

Japanese knotweed

Polygonum cuspidatum / *Falopia japonica*

Fact Sheet

NH Department of Agriculture, Markets & Food, Division of Plant Industry, 29 Hazen Dr, Concord, NH 03301
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Common Name: Japanese knotweed

Latin Name: *Polygonum cuspidatum* / *Falopia japonica*

New Hampshire Invasive Species Status: Prohibited (Agr 3800)

Native to: Japan



Description: Perennial reaching 10' in height and width. Bohemian Knotweed (*Polygonum x bohemicum*) is similar. **Stems:** Greenish, hollow and jointed, similar to bamboo. **Leaves:** Alternate, broadly ovate, 3-7" long. **Flowers:** Small, whitish, forming panicles, August-September. **Seeds:** Calyx, brown, triangular. **Habitat:** Found in woodland sites, open spaces, ditches, roadsides, riverbanks. Prefers moist, well-drained soils. **Spread:** Stem & root fragments, and by seed. **Comments:** Aggressive, spreads quickly along surface waters and in right-of-ways. **Controls:** **Do not mow**, cut stems at base then smother by covering area with heavy-duty fabric/plastic, herbicides also recommended.

General Considerations

Japanese knotweed is a tall upright perennial with a large rhizomatous rooting system and hollow stems. The stems can reach heights of up to 10' (3 m) tall, with some records indicating they can grow to 13' (3.9 m) tall. The stems are glaucous and hollow with nodes / joints, similar to bamboo shoots. The older shoots tend to get woody near the base as they age. Leaves are alternate and broadly ovate with a flat-truncate base. Flowers emerge in late summer as small white to off-white racemes / panicles. Pollination is by insects, primarily by bees. The three-winged seeds (Calyx) were often thought to be sterile; however, a basic germination test showed that 95% of seeds collected from various populations spread

throughout NH were viable, but not seen as a significant vector for its spread. Seedlings often succumb to frost, desiccation, shade, predation and smothering.

The rooting system, which is composed of numerous intertwined rhizomes that can grow up to 3" (8 cm) in diameter, is the primary reproductive propagule that enables it to quickly spread to new locations. The rhizomes have the potential to spread laterally 23 to 65 feet (7-20 m) away from the crown. Most also have a deep taproot. Based on the extensive rooting system, the majority (2/3) of Japanese knotweed plants occurs below ground. The greatest advantage of having this type of rhizomatous rooting system enables the plant emerges in the spring earlier than most native plants. It also helps to ensure the plant will rebound if damage to the shoots occurs. In addition, perennating buds found on the root crown and along the rhizomes will also react to shoot damage, i.e. mowing/cutting, by sending up additional shoots along the root. This typically results in radial/clonal spread of the plant and increases its shoot density.

The movement of soil containing living and viable root/rhizome fragments is a violation unless the material shall be treated in a manner to render the propagules inert and non-viable. Root fragments as small as ½" (12.7 mm) have the ability to regenerate into a new plant creating adventitious roots and shoots within a short period of time. The larger the root fragment the greater its ability to survive. Regeneration has occurred as deep as 20" (50 cm).

Anecdotal evidence of seed germination by the NH Department of Agriculture, Markets & Food, Division of Plant Industry, indicates 95% germination rate from seeds collected throughout the state. This suggests that seed germination may be a factor in the plants ability to spread. However, field observations indicate that this is typically not a significant method of dispersal.

<i>Polygonum cuspidatum</i> / <i>Falopia japonica</i> Japanese knotweed	
Plant Type	Herbaceous - Perennial
Habitat Type	Road sides, disturbed sites, riparian habitats, wetlands
USDA Hardiness Zone	3-7
Rooting Structure	Rhizomes have a diameter of 3 inches (8 cm) and may spread 23 to 65 feet (7-20 m) laterally. Also has a deep central taproot
Environmental Impacts	Increase the risk of stream bank erosion. Loss of native species diversity.
Wildlife Impacts	Impedes the movement of wildlife
Leaf arrangement	Alternate and broadly ovate
NWI Ranking	UPL-FACU
Soil Type	Not limited by soil type
Soil pH Range	Can tolerate 3.5
Light Requirements	Prefers full sun, but grows in light shade
Growing Season	April - October
Growth Rate	Fast
Mature Height	13 feet (4 m) tall
Life Span	?
Reproductive Age	First growing season
Flowering Period	August to September
Flower Type	Dioecious
Pollination	Insects - bees
Seed Set	September - October
Seed Per Plant	50,000 to 150,000 per stem
Scarification Required	No
Cold Stratification	Yes
Seed Longevity	4-6 years
Seed Germination Rate	82%
Seedling Density	?
Other Propagules	Root fragments
Dispersal Vectors	Wind, erosion, roadside mowing, construction projects, movement of contaminated soil, dumping

