A Community-based Program for Management of Japanese Knotweed:
Using the Plants to Fund their Own Removal
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Japanese knotweed, like a handful of other invasive plant species, is tenacious and persistent on the one hand, but economically useful and often medicinally beneficial on the other. The purpose of this write-up is to concept treatment programs that accomplish the removal objective while also providing a maximum of benefits to reward the effort. Landowners and town leaders know that invasive species are impressive colonizers, and without a comprehensive plan to manage large corridors on the landscape, re-infestation is virtually unavoidable. Thus, a community-wide approach is absolutely necessary.

Every infestation site is unique with particular vulnerabilities and characteristics, so elements of this program may prove useful or practical in some locations but not in others. As always, the key to any management program is to tailor the approach both to the site and the target plants. A final note: this is a non-chemical treatment approach which allows the plant material to be utilized without the risks or considerations associated with toxins or probable carcinogens. Again, the goal is eradication of the target species and long-term transition of the site to a more resilient, bio-diverse landscape.

Summary, Control Methods and Economic Uses

Japanese knotweed occurs in patches with ¾ of the plant biomass typically found in the root network. Patches are commonly a single plant, a rhizomal network; smaller patches are generally easier to manage, but that is not a given. Moist ground and riverbanks are preferred habitats, at least in New England, but knotweed will absolutely colonize most disturbed spaces. Control of the patches is pursued by flush-cutting the plants completely to the ground. Uprooting and excavating are available options but only if the site allows. Since plants are cut above the rhizome system, they can be dried on pallets with little potential for re-sprout. Full sun and a New England winter remove all viability from the cut stalks.

This dried material can be used as on-site mulch the following year. Alternatively, fresh-cut material can be fed to animals (cows, goats), but that requires an element of control and oversight. New shoots are also edible and highly desirable for particular landowners (pie, crisp). Finally, if root material is extracted and collected, bulk root may be processed for its herbal properties and resveratrol.

The approach, therefore, is to condense extensive infestations into hotspots over time. Establish weed drying stations at the ends of the patch and perhaps intermittently, and then commence with aggressive flush-cutting for three to five growing seasons. 12-11-10-9-8 seems to be a successful formula in New England; 12 cuts the first year, 11 the second, 10 the third, and so on through five growing seasons. Another several years of cutting 5 or 6 times annually prevents any recovery of knotweed as natives regain their footing. The original formula called for a 10-9-8… approach, but extended growing seasons have altered that math since 2012. More southerly sites or those in full sun may require a rounding-up of the numbers. Even at the nine or ten year mark, sites should be monitored to finish off the population entirely.

The 12-11-10-9-8 formula cannot be forced onto an area; we must learn from each site and adapt our management. Site managers need to let go of the "human calendar" and keep pace with the phenology of the plants. This is why cut treatments may not be evenly spaced or scheduled; we might learn that May alone can accommodate five cuttings due to the sheer rate of growth. Cut material is piled for drying, and once the first two cuts are accomplished, the goal is to keep the entire patch under one foot in height (six to ten inches, ideally). The amount of material may at first seem overwhelming, but the volume of cuttings will continuously decline after the first sessions. And from the outset, Year One, native competitors like ironweed, ostrich fern, elderberry, cow parsnip, and pokeweed are NOT cut and are actually favored.

Clearly, material must be responsibly managed at all stages. Knotweed should ideally be kept on site rather than transported to new locations; any sloppiness can have consequences. This leads to the final guiding principle. If we think of Stewardship as the notion of Presence, it is our constant and steady Presence that will succeed in transitioning the landscape. PRT: persistent, relentless, tenacious Presence. And thankfully, when we develop the habit of Presence on our management sites, any errors or sloppiness or oversights can be quickly detected and remedied.

Individual Site Considerations

Japanese knotweed loves full sun; many rivers in Vermont have no patches on the shaded north-facing banks (east-west river channels). The south-facing bank however is often a monoculture of knotweed for hundreds of meters (since trees cannot grow in the river channel, south-facing banks receive full sunlight).

