

EXHIBIT 29

Invasive Plant Control Techniques and Management Options

Japanese Knotweed *Polygonum cuspidatum*

Action	Description	Time Span Required	Advantages	Disadvantages
Repeated Cutting/Mowing (Mechanical)	Cut patches twice a month or more, especially between April and August, and then once a month or more until the first frost. All plant parts should be bagged and disposed of in a trash dumpster to prevent reestablishment. Do not allow vegetation to enter waterways.	To be effective, this program should be continued for at least 2 or 3 years for patches that are well established.	Effective for very environmentally sensitive areas or where herbicide use is not an option. Best suited for small, isolated, easily accessible patches.	High labor costs. May increase spread if plant parts are not all removed properly. May increase disturbance.
Digging or Pulling (Manual)	Pull the plant and major rhizomes up by the root crown to remove as much of the root system as you can. Each time new sprouts arise, uproot them as well. Be sure to carefully dispose of all plant parts	Same as with cutting/mowing.	Good option for small patches where soil is soft and herbicide is not an option.	Labor Intensive. Increases disturbance.
Cutting/Mowing followed by Covering and frequent maintenance (Mechanical/Physical)	After cutting/mowing the knotweed to the ground, cover the stand with geotextile material and secure perimeter with rocks, logs or stakes, leaving some slack in fabric to avoid stems poking through. Control vigorous sprouting along edges of fabric using manual removal or herbicides. Stems growing under fabric can be crushed by walking or stomping.	Requires frequent monitoring (~every 3 weeks through growing season) for 3 to 6 years.	May be effective for sites where herbicide use is restricted or discouraged. Strength and longevity of the geotextile fabrics seems to be the key to success with this method. Timing of application is not important. Plant cuttings can be left in place and covered with fabric.	Any other plants under the fabric are not likely to survive. Question of habitat value of the black fabric on the landscape for several years. If used on stream banks, installation must take into account the force of flooding water over the fabric. Plans must be in place to stabilize the primarily bare soil once covering is removed. Materials are relatively expensive. Requires frequent maintenance.
Herbicides— General info.	<i>To be effective on knotweed, the active ingredient in an herbicide product must have a mode of action designed to move the chemical into the root system at sufficient concentrations to kill the root tissue. It may be necessary to conduct some site specific field trials to test the efficacy of different concentrations of solution. Some herbicides may need to be used at low concentrations to avoid damaging the above ground tissue before the herbicide is well dispersed in the root system. Herbicides with an active ingredient of glyphosate, triclopyr, 2,4-D, picloram, and Imazapyr have shown variable efficacy in controlling knotweed either separately or in combination. The right time to apply herbicides is greatly affected by herbicide choice.</i>			

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Action	Description	Time Span Required	Advantages	Disadvantages
Foliar Spray ¹ (Herbicide)	Spray herbicide on the top surface of every leaf on the plant and the stems using a small hand held, backpack, or large volume sprayer. Applying a foliar spray in the fall with a prior cut or spray in late spring or early summer is most effective with this method.	2 or more years	Chemical has potential to eliminate infestation if done at correct time, and if correct concentration is used Relatively rapid effect.	Poses a relatively high risk of creating drift onto the soil, into water, or on surrounding desirable plants. Herbicide may impact non-target species and/or be environmentally damaging if not applied according to label restrictions.
Cut Stem-Wick/Wipe (Mechanical/ Herbicide)	After cutting stems (& properly disposing of plant parts), apply herbicide onto the cut stem surface using a wick applicator. Some field trials have shown greater success when the stems are first topped at about 3 feet tall, others recommend cutting the stems about 2 inches above the ground.	?	Chemical has potential to eliminate infestation if done at correct time, and if correct concentration is used Greatly reduces or eliminates drift; useful in areas where plants are established in particularly sensitive areas.	Very slow and laborious. Control is generally mediocre without multiple repeat applications. Herbicide may impact non-target species and/or be environmentally damaging if not applied according to label restrictions.
Cut Stem-Pour Applications (Mechanical/ Herbicide)	After cutting the stem just below the third node above the ground, carefully pour or squirt approximately 5 ml of undiluted herbicide into the stem cavity immediately after the cutting. Carefully dispose of all cut plant parts.	?	Greatly reduces or eliminates drift. Useful in areas where plants are established in particularly sensitive areas.	Very Slow and laborious. Still somewhat experimental. Herbicide may impact non-target species and/or be environmentally damaging if not applied according to label restrictions.
Stem Injection (Herbicide)	Inject 1 to 5 ml of undiluted glyphosate herbicide directly into the hollow of the lower nodes of knotweed stems.	?	Greatly reduces or eliminates drift. Saves at least one site visit. Stem injection seems to be the optimal choice for patches overhanging water.	Time Consuming and still somewhat experimental. Requires relatively large volumes of herbicide. Glyphosate may “leak-out” of knotweed roots/rhizomes and remain active in coarser sandy and gravelly soils.

