YOU CAN HELP CONTROL JAPANESE KNOTWEED!

Learn to identify it (and other invasive plants):
- Carry this brochure or a Japanese knotweed Wildcard (WDNR # PUB ER-106V-2003) when you travel.
- Take a native plant class to discover your area’s rich diversity, how to distinguish Japanese knotweed from natives, and what to use to replace it after clone elimination.
- Get and learn to use a good plant identification guide— it’ll be fun!...

Report infestations in wild areas, especially along watercourses:
- Use WDNR’s Invasive Plant Report Form found at http://dnr.wi.gov/invasives/futureplants (under “How you can help!”) or
- Email or call Kelly Keams at kelly.keams@wisconsin.gov or 608-267-5066.

Help prevent the spread of Japanese knotweed:
- Clean footwear when leaving an infested site to slow seed dispersal.
- Be sure your local highway mowers and local area’s overall control efforts have minimal herbicide use.
- Help control Japanese knotweed in your area by eliminating established clones and working with others to develop your watershed’s control plan
- Be responsible and know control

where did it come from?

JAPANESE KNOTWEED

Polygonum cuspidatum (Fallopia japonica)

A new threat to Wisconsin’s waterways, lakeshores, and wetlands

- Work to get Japanese knotweed on your local noxious weed list, with incentives for prevention of the plant (early removal), and reasonable elimination requirements.
- Help control Japanese knotweed in your area by eliminating established clones and working with others to develop your watershed’s control plan
- Be responsible and know control
- Always get landowner permission for work on private property.

Spread through planting

Learn about Japanese knotweed (and other invasive plants):
- Learn about the many invasive plant species already in Wisconsin and how to help control them at http://dnr.wi.gov/invasives/plants.htm
- Learn about future invasive plants at http://dnr.wi.gov/invasives/futureplants
- Get educational materials from WDNR and UW-Extension to use with other people and groups in your area.

Urge elected officials to provide adequate funding for biological control research for all invasive plants:
- Help Wisconsin become part of international efforts to find effective, long-term control insects or plant diseases specific to Japanese knotweed and other invasive plants.

NOTE: References to pesticide and other products in this publication are for your convenience and are not an endorsement or criticism of one product over similar products. You are responsible for using pesticides according to the manufacturer’s current label directions. Follow directions exactly to protect the environment and people from pesticide exposure. Failure to do so violates the law.

web sites for more information

dnr.wi.gov/invasives/plants.htm

tcncweeds.ucdavis.edu/academy/polyugsp.html

www.invasiveplants.net/invasivePlants/Knotweed/
Knotweed.asp

www.nps.gov/plants/alien/facts/pes01.htm

www.invasiveplants.net/invasivePlants/Knotweed/Knotweed.asp


additional contacts:

- Tom Heutte photo, www.invasive.org
- Wisconsin Department of Natural Resources, 901 North Westmoreland Blvd., Madison, WI 53703 (608-267-5066)

- Wisconsin Department of Natural Resources (DN R), Livingston County Natural Resources, 1550 S. East St., Eau Claire, WI 54701.


- knotweed Wildcard (WDNR # PUB ER-106V-2003) when you travel.

- Learn to identify future invasive plants at http://dnr.wi.gov/invasives/futureplants

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- These biological controls can help us control invasive plants efficiently, with minimal herbicide use.

- Help control Japanese knotweed in your area by eliminating established clones and working with others to develop your watershed’s control plan
- Be responsible and know control
- Always get landowner permission for work on private property.

- Work to get Japanese knotweed on your local noxious weed list, with incentives for prevention of the plant (early removal), and reasonable elimination requirements.

- Work with landowners to remove pioneering plants.
- Dispose of all plant parts properly, especially near moving water.

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Wetlands, lakeshores, and waterways: a new threat

Japanese knotweed

Picture your favorite trout stream or canoeing river lined for miles with a tangle of rigid, bamboo-like stems ten feet tall. These canes confront you like prison bars, and to get through you have to use a machete to hack your way to the water’s edge. Once there, you find that the fish have disappeared and that you can’t move up or down the shoreline. You can enter the waterway only where you chopped your way in.

This is the unfortunate scene on some rivers in the Eastern United States now, and could be along many of Wisconsin’s streams and shorelines in the future if Japanese knotweed is allowed to begin colonizing them. Fortunately, we can take action now to ensure that our wild waterways, lakeshores, and wetlands remain open and accessible for future generations.

