

Breadline Bluff Trail Head

Juneau 2010

Bohemian Knotweed

Polygonum x cuspidatum/ Fallopia x bohemica

POBO10

GPS Location 58.3000,-134.40463

Location notes: The beginning of the Breadline Bluff Trail Head ~20 mile. The trail is maintained by CBJ, but this infestation is on the edge of the newly constructed parking lot, DOT-ROW



This stand was discovered when Bohemian Knotweed was starting to spread in new clumps “out the road.” This stand consists of what appears to be three separate root clumps, but could very possibly have roots and rhizomes that are connected and intertwined. Several summers ago the entrance to the Breadline Bluff Trail had been rebuilt with the installation of the parking pad. It is possible this infestation was brought in the fill material or machinery used to build the parking pad.

A water draining culvert was installed at the beginning of the trail and covered with gravel. Just below this culvert is where the knotweed seems to be spreading the fastest, down the steep hillside alongside the drainage water into the intact native forest.

It is not too late to prevent this invasive plant from taking over the hill side, but it could continue to spread and outcompeting native vegetation and biodiversity.

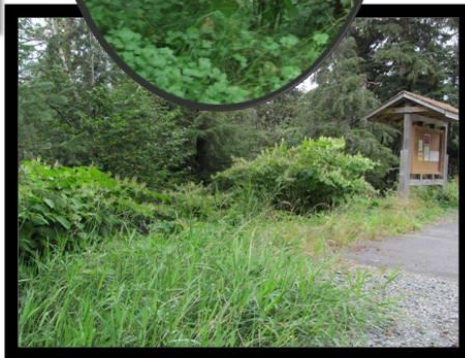
- Manual control of knotweed without the use of herbicides would require an estimated 10 visits per growing season to chop and dispose of clippings, for 3-7 years. Estimated travel time, chop, and disposal time for each visit would be a minimum of 3 hours.

Estimated ~30 hours per season x 7 years

- Herbicide application is much less labor in the field, but more in the office. We would need to get permission from CBJ and DOT ROW, with a DEC permit for injecting with Aquamaster. This method seems to be the best option for killing knotweed in a water logged rain forest where the herbicide is used at 100% strength, 3-5 ml is then injected in the second or third nodule at the end of the growing season, before the first frost. There is little chance of drift and it is recommended to use an herbicide designed to attach to soil rather than water particles.

To be done in August 2011

- estimated ~8-15 hours labor for injection and stem removal
clipping and painting herbicide on stalks too small to inject
- Aquamaster (\$125 for 2 gallons) probably using up to 1 gallon (\$63)
- Mileage and shipping costs
- Follow up August 2012 and inject or paint any remaining stems. This should do it.





Anchorage CES recommendations

Manuel Control:

Hand Cutting: using a machete, loppers or pruning shears, cut the stems down to the ground surface as often as possible, but **at least every two weeks** from **April** (or as soon as it appears) **through August**. Sprouting slows during late summer, so you can reduce cutting frequency, but try not to let the plants ever exceed 6" (15cm) in height. Pile the cut stems where they will dry out, bury them, or burn them.

Digging/Pulling: if knotweed is growing in soft soil, pull the plant and rhizomes up by the root crown and remove as much of the root system as you can. This treatment **will not kill knotweed** in one treatment, but will reduce the root mass. Each time new shoots sprout (start looking a week after pull and search up to 20 feet away from the original plant), uproot and pull out as much of the root as you can each time. Tilling will create many resprouts. Be sure to carefully dispose of any root material.

No matter how you do it, manual control is going to be a lot of work. If you do try and control knotweed manually, be sure you practice the four T's: be timely, tenacious, tough and thorough. As always, carefully dispose of any root material.

Anchorage CES recommendations

Herbicides:

Many herbicides have been tried on knotweed, and many can work and work safely if used correctly. But just like any method, each **can fail if used incorrectly**. Using herbicides correctly means not only using the right herbicide, but the right concentration, the right adjuvant (additives that make the herbicide work better), the right application method, the right timing and of course, using them carefully. With many, if not all herbicides, **when you apply them is as important as how you apply them**. Carefully read and follow the directions on the label.

Foliar Spray: Whether using a small hand held, backpack or large volume sprayer, spraying herbicide on the leaves is the fastest and easiest way to apply herbicides. It also is the messiest. The general rule is the faster the delivery rate; the more likely it is to drift (i.e. hit nontarget plants or the soil). Herbicides recommended for foliar-spray control of knotweed in an area **not** adjacent to water include: dicamba (such as Banvel, Clarity) and glyphosate (Aquamaster, Rodeo, Roundup) or imazapyr (Habitat, Arsenal). Talk with a local expert for advice on which to use, the appropriate rate, and time to spray. When using herbicides always read and carefully follow direction on the label.

Stem Injection: This method has been found to be highly effective, 95% or more control in one year. Though, stem-injection is very time and labor intensive because every stem needs to be injected. Stems <0.5 inches cannot be effectively injected, but clipped and carefully painted with herbicide. Use a stem injection gun or similar tool. Inject 3-5ml into stem between first and second or second and third nodes if stem is too woody to inject. The best time to stem-inject is from mid-June to first major frost.

To **successfully kill knotweed** with herbicides, the **active ingredient must move** from the **leaves, deep into the root system** (be translocated) at sufficient concentration to kill the root tissue. For successful translocation to occur, some herbicides should be used at the lowest effective concentration in order to avoid damaging the above ground tissues of the plant before the herbicide is well dispersed in the root system. Using a combination of manual/chemical control options increases the level of control achieved.

Digging or pulling prior to spraying may also help by increasing the shoot to root ratio. When mixing, applying or disposing of herbicides always follow the instructions on the label and wear appropriate safety gear.

Literature referenced

King County Noxious Weed Control Program. 2007. Knotweed Biology and Control. URL your.kingcounty.gov/dnrp/knotweed-biology-and-control.pdf (accessed on May 25, 2010).

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William, R.D., D. Ball, R. Parker, J.P. Yenish, T.W. Miller, D. Morishita, and P.J.S. Hutchinson. 2006. Pacific Northwest Weed Management Handbook.