¹ Doug Cygan recommended using Habitat for foliar spraying. Habitat herbicide must be sprayed by an applicator licensed for aquatic use. Habitat needs to be sprayed early in the morning on a day with little to no wind and when plant leaves are dry.

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Purple Loosestrife *Lythrum salicaria*

Action	Description	Time Span Required	Advantages	Disadvantages
Digging & Hand Pulling (Manual)	Pulling purple loosestrife by hand is easiest when plants are young (up to two years) or when in sand. Older plants have larger roots that can be eased out with a garden fork. Remove as much of the root system as possible because broken roots may sprout new plants. Removal of all plant material is important. The best time to remove purple loosestrife from the soil is prior to seeding time (August/ September).	2 to 3 years (Monitor area for several growing seasons.)	Useful for small, young infestations (up to 3 acres) Plants are physically removed. Target Specific	Labor Intensive. Increases disturbance. Extremely difficult and impractical on a large scale.
Foliar Spray (Herbicide)	Glyphosate will provide good control of purple loosestrife when applied from July to early September. Garlon is a selective broadleaf herbicide that will not kill cattail or other desirable monocot species. Garlon will provide good to excellent purple loosestrife control when applied in the pre to early flower or late flower growth stages. <i>Spraying should be done after the period of peak bloom, usually late August.</i>	Requires multi-year efforts to manage surviving plants and to kill seedlings.	Useful in areas up to 3 acres and where manual pulling is not practical. Chemical has potential to eliminate infestation if done at correct time, and if correct concentration is used Relatively rapid effect	Extremely difficult and impractical on a large scale. Potential of addition of chemical to waterbody. Herbicide may impact non-target species and/or be environmentally damaging if not applied according to label restrictions.
Cut Stem-Wick ¹ (Mechanical/ Herbicide)	Cut off all stems at about 6 inches and then paint or drip a 20-30% solution onto the cut surfaces. All cut vegetation should be removed from site.	Treated areas will need to be monitored for regrowth from the roots or seedlings for several years.	Safest method of applying glyphosate herbicide; Greatly reduces or eliminates drift. Chemical has potential to eliminate infestation if done at correct time, and if correct concentration is used Relatively rapid effect	More labor intensive than foliar spraying. Extremely difficult and impractical on a large scale. Herbicide may impact non-target species and/or be environmentally damaging if not applied according to label restrictions.

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Action	Description	Time Span Required	Advantages	Disadvantages
Biological Control ²	The leaf-eating beetles, <i>Galerucella calmariensis</i> & <i>Galerucella pusilla</i> , have been the most successful in NE. When these insects are present in high densities they cause defoliation of mature plants, death of seedlings, and the destruction of flowering spikes or prevention of their formation.	In as little as three years, treatments can have a dramatic impact on purple loosestrife populations. Ongoing Monitoring is necessary.	Can cause a reduction of as much as 95% of the biomass of purple loosestrife over a 3-5 year period. <i>Highly effective for long term control, not complete eradication.</i> Most practical method for large scale infestations. No significant long-term impacts on native plant species have been observed.	Populations of bio-control insects are directly dependent on there being a viable population of loosestrife. If a loosestrife population is decimated in a site but later reinvades, the beetles will need to be reintroduced.

¹ For smaller patches of Loosestrife Doug Cygan recommended wicking or cut stem & wick.

² Doug recommended releasing *Galerucella* beetles in the cemetery where the infestation is the densest.