WHERE DID IT COME FROM?
The plant is a large, aggressive perennial from Asia that was exported without the insects and diseases that control it at home. Introduced to Europe by 1800, it has alarmed many countries with its rapid spread and difficult control. Japanese knotweed appeared in the US in the 1800s and has since spread across the eastern states. This plant now has a foothold in many states.

SPREAD THROUGH PLANTING

The experiences of other countries and states are being duplicated here and are cause for alarm. Brought to Wisconsin in the mid-1990s, the species is planted in urban areas around the state. However, many landowners now regret having it on their land, as it usurps garden space and encroaches on property. One unhappy man in Green Bay has been mowing this plant for forty years, unable to eliminate it from his lawn!

It is now reported from most counties in the state (see state map) Once established, this plant defies control, with roots that grow as deep as 6 feet and rhizomes (horizontal roots that send up shoots) that grow out to 60 feet. Though it dies to the ground with the first frost, every spring it sends up numerous early shoots along the whole length of these rhizomes. The rhizomes can also push their way under streets and up through pavement. In Bayfield, rhizomes have grown under streets to infest neighboring properties. A business in the United Kingdom spent over $600,000 to replace its parking lot after extensive damage from rhizomes, and one Welsh family even found the plant invading its living room as it pushed up from beneath the floor!

Wisconsin is now poised to suffer an explosion of Japanese knotweed in wetlands, along stream banks, and lake shores unless we act to prevent the spread.

Giant knotweed, Polygonum sachalinense (Fallopia sachalinense), is another similar exotic knotweed now found in several northern Wisconsin counties. This plant grows to 15 feet tall and has larger leaves than Japanese knotweed. Less important than vegetative spread, seed production and fertility in both species is uncertain. Unfortunately, these species hybridize and their offspring can produce viable seeds. Both plants and all hybrids must be eliminated or controlled, especially due to the possibility of increased dispersal from viable seed which could vastly complicate exotic knotweed control. The seeds need open habitat and moist soil to germinate.
IDENTIFICATION

How to identify Japanese knotweed:

- Upright, semi–woody, shrub–like herb that can grow 10 feet tall
- Stems: resemble bamboo, smooth and hollow between swollen joints that have a membranous sheath, often tinged with red, with few branches
- Winter stems: usually stout, persistent, rust–colored and appear very numerous
- Leaves: variable, normally about 6 inches long by 3 to 4 inches broad, heart shaped to somewhat triangular with a pointed tip
- Flowers: very small, greenish–white, arranged in attractive, branched sprays in late summer
- Fruits: small and winged, with tiny, triangular, shiny seeds arranged in attractive, branched sprays
- Grows in dense stands that often line high light areas such as stream banks and moist roadways, and may be up to several acres in size
- Sprouts very early in the spring and grows fast, quickly towering over other plants

CONTROL METHODS

At this time eradication of Japanese knotweed from the landscape is unlikely since it grows in so many locations and its clones are so difficult to eliminate. Thus, control on a watershed scale should be considered. High priority places should be given to sites where it has established along water courses, starting at the top of the watershed. High priority should also go to eliminating any plants producing seeds, regardless of location.

Control of clones

Control is possible, though not easy because large clones are usually a single plant with an extensive root system. Find the clone and cut the plants before they become large clones! Eradication of even small patches rarely takes less than a year, even with multiple attempts. The methods you choose will depend on patch location, resources available, etc. Most control measures result in vigorous resprouting from rhizomes, so whatever method you use, watch the area 2 to 7 years out from the obvious infestation edge to be sure rhizomes are not sending up new shoots outside of the controlled area. All removed plant material must be dried, removed from the site and burned, or put into a capped landfill.

Manual/Mechanical

In many cases continual cutting of Japanese knotweed has failed to eliminate clones of the plant, though in some small infestations cutting the whole clone at least twice a month in the growing season for two to three consecutive years has eliminated it. If cutting works, it may be the only method available for very sensitive areas where herbicides are unwelcome. Easy site access is necessary for frequent cutting work, and the labor involved usually regulates the cutting to small sites. Hand cutting works in sensitive sites, but mowing or other mechanical cutting is much easier. Cut as close to the ground as possible. Re-examine these sites for several years to be sure the clone does not return. Cutting plant tops as flowering begins can eliminate seed production for the season.

