



Thurston County Noxious Weed Control

Knotweed control guide

Polygonum bohemicum, cuspidatum, polystachyum, sachalinense

Description:

Four species of knotweed are expanding exponentially in the Pacific Northwest. Until recently, three of the species (Japanese, Giant, and Bohemian) were all considered to be one species, Japanese knotweed. Research has shown that a cross between Giant and Japanese has now created the specie Bohemian knotweed, which is now the majority of the infestations in Thurston County.

The major differences in the species are: Giant can reach up to 15 feet in height, while Japanese and Bohemian reach “only” 10. Himalayan could be considered a dwarf species reaching “only” 6 feet in height. Another difference between the species is the leaf shape and size. Giant leaves can be nearly a foot across while Japanese is smaller. Giant leaves have a distinctive heart shape; Himalayan knotweed leaves are much smaller and linear without a heart shape.



Stems of knotweed are smooth (bamboo-like), stout, and swollen at the joints where the leaf joins the stem. The stems are hollow, but may be water-filled depending upon soil moisture levels and where it is growing. The small, pale greenish-white flowers occur in branched sprays in summer and are followed by small winged fruits. When they appear, seeds are triangular, shiny, very small, about 1/10 inch long. Knotweed spread is mainly by rhizomes and stem fragments; however seed spread is also a concern. Knotweed seeds are low in viability. Recent research shows 6-33% germination rate from seeds collected locally. This is an unusually low germination rate.

Plants grow quickly and often form large thickets. The roots are rhizomes that may extend 30 feet from the parent plant and grow as much as 7 feet below the soil. Buds along the length of rhizomes may develop into new stems depending upon environmental conditions. Digging around the base of established plants encourages new vegetative buds to develop along the rhizome system. Knotweed is also able to spread by sprouts arising from stems that have been severed from the mother plant.

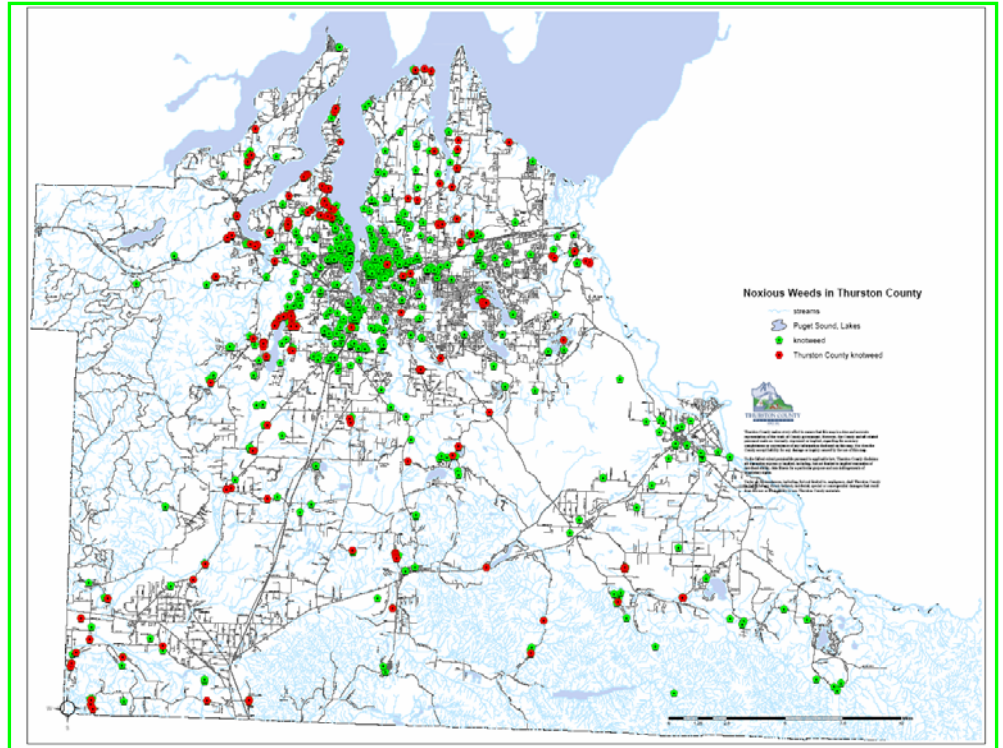
Impacts:

Knotweed severely degrades native plant and wildlife habitat. It spreads quickly to form dense thickets that exclude native vegetation and greatly alter natural ecosystems. Root fragments as small

as ½” can form new plants that grow into colonies. Knotweed reproduces vegetatively very effectively. Floodwaters sweep plants into rivers and creeks, then fragment and disperse knotweed roots throughout the floodplains and cobble bars. The fast growing knotweed then takes advantage of the fresh disturbance to colonize growing space. Because it grows faster than native species, it quickly shades them out. Roadside ditches and irrigation canals can also be colonized the same way.

