread throughout the UK to the detriment of the natural plant communities. Japanese knotweed is established alongside railways, canals, rivers, streams and roadsides.

It forms tall thickets with a dense leaf canopy that exclude other plants even bracken. In the autumn the fallen leaves decompose slowly forming an impenetrable mulch that prevents anything else germinating. Japanese knotweed is tolerant of soil acidity, heavy metal contamination and air pollution. In spring gales, the leaves can suffer severe wind damage as they unfurl. The foliage is also sensitive to late spring and early autumn frost. Evidence from the east of England and the Mediterranean region suggest that summer drought restricts the spread of the weed in warmer climates.

In the UK, both *F. japonica* var. *japonica* and the dwarf variant var. *compacta* are naturalized along with several hybrids. All of the plants of var. *japonica* found in the UK are functionally female and originate from the same clone. The closely related giant knotweed (*F. sachalinensis*) occurs in similar places to the Japanese knotweed and has the same growth habit but has heart-shaped leaves and is even more robust.

A hybrid, *(F. x bohemica)*, between the Japanese and the giant knotweed is known to occur.

Young shoots of Japanese knotweed have been used for human consumption, the dried rhizomes are used in Chinese and Japanese medicines for treating a range of ailments. In September, the flowers are a valuable nectar source for beneficial insects and honey bees. There have been suggestions that Japanese knotweed could be grown as a renewable energy source if planted on derelict land or land of low agricultural value. However, in the UK, it is now an offence to cause Japanese knotweed to become established in the wild.

Biology: Flowering occurs from August to October but Japanese knotweed rarely sets seed. Some fruits were set in the hot summer of 1996 but it is not known if the seeds were viable. Almost all seed that is set is hybrid often with the Russian vine, *F. baldschuanica*, or the closely related giant knotweed as the pollen source.

The reddish shoots emerge in spring and grow rapidly up to 3 m tall. The roots can extend to a depth of 2 m. In the autumn, when the shoots are killed by frost, food reserves are translocated down to the stout rhizomes. These form a deep mat and can be more than 2 m deep and 15-20 m long. The rhizomes form pinkish nodules in early spring from which shoots develop in April. The previous stems may still be present as the new shoots emerge and can persist for 12 months or more.

Seedlings are susceptible to frost and are unlikely to survive in the open. There are

no reports of any seedlings becoming established naturally in the UK.

Persistence and Spread: Established plants develop persistent woody stocks that increase in mass with age and continue to produce lateral creeping rhizomes. A significant proportion of the biomass of Japanese knotweed is below ground.

In the UK, the reproduction of Japanese knotweed is purely vegetative. Spread is by the encroaching growth of established clumps or the dispersal and regeneration of small pieces of plant material, especially rhizomes, but also of stem and crown material. Small fragments of stem of the size produced by a horticultural shredder will regrow and form new plants. The regenerating shoots from buried plant material have emerged through tarmac and concrete. The dumping of waste plant material and the cartage of soil containing plant fragments has been responsible for much of the spread of Japanese knotweed. It is common to see this weed on roadside verges where it has established from fly-tipped garden waste. Where Japanese knotweed is growing near water, plant fragments can be carried downstream for long distances before developing into new plants. The fragments can even survive a period in seawater.

Management: A specialist contractor should be contacted as soon as plants are seen, once established, eradication is much more difficult. Control by cutting alone is ineffective and may increase stem density and the lateral spread of clumps. Regrowth is very rapid. Pulling or digging out the weed has some effect if repeated regularly over a three year period, but all waste plant material must be burnt. Japanese knotweed can survive composting. Burning the plant in situ is ineffective. Root barrier fabrics made from reinforced polyethylene laminate have been successfully used to contain the spread of Japanese knotweed. Some on-going research is looking for biological control agents in the countries of origin. The most effective way to control and eradicate Japanese knotweed is by using herbicidal treatments carried out by a specialised company.

Topsoil and other brought in soil should be checked for fragments of Japanese knotweed. If there is any doubt, the origin of the soil should be checked. Strict hygiene should be followed in dealing with living plant material of Japanese knotweed. All fragments should be destroyed by burning or by deep burial to at least 10 m deep. When control is limited to one problem area, re-infestation is likely from adjacent areas. It is necessary to deal with plants in the adjacent areas too and prevent the spread of plant fragments, especially near water or where loose soil is

likely to become moved around.

Japanese knotweed would appear to be an appropriate candidate for biological control. However, few native insects or plant diseases are known to attack the weed in Britain. An extensive programme of research would be needed to evaluate and develop biological control measures introduced from elsewhere. A rust fungus *Puccinia* spp. from Japan, has shown some promise as a control agent. More recently, a pathogenic leafspot, *Mycoshaerella* spp. and a sap-sucking plant louse, *Aphalara itadori* have been found living on the weed in Japan. Both have given encouraging results and are under assessment as biocontrol agents for Japanese knotweed.

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