Control Options

See the following control guide: [Control Methods for Japanese knotweed](#)

Sources

Mehrhoff, L., 2001. Invasive Plant Atlas of New England, Catalog of Species, *Alliaria petiolata*: http://www.eddmaps.org/ipane/ipanespecies/herbs/Polygonum_cuspidatum.htm

USDA Forest Service invasive species website: <http://www.fs.fed.us/database/feis/plants/forb/polspp/all.html>

Invasives.org: <http://www.invasive.org/browse/subinfo.cfm?sub=3414>

Control Methods for Japanese knotweed

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There are two affective methods for controlling Japanese knotweed (*Polygonum cuspidatum*), henceforth referred to as knotweed. It is advised that you evaluate the site conditions where the knotweed occurs to determine which method is best suited for control. One involves smothering and the other uses herbicide.

Smothering



(PHOTO 1)



(PHOTO 2)



(PHOTO 3)

If you wish to avoid the use of herbicides you may want to try smothering. Not only does it eliminate the need for chemicals, but there are also no soil disturbance/erosion issues. Here are the general guidelines:

1. Allowing the knotweed to grow in the spring without attempting to control it;
2. Cut the knotweed at the base and close to the ground around the first week in June (PHOTO 1) (this helps to weaken the rooting system);
3. Pile the cut stems on an impervious surface such as a tarp, plastic, pavement, etc. so they can dry out (after turning brown the stems can be composted);
4. Apply a layer of mulch, grass clipping or other cushiony material over the sharp cut stems to prevent them from puncturing the plastic (PHOTO 2, an old tarpaulin was used);
5. Cover the entire area with the biggest heavy-duty dark colored plastic (7mil thick), tarp or heavy duty weed fabric you can find. If more than one piece is used make sure to overlap the seams by about 2 feet. Also, make sure the cover material extends at least 5-10 feet beyond the limit of knotweed in all directions (PHOTO 3);
6. Weight the top of the tarp/plastic and seal the edges with rocks, sticks, soil, sand, mulch, wood chips etc. (PHOTO 3). Do not puncture the tarp/plastic as this can allow knotweed stems to survive. If there are any tears or holes, patch them. Covering with wood chips or mulch does several things including improving the visual aesthetics; blocks UV rays from the sun, which photo-degrades plastic; and insulates it from cold temperatures so it doesn't crack.
7. After 5 years the covering material can be removed and the area replanted.

Although this method may take a while, it has been very successful in sensitive areas here in NH.

Foliar Herbicide Treatment



(PHOTO 1)



(PHOTO 2)



(PHOTO 3)

To achieve 95%-100% control in one application, use the following guidelines:

1. Allow the knotweed to grow in the spring without doing any type of management until the first week in June;
2. Cut the knotweed at the base as close to the ground as possible during the first week of June (see PHOTO 1 above and note below);
3. Pile the cut stems on an impervious surface such as a tarp, plastic, pavement, etc. so they can dry out (after turning brown the stems can be composted);
4. Allow the knotweed resprout and again, do not do any management until after flowering, which usually occurs in early to mid September ;
5. Just after flowering (early to mid September) an herbicide application using a 5% solution of a glyphosate based product, such as Roundup, should be applied as a foliar spray using a pump, backpack sprayer or mist blower (PHOTO 2). Apply to thoroughly wet all foliage, but not to the point of runoff.

Read and follow the product label!

If resprouting occurs the following year then a re-treatment will be needed following the above described guidelines (As was the case in PHOTO 3).

Note:

Knotweed is herbaceous (non-woody), so although it may be imposing, the stems cut quite easily and can be done using motorized trimmers with metal blades, or hand tools such as a machete or stout sickle, even loppers and hand pruners work just fine. **Mowing is not recommended** as it can promote the spread of knotweed by moving vegetative propagules to new locations. A properly timed cutting will eliminate the tall canopy and make follow-up operations much easier. The best time to cut is in early June and once in the season is all that's required to weaken the rooting system. The best time to apply herbicides to knotweed is in the fall (September to October) once the flowers have died off. The two primary reasons for waiting are: honeybees voraciously forage on knotweed flowers and by waiting till after flowering the herbicide treatment will not coincide with their activity; and secondly, this is also the time of year when carbohydrates start flowing back down into the rooting system (rhizomes) for over wintering. Glyphosate is the herbicide of choice for controlling knotweed. It is effective, has no soil activity, it is readily available, and somewhat inexpensive.