Distribution:

Knotweed can tolerate a variety of adverse conditions including full shade, high temperatures, high salinity, and drought. It is found near streams and rivers, in low-lying areas, waste places, utility rights-of-way, and disturbed sites. Surveys in Thurston County for all 4 knotweed species have been conducted over the past several years revealing over 800 infestations.



In 2005 the Thurston County Noxious Weed Control Board selected knotweed for control on all transportation rights of way and gravel mines throughout Thurston County.

What you can do:

Most control methods need to be applied over several years to be successful.

➤ Manual Techniques

Removing the knotweed from the soil is nearly impossible due to the root system that can extend seven feet deep and thirty feet long. Soil that is disturbed with knotweed infestations should be monitored closely as the roots systems will break apart and new plants will emerge.

Cutting the stems once will result in new shoot emergence. However, repeated cutting may eventually tax the plant of its resources. Cut each time the plant reaches six inches tall.

At a minimum cut at least 10 times per season (twice a month April through August) and monthly cuttings afterwards, for 2-3 years is necessary.

You may not want to attempt manual removal of knotweed unless you are willing to continue the process for the entire growing season and continue for several additional seasons. **Research has shown that cutting once per month from April to October resulted in an increase in stems after 3 years.**

All cut knotweed stems need to be disposed of in sturdy plastic bags to ensure that plant fragments get buried and cannot grow.

There are anecdotal reports of successful control by covering plants with black plastic, cardboard, carpet pieces, plywood, and similar materials; however, there are no published reports of controlling knotweed with covering. In several experiments in Thurston County, a plastic tarp was used to cover a large stand of knotweed (in the spring, after new shoots were cut down). It was found that the plant did not grow under (or through) the tarp, but side shoots continued to appear around the edges. Many hours are required to maintain the rigorous schedule of removal that research suggests is needed for full control.

➤ **Biological Techniques**

Research has just begun in Japan to locate natural enemies of knotweed. Several arthropod and fungal agents were found. Quarantine and testing on other species closely related to knotweed will be necessary prior to any possible introduction to North America. The possibility of finding an effective natural enemy and introducing it in the near future are low at best. The effort will require millions of dollars in research, and decades to pass all testing requirements.

➤ **Herbicides**

Use of herbicides may be appropriate when other strategies are ineffective. Thurston County uses herbicides that are approved by the Environmental Health Division after careful screening for the following criteria:

- Least hazardous to human health;
- Minimal impact to non-target organisms and the environment;
- Best preserves the natural plant controls at the site;
- Most likely to produce permanent results;
- Effective technique and cost-effective in short and long term.

Products

READ AND FOLLOW ALL LABEL DIRECTIONS AND RESTRICTIONS. Use of brand names does not connote endorsement and is for reference only; other formulations of the same herbicides may be available under other names.

- Because knotweed grows in wet areas that threaten riparian sites and because of difficulty in controlling in these sites contact a licensed applicator to develop a control plan. Only spot applications are recommended.

Currently, Thurston County has four herbicides that are approved for knotweed control – Roundup™, Aquamaster™, Habitat™, and Arsenal™. Aquamaster™ (active ingredient is glyphosate) and Habitat™ (active ingredient is imazapyr) are aquatic herbicides that are appropriate for use within 50 feet of a water body. **Aquamaster and Habitat are aquatic herbicides restricted for use in Washington State to licensed applicators only.**

Roundup™ (containing glyphosate) and Arsenal™ (containing imazapyr) are terrestrial herbicides for use on plants at least 50 feet away from a water body.

Arsenal™ may not be available to homeowners in stores and may require a licensed applicator to obtain and apply it.

Research of the following products has shown 68-94% effective control of knotweed.

- Spot applications with glyphosate products are effective. Spot application means the herbicide is applied only to the plants and not on the surrounding plants or soil.
 - Foliar applications of glyphosate:
 - On terrestrial (dry) sites, mixes of up to 2% product in water carrier may be used for spray-to-wet applications to perennial weed foliage. Only concentrate formulations of Roundup™ will be effective, pre-mix roundup products do not contain a percentage of formulation high enough to be effective. Look for a brand with at least 40% glyphosate.
 - The application of glyphosate to wet sites may require additional licensing from applicable regulatory agencies. These control recommendations for knotweed are based on results from supplemental research efforts performed by county, state, and federal agency personnel as well as private organizations and landowners. There is a general consensus in the Pacific Northwest that a minimum of 2.5 to 3% glyphosate product is necessary to adequately control knotweed and that, at that rate, repeat applications to re-growth will be necessary over the subsequent two growing seasons. Aquatic glyphosate products require the addition of a surfactant at 0.25% v/v prior to application.
 - Stem injection/cut stem treatment of glyphosate:
 - Aquamaster™ has recently been issued a supplemental label approved for knotweed control using a stem injection or cut stem treatment. The label for Aquamaster, limits the number of stems to be treated per acre at 1514 at 5 mls per stem.
 - Roundup Pro Concentrate™ has recently been issued a supplemental label for knotweed control using a stem injection treatment. The supplemental label, limits the number of stems to be treated per acre to 1600, at 5 mls per stem.