Digging and pulling roots may also eliminate young, small clones, especially in loose soil, though root fragment usually remain to produce new plants. Tilling the soil will not control knotweed, but does cause re-sprouting that can help drain the roots of energy. It can be combined with a number of other later control measures, including herbicides. Covering the soil surface to eliminate light to the plant has not been very successful or economically viable, though it may work for smaller, isolated patches when done carefully. Covering the soil with whole growing season might be required.

Herbicides

Herbicides are currently the most effective control option for Japanese knotweed. Many different chemicals have been tried with varying results; all have advantages and disadvantages. Be sure to use herbicides in accordance with their label instructions to ensure safety and efficacy. Different methods and rates of application available for each herbicide will help dictate how and when it is used. More herbicide is not always better; too much active ingredient may kill plant tissue before translocation to its roots, rendering it useless in killing the plant. Always try to use the least amount of herbicide that will do the job. Field test your chosen herbicide and rate of delivery to ensure best results. Apply them only on sites listed on the label, and take extra care using chemicals over or very near water. Herbicide use in these areas in Wisconsin always requires a permit from your regional WDNR Aquatic Plant Manager.

- Injecting hollow Japanese knotweed stems with glyphosate or triclopyr herbicides is a new type of application that promises to be the most effective and environmentally sound, especially in wet sites since there is little chance of chemical water contamination. It may also be the method of choice for hard to reach places since it might kill a clone in just one or two applications if all stems are treated. A new injection tool (~$200) is available that delivers a precise amount of herbicide; 5 ml being the optimal amount per stem for both glyphosate and triclopyr. Label restrictions on rates must be followed that might dictate how many stems can be treated in an area. For example, a minimum of 1,450 stems per acre can be treated in this way with 5 ml of Rodeo per stem. The minimum stem diameter for injection is ½ inch.

- Foliar spraying is a common way to apply herbicides, though it carries a risk of damaging other plants from overspray of non–selective chemicals, unless done carefully and in still wind conditions. Many herbicides have been effective, including glyphosate (Rodeo, Aquamaster, and Round-Up, among others), triclopyr (Garlon 3A, etc.), 2,4-D, picloram (Tordon), and Imazapyr (Arsenal). Consult with your local DNR or UW Extension agent, web sites listed below, and manufacturers for advice on choosing the best for your site and application. Be sure to use a legal adjuvant for increased effectiveness.

A variety of different rates of spray application have been used and reported on the web sites listed below. Most work has been done with glyphosate and triclopyr at rates of from 5% (for Garlon) to 8% concentration for both glyphosate and triclopyr. Unfortunately, reported results vary, making exact recommendations difficult.

- Timing is important in foliar applications, with flower bud stage being the best for deep rooted perennials. The most practical time for Japanese knotweed, however, is when it is only 3 to 6 feet tall and easy to spray, but this is too early in summer for the herbicide to be most effective. Instead, consider cutting all the stems once or twice to retard their growth in height in order to apply the herbicide at the clone’s best developmental stage late in summer, but on short, conveniently sized stems.

- Herbicides may also be applied directly on all stems in a clone cut just above ground late in summer. Sometimes stems are cut just below the second joint above the ground and herbicide is poured into the hollow stem below. Follow label instructions. In each case, follow–up foliar spraying might be necessary.

Integrating methods

Combining methods, such as early cutting and later herbicide use as suggested above, allows more options and flexibility. Digging, pulling, or tilling before spraying might also increase the effectiveness of herbicides. Stems too small to inject might have to be spot sprayed.

Biological Control

Surveys in Japan of insect and fungal pests of Japanese knotweed have found many insect species and a number of fungal pathogens that are promising biocontrol organisms because they appear to feed exclusively on the plant. These reduce the plant to an innocuous member of the flora there and could do the same elsewhere. The research on the safety and effectiveness of biocontrol organisms for Japanese knotweed in Europe is underway and focusing on Luxus weevils. More than 700 European plants have been tested so far with no crossing feeding by the insects. More than 70 plants have also been successfully tested with another insect species and more than 50 plants with a leaf spot fungus. Biocontrol may be our only hope for keeping the plant in check.

The widespread planting of Japanese knotweed, its ability to spread easily to new sites, and its increasing frequency in wild places suggest it is starting to follow a trajectory similar to other serious invasive plant species. It is likely to begin expanding at an alarming rate if nothing is done to prevent it from doing so.

Manual, mechanical, and chemical control methods described below can slow the spread of the plant, but have proven inadequate to stop its spread in Europe, as is likely here as well. European workers are now banking on biological control as the critical long–term control method.