OSU Oregon State University Extension Service

Invasive Weeds in Forest Land

Knotweeds *Polygonum* spp.

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Japanese knotweed *Polygonum cuspidatum*

Giant knotweed *Polygonum sachalinense*

Japanese–Giant knotweed hybrid *Polygonum* x *Bohemicum*

Japanese and giant knotweeds were introduced to North America in the late 1800s as ornamentals but soon escaped into the wild. They are particularly invasive along streams, roadsides, and waste areas. Large, spreading patches of knotweed can completely dominate and displace native species in open sunlight. Erosion can increase on riverbanks or floodplains invaded by knotweed when aboveground parts die back and wash away each winter, leaving bare soil. Knotweed thrives in a variety of habitats but is most prolific and invasive in moist, open areas (Figures 1a–b).

Figures 1a–b.—Giant knotweed thrives in moist, open areas.

Description

Knotweed is an herbaceous perennial that emerges from March through April from extensive rhizomes, growing very rapidly to 6 to 16 feet tall by midsummer. Infestations are commonly either Japanese knotweed or Japanese–giant knotweed hybrids.

Knotweed is dioecious (separate male and female plants). It reproduces by seed, by spreading rhizomes, and by vegetative sprouting from fragments of shoot or rhizome. Stems (canes) of knotweed are upright, hollow, jointed, and unbranched. Leaves are broad, oval to heart-shape, and 2 to 11 inches long by 2 to 9 inches wide (Figure 2). Greenish white flowers, each 0.08 to 0.12 inch wide and arranged in dense clusters (panicles), originate where leaves join stems. Knotweed is most commonly spread by floodwater, animals, and human activity (e.g., cut-and-fill waste) that disperses rhizome or shoot fragments, which form new plants.

Figure 2.—Giant Japanese knotweed leaves and flowers.

Management options

Control of knotweed is difficult but possible using a variety of methods, depending on the size and scope of the infestation.

Success with large-scale control programs or eradication of larger infestations (greater than 1,000 square feet) will almost certainly require a strategy that incorporates herbicides. Regardless of specific weed control methods, long-term success in controlling knotweed likely will require establishing and maintaining dominant desirable vegetation. Key steps include thorough and repeated treatments, planting or favoring desirable vegetation, and monitoring and spot treating any weed recurrence.

If long-term desirable vegetation does not establish on the site, knotweed or common associates such as Himalayan blackberry and reed canarygrass are likely to reinvade. Establishing a conifer forest may be the most promising long-term strategy, as knotweed is not considered invasive under dense forest cover.

Biological control

Some biological control agents are very promising, but none is available yet.

Chemical control

Note: Before you apply herbicide on forest land, you must file a "notification of operations" with the Oregon Department of Forestry at least 15 days in advance.

The following information about herbicides is only a brief summary; consult your local Extension agent or Oregon Department of Agriculture representative for specific recommendations for your situation. Read and follow the herbicide label carefully. Before spraying over or around seedlings, ensure the chemicals pose no hazard.

Foliar sprays of glyphosate, triclopyr, or imazapyr are 80 to 100 percent effective if applied to fully developed knotweed plants at flower-bud to flowering stage (usually August to October).

Injecting 3 to 5 ml (0.1 to 0.17 fl oz) of glyphosate in every stem at the first aboveground internode has effectively controlled patches of knotweed from June to September, but current labels greatly limit this application for large infestations. The suggested injection rates are listed under a Special Local Needs label which the applicator must apply for and have in hand during application.

Follow-up treatments with these herbicides for 2 to 3 years may be required for complete control. Any herbicide treatment program should rotate among chemicals to prevent developing herbicide-resistant strains of the weed.

For details on chemical control, refer to the current edition of the *PNW Weed Management Handbook* and to *Herbicide-resistant Weeds and Their Management*, PNW 437. Both are available from OSU Extension http://extension.oregonstate.edu/catalog/

Use pesticides safely!

- Wear protective clothing and safety devices as recommended on the label. Bathe or shower after each use.
- Read the pesticide label—even if you've used the pesticide before. Follow closely the instructions on the label (and any other directions you have).
- Be cautious when you apply pesticides. Know your legal responsibility as a pesticide applicator. You may be liable for injury or damage resulting from pesticide use.

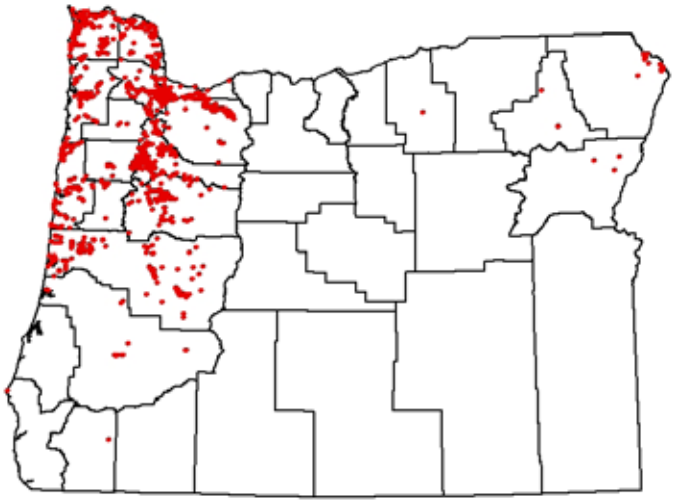

Figure 3.—Giant and Japanese knotweed distribution in Oregon. Map: Weedmapper.

Mechanical or manual control

Control via cutting, mowing, and/or uprooting may be possible on small, isolated knotweed patches if treatments are thorough and repeated often; for example:

- Where soils are soft, uprooting every plant in late summer for 3 consecutive years
- Cutting or mowing twice a month for several years, to convert to grassland
- Clearing aboveground knotweed, and removing rhizomes from the soil using heavy equipment

In all cases, very thorough and intensive manual or mechanical treatment is required. To prevent further spread of knotweed, dispose of all knotweed plant materials properly—completely dry, burn, and bury at least 10 feet deep, or dispose of at a landfill.

Grazing

Heavy grazing with goats or livestock can control knotweed about as well as repeated cutting does. After mechanically or chemically treating knotweed-infested areas and converting them to pasture grasses, continuous livestock grazing can give effective long-term control.

For more information

Oregon Department of Agriculture, Plant Division, Noxious Weed Control.
http://oregon.gov/ODA/PLANT/WEEDS/

Weedmapper, a collaborative project of Oregon Department of Agriculture, Oregon State University, U.S. Bureau of Land Management, and U.S. Forest Service.
http://www.weedmapper.org/

California Department of Food and Agriculture, Encycloweedia.
http://www.cdfa.ca.gov/phpps/ipc/weedinfo/

Nature Conservancy, Global Invasive Species Initiative.
http://tncweeds.ucdavis.edu/worst.html

USDA National Invasive Species Information Center.
http://www.invasivespeciesinfo.gov/