

T.I.P.S.

Targeted Invasive Plant Solutions

16 Invasive Knotweeds



Invasive Knotweeds

Although the primary knotweed species found in BC is Japanese knotweed (*Fallopia japonica*), Bohemian knotweed (*Fallopia x bohemica*), Giant knotweed (*Fallopia sachalinensis*), and Himalayan knotweed (*Polygonum polystachyum*) are also present and all four species are considered invasive. Since all four species are similar in appearance, biology, impacts, distribution, and methods of control, they will be discussed under the general title of "knotweeds". **Note:** Bohemian knotweed is the hybrid of Japanese and Giant knotweeds. During the 2006 identification survey it was suspected that the most dominant knotweed species in BC was the hybrid Bohemian.

Legal Status

- ✓ Invasive Plants Regulation, *Forest and Range Practices Act*

Distribution

Knotweeds are currently found in the southwest coastal region, the Shuswap, Kitimat, Stikine, Skeena, Columbia, Okanagan, and Kootenay areas, as well as the Queen Charlotte Islands. Additional plants may exist in many gardens in communities across BC.

Identification

Flowers: Small, white/green flowers grow in showy, plume-like, branched clusters along the stem and leaf axils (joints).

Stems: Stems, or canes, are hollow with varying thicknesses, upright, and bamboo-like with reddish-brown/red speckles and thin, papery sheaths. Stems are generally 1-5 m in height and grow in large, dense thickets. Stems may persist through the winter as bare, reddish-brown stalks.

Leaves: Predominantly heart- to triangular-shaped on all species except Himalayan, which are elongated and tapered. Leaves on all species except giant knotweed are 8-10 cm wide and 15 cm in length. Giant knotweed leaves are generally twice the size of the other 3 species. A distinguishing feature for Japanese knotweed is the zigzag pattern in which leaves are arranged along the plant's arching stems.

Fruits: Production of fertile seeds is rare in most knotweed species due to a disproportionate ratio of female to male plants: Japanese being female; Giant being male; and Bohemian being the offspring of the two. Bohemian knotweed produces viable seeds that are dispersed along riparian areas via the water column.

Similar Native Species: Elderberries (*Sambucus spp.*) have lance-shaped, pointed, and sharply toothed leaflets.



Current Distribution in BC



Dots indicate species presence as recorded in IAPP (accessed March 15, 2008).



Ecological Characteristics

Habitat: Thrive on freshly disturbed soil in roadside ditches, low-lying areas, irrigation canals, and other water drainage systems. Also found in riparian areas, along stream banks, and in other areas with high soil moisture. Able to grow in partial shade or full sun

Reproduction: Perennials that spread rapidly vegetatively. Rhizome system may extend from a parent plant up to 20 m laterally and to a depth of 3 m. Root and stem fragments as small as 1 cm (or 0.7 grams) can form new plant colonies. Fresh stems produce shoots and roots when buried in a soil medium or floated in water. Stems submerged in water can produce viable plants within 6 days.

Dispersal: Primarily from root (rhizomes) and stem fragments that are dispersed by human activities or by water to downstream areas.

Japanese knotweed (*Fallopia japonica*)
Bohemian knotweed (*Fallopia x bohemica*)

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Giant knotweed (*Fallopia sachalinensis*)
Himalayan knotweed (*Polygonum polystachyum*)

Impacts

Economic: Can reduce or eliminate access to water bodies for recreational activities including fishing, swimming, boating, canoeing, and kayaking.

Ecological: Are of particular concern in riparian areas and areas prone to seasonal high water or flooding. Plants emerge early in the spring and produce large leaves that can shade out other plant species. Infestations can dominate stream banks and reduce sight lines along roads, fences, and right-of-ways. Knotweeds threaten biodiversity and disrupt the food chain by reducing available habitat and increasing soil erosion potential (roots do not hold soil well). Stream banks are at particular risk as exposed knotweed roots break off and float downstream to form new infestations.

Integrated Pest Management

IPM is a decision making process that includes identification and inventory of invasive plant populations, assessment of the risks that they pose, development of well-informed control options that may include a number of methods, site treatment, and monitoring.

Prevention

- Monitor for knotweed on both disturbed and undisturbed sites.
- Do not purchase, trade, or grow knotweed. Instead, grow regional native plants as they are naturally adapted to the local environment and are non-invasive.
- Ensure soil, gravel, and other fill material are not contaminated.
- Minimize soil disturbance during activities and re-vegetate exposed soil as soon as possible.
- Avoid unloading, parking, or storing equipment and vehicles in infested areas.
- Remove plants, plant parts, and seeds from personal gear, clothing, pets, vehicles, and equipment. Wash vehicles, including tires and undercarriage, and equipment at designated cleaning sites before leaving infested areas.
- Bag or tarp plants, plant parts, and seeds before transporting to a designated disposal site (e.g. landfill).
- Take special care when controlling knotweed near streams, or ditch lines, to prevent the movement of plant parts downstream.
- Maintain or establish healthy plant communities that are resistant to invasion by invasive plants.

Mechanical Control

- Mowing and cutting may be effective if done close to the ground, twice per month between April and August, then monthly until the first frost. Repeat this treatment for at least 5 years to exhaust root reserves.
- Mechanically controlled areas should be monitored throughout the growing season to ensure new infestations do not develop from root fragments.
- **Disposal:** All cut plant parts should be incinerated or undergo deep burial at landfill. Care should be taken to ensure that plant parts are not distributed during transport.

Biocontrol

- There are no biocontrol agents available for the control of invasive knotweed species. Screening research for potential biocontrol agents was initiated in 2007.



W. Tyrrell



S. Craig



J. Craig



J. Craig



J. Hallworth

Chemical Control

Herbicide recommendations and use must first consider site characteristics and be prescribed based on site goals and objectives. Herbicide labels and other sources of information must be reviewed before selecting and applying herbicides.

- Effective herbicides include: imazapyr, glyphosate, and triclopyr.
- Stem injections/cut surface treatments are most effective in the summer or fall, while foliar applications are most effective at the late bud stage.
- Application of herbicides on Crown land must be carried out following a confirmed Pest Management Plan (*Integrated Pest Management Act*) and under the supervision of a certified pesticide applicator.
www.env.gov.bc.ca/epd/epdcpa/ipmp/index.html

References and Links to Further Information

- BC Ministry of Forests and Range, Invasive Alien Plant Program. www.for.gov.bc.ca/hra/Plants/application.htm
- *Controlling Knotweed in the Pacific Northwest*. The Nature Conservancy. <http://tncweeds.ucdavis.edu/esadocs/polybohe.html>
- E-Flora BC, an Electronic Atlas of the Plants of BC. www.eflora.bc.ca
- *Field Guide to Noxious Weeds and Other Selected Invasive Plants of British Columbia*. BC Ministry of Agriculture and Lands. www.agf.gov.bc.ca/cropprot/weedguid/jknotweed2.htm
- *King Country Noxious Weed Control Program Weed Alert: Invasive Knotweeds*. King County, Washington. <http://dnr.metrokc.gov/wlr/lands/weeds/pdf/knotweed.pdf>
- *Key to Identification of Invasive Knotweeds in British Columbia*. The Ministry of Forests and Range. <http://www.for.gov.bc.ca/hra/Plants/index.htm>