

or near a stream, knotweed can move by floodwaters to colonize an entire watershed. It chokes drainage ditches and can break up pavement with its expanding network of roots. Shoots have been observed growing up through two inches of asphalt.

Knotweed spreads quickly, forming dense stands that prevent regeneration of native vegetation and suppresses the growth of existing vegetation. Wildlife that depends on native vegetation for food and shelter are displaced. Furthermore, organisms within the stream are deprived of the insects and native plant material that fuel the aquatic “food chain,” ultimately reducing habitat quality for juvenile salmonids.

Guidelines for Control of Knotweeds

Knotweed eradication can be expensive and difficult. Small stands may be killed by repeated cutting, but this treatment must be repeated six times or more per season, for many years (Figure 4). Removing plant material from the site is not recommended unless all plant parts can be incinerated, buried deeper than five feet, or chopped into pieces smaller than 1/2 inch and composted. Pulling up the plants increases the risk of spreading knotweed because small pieces of root left in the soil can start a new colony. Another strategy is to smother the plants with heavy plastic or other material heavy enough to prevent the plants from growing through. Weight the barrier to keep the cover in place for 3–5 years. Continue to monitor the site after this is removed.

Knotweed plants may be controlled by application of a systemic herbicide containing glyphosate or triclopyr to the actively growing plants. Cut or break stems in early summer, then apply herbicide spray to the regrowing shoots in late summer. Cutting should be timed so that plants do not exceed three feet in height when sprayed. Use a bulk handheld or backpack-type tank sprayer. Dispense the product at the lowest pressure and largest droplet size possible to reduce the risk of exposure and drift. Stem injection is another technique for killing knotweeds (for example <http://www.jkinjectiontools.com/>). The advantage of these devices is that plants that are too tall to spray easily may be treated by injecting herbicide directly into the hollow stems. Injection methods reduce injury to desirable vegetation. Injection is also thought to lead to more immediate death of knotweed plants. Injection is more costly and labor intensive than foliar spray application. It also requires greater quantities of herbicide than foliar spray application, as each stem must be treated separately. Supplemental herbicide labels that give specific instructions for stem injection are available from the manufacturers.

Any weed management activity should include a plan to reintroduce native or desirable landscape or crop plants. This allows the area to recover and resist future invasions. Monitor the site for at least two years following treatment to ensure that the knotweed has been completely killed. Small stunted plants are often observed resprouting on site the year following treatment. These

may be removed with a repeat application of the treatment. Wait for one year after herbicide application before restoring the site to ensure that eradication is complete, so that replanted vegetation is not damaged by further herbicide treatment.



Figure 4. *Mowing knotweed patches does not kill them. Top photo: patch immediately after mowing. Bottom photo: Same patch two months later.*

Caution: Herbicides can be dangerous to the user and the environment unless used according to the label directions. Federal law requires that the user read, understand, and follow all label directions. Consult with a UAF Cooperative Extension Service office near you for more information on use of herbicides. Mention of a herbicide in this publication does not constitute a recommendation for use by the USDA, nor does it imply registration of a product under Federal Insecticide, Fungicide, and Rodenticide Act, as amended. Mention of a proprietary product does not constitute an endorsement by the USDA.

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Invasive Plant

Japanese Knotweed



Knotweeds (*Polygonum* spp.) are recognized as a significant invasive plant problem throughout much of the northern United States, British Columbia in Canada, and the United Kingdom. Escaped knotweeds have become established in many communities throughout southeast Alaska. Three species of particular concern in Alaska are: Japanese knotweed (*Polygonum cuspidatum*), giant knotweed (*P. sachalinense*), and a hybrid cross of Japanese and giant knotweed known as Bohemian knotweed (*P. x bohemica*). The three are often collectively referred to as “Japanese knotweed.”

Knotweeds were originally imported from Asia to North America as ornamentals and for use in stabilizing disturbed sites. Today these plants are propagated by unwary gardeners because they are easily established and form a dense hedge with attractive flowers. However, many gardeners regret their decision to plant it after it takes over the yard, spreading beyond where it was originally wanted. Due to its invasive characteristics, many states prohibit its use in landscaping. State and federal agencies, environmental groups, and private landowners are working to control Japanese knotweed in the Pacific Northwest, where it is now spreading into riparian areas throughout the western side of the Cascade Mountains.

Description

Invasive knotweeds are easily identified. They are herbaceous perennials with stems up to ten feet tall. Leaves are broadly oval to somewhat triangular, with a satiny texture. The hollow stems with their thickened nodes

resemble bamboo, but lack the long grass-like leaves characteristic of bamboos. Stems are also angled slightly at each node. In late summer plants produce branched sprays of tiny white flowers (Figure 1). In late fall the stems die back, but the underground stems, called rhizomes, survive the winter in a dormant state. In early spring, the rhizomes produce new rapidly growing shoots, which can quickly dominate the site. The roots and rhizomes of a knotweed plant form an extensive underground network, growing up to 45 feet in length (Figure 2).

Of about 80 species of the genus *Polygonum* that occur in North America, many are non-native species.

To differentiate the three species of particular concern for the maritime portion of Alaska use



Figure 1. Bohemian knotweed flowers and foliage detail.



Figure 2. Knotweeds form dense colonies

the following: Look at leaves from the middle of a stem, not the shoot tip leaves, which are highly variable. Hairs on the midvein on the underside of the leaf are diagnostic of the species. Use a 10X lens to view the backlit leaf bent over a finger.

- ▲ *P. cuspidatum*: Leaves are flat-based, with an acutely tapering (cuspidate) tip. Hairs are reduced to bumps.
- ▲ *P. sachalinense*: Leaves have a deeply notched base with a short, untapered tip. Hairs are multicellular, kinky, and long.
- ▲ *P. bohemica*: Leaves are intermediate between the other two species. Hairs are shorter, unicellular, with a broad base.

Life History

In North America, knotweed is primarily spread by root expansion and vegetative regeneration of rhizomes and stems. Very small fragments of root and stem can

produce new plants. Therefore, the spread of this plant is exacerbated by flood events and the movement of soil from knotweed infested areas. Pieces of root or stem moved with soil from excavation, landscaping, or roadside ditching might quickly establish new colonies where the soil is deposited (Figure 3). Fragments have also been spread by disposal of contaminated yard clippings. Reproduction by seed is less typical, but has been documented on many occasions.

Impacts

Knotweed is a concern for several reasons. Most notably it can grow along streambanks and even within streams where it restricts or blocks streamflow and degrades salmon spawning grounds. Once established in



Figure 3. Knotweed is commonly spread by movement of soil.

Japanese Knotweed

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Additional information about this plant can be obtained from your local UAF Cooperative Extension Service office, Alaska State Forestry office, Forest Service District office, or from:

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3301 “C” Street, Suite 202
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2770 Sherwood Lane, Suite 2A
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Or:
www.fs.fed.us/r10/spf
<http://akweeds.uaa.alaska.edu>
www.dec.state.ak.us/eh/pest/index.htm

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Cover Photo. This knotweed colony on a beach south of Juneau is over 400 feet long.