There are nuances to both the treatment methods for Japanese knotweed and the site selection. Success depends on patient transition of the site back to a diversity of native species. The success of that transition may rest on several factors, chief among them being the disturbance regime and soil conditions. If the soil quality is poor and disturbances occur regularly, native species will have difficulty reclaiming the space. But if regeneration succeeds in building anew the four layers of canopy, Japanese knotweed can be stressed, reduced, and crowded out over several years. There will likely be other opportunistic non-natives (goutweed, garlic mustard) in the immediate vicinity, however, and the program can backfire if these factors are not recognized. Photo-documentation of the site is a powerful tool for capturing site transition.

Administering a Management Plan

Towns, municipalities, and organizations can prioritize a number of appropriate control sites that allow for simple and centralized coordination. Towns also play a role in determining the long-term vision being pursued. Eradication or containment of an invasive species goes hand-in-hand with other elements of a larger stewardship plan. Towns are well-positioned to direct tree-plantings, the gathering of community input, and coordination amongst interest groups. The best hope of success on infestation sites is a transition process, whereby native species are favored and introduced even as the non-natives are selectively removed or suppressed.

Paid interns could manage the work and coordinate the "economic uses" component of the program. It is vital to point out, however, that Japanese knotweed control is a long-term effort. It may take some time to pull all the pieces together. Work should progress annually to a new group of sites while still allowing time for follow-up work at previous locations. A logical program would have several sites each in successive years

of control: Year One, Year Two, Year Three, etc. Taking on numerous sites all at once is a mistake; better to do the work attentively and thoroughly. Add new sites as resources allow; one tip is to prep a future treatment site in the fall so it is ready for immediate action the following spring. Preparations can involve removal of old canes, acquisition of pallets for drying stations, and mitigation of site hazards.

Short-term grants are likely not a good fit for a long-term program; personnel turnover is also a potential pitfall. The best fit may be a dedicated individual or team that can draw on relationships with service organizations, landowners, and learning institutions. This person unifies the various participants who together contribute to the end goal: restaurants, farms, volunteer pools, town and school representatives, the art community, etc. With all such parties invested in a long-term project, incremental progress can build a momentum solidifying site rehabilitation gains.

Additional Considerations

1. Professional assistance at key points is helpful, particularly regarding safety and initial approaches.
2. The worst possible scenario is a control effort that does not manage an entire site or abandons the effort too soon. Knotweed will respond aggressively.
3. Pallet-drying of material is one option. Pallets are typically free to obtain and make a great Weed Drying Station or multiple stations. The goal is allowance of air flow beneath the plant material.
4. The first couple flush-cuts each growing season generate the most material; the bulk of the work is in May / June.
5. In the latter half of the growing season, control work does not even require tools beyond footwear and gloves. Stalks simply break off.
6. Smothering knotweed is not a realistic option, although patch edges can be “fortified” with dense native plantings or sheet plastic, or both. Use hardened areas or dead zones to advantage; this includes bedrock, paved roads, and large structures, but recall that rhizomes can extend underground for up to sixty feet.

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Economic Uses for Japanese knotweed

1. Animal feed, young tender shoots
2. Human consumption, again young and tender
3. Mulch layering, dried stem material
4. Resveratrol, extracted from root system
5. Paper, a niche market, artisanal
6. Herbal and medicinal uses

Considerations for Large-scale Control / Management

- Select sites – prioritize treatment sites, then factor in logistical needs and management factors.
- Use aerial views to study sites and transmission vectors.
- File-sharing arrangements, or information management
- Communication internally amongst team members
- Communication externally with and to broader community.
- Hiring of dedicated interns or paid employees
- Safety protocols and supervision
- Equipment clean-up and bio-security
- Guidelines for harvested material
- Management of material in all stages
- Marketing of material / products
- Follow-up treatments and site rehabilitation