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Multiflora Rose *Rosa multiflora*

Action	Description	Time Span Required	Advantages	Disadvantages
Grubbing (Mechanical/ Manual)	Grubbing, pulling, or removing individual plants from the soil is only effective when all roots are removed, or when plants that subsequently develop from severed roots are also destroyed. Large plants can be pulled out using a weed wrench, tractor or other such equipment.	Monitoring and follow-up treatment are necessary for several growing seasons.	Useful for light, scattered infestations and for environmentally sensitive areas where herbicide use is not an option. Plants are physically removed. Target Specific	May increase disturbance or disturb roots of adjacent plants. Not practical when plant growth is dense. Labor Intensive.
Repeated Cutting/Mowing (Mechanical)	Cut/mow infestation 3 to 6 times per growing season for 2 to 3 consecutive seasons.	2-3+ years	Effective for very environmentally sensitive areas or where herbicide use is not an option. Best suited for small, isolated, easily accessible patches.	May increase disturbance. Native vegetation may be damaged. Only a practical option in infested areas such as pastures where mowing equipment can operate.
Foliar Spray (Herbicide)	Thoroughly wet all leaf and green stem tissue with herbicide. The best herbicide options for use on Multiflora Rose growing near streams are dicamba or glyphosate. Mechanical or manual removal of treated plants the following season will often complete the kill of plants exhibiting slight regrowth.	Site should be monitored for multiple seasons and follow-up treatment may be required.	Chemical has potential to eliminate infestation if done at correct time, and if correct concentration is used Relatively rapid effect	Risk of Herbicide drifting or running off into water. May impact non-target species if not applied according to label restrictions. Could be environmentally damaging if not applied per label restrictions.
Basal Bark Spray (Herbicide)	Primarily used during the dormant season to apply a mixture of herbicide to the lowest 18 to 24 inches of stem and crown of plants.	Site should be monitored for multiple seasons and follow-up treatment may be required.	Uses lighter, less costly, and more portable spray equipment compared to foliar applications. Uses a relatively low spray volume and is targeted only to the lower portion of bushes, reducing the potential for off-site herbicide movement.	Risk of Herbicide running off into water. May impact non-target species if herbicide not applied according to label restrictions. Could be environmentally damaging if herbicide not applied per label restrictions.

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Action	Description	Time Span Required	Advantages	Disadvantages
Cut-Stump Treatment (Herbicide)	Cut stems near ground level and paint or spray herbicide on the stump. This method is effective late in the growing season and also during the dormant season.	Site should be monitored for multiple seasons and follow-up treatment may be required.	Herbicide is applied specifically to the target plant reducing the possibilities of damaging nearby, desirable vegetation.	<p>Risk of Herbicide running off into water.</p> <p>Cutting stumps in established thickets can be very difficult because of the long arching stems and prolific thorns.</p> <p>May impact non-target species if herbicide not applied according to label restrictions.</p> <p>Could be environmentally damaging if herbicide not applied per label restrictions.</p>

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Glossy Buckthorn *Rhamnus frangula*

Action	Description	Time Span Required	Advantages	Disadvantages
Hand Removal/ Grubbing (Manual/ Mechanical)	Hand pull seedlings or remove with a digging tool; larger plants can be pulled out with heavy equipment. Care should be taken to minimize disturbance to soil and adjacent plants.	Monitoring and follow-up treatment are necessary for several growing seasons.	Effective for controlling low densities or new infestations. Plants are physically removed. Target Specific	May increase disturbance or disturb roots of adjacent plants. Not practical when plant growth is dense. Labor Intensive.
Cutting/Mowing (Manual/ Mechanical)	Cutting of stems at least twice in one season (June & August) can reduce plant size and stem density.	Treatments must be repeated for 2-3 successive years	Rapidly removes vegetation from area Plants are physically removed	Mechanical Mowing is not target specific. Removes beneficial native vegetation. Does not remove rooting system
Girdling (Manual/ Mechanical)	Completely encircle the base of stem with a 2-3 cm wide saw cut into the phloem. Girdling may be done all winter. A five second flame torch application around the stem will kill the cambium of stems less than 4.5 cm in diameter. Clip re-sprouts as they emerge.	Monitoring and follow-up treatment are necessary for several growing seasons.	Does not disrupt soil. Does not adversely affect sensitive wetlands or riparian areas.	Labor intensive. Plant not physically removed.
Foliar Spray (Herbicide)	Buckthorn foliage remains green throughout the autumn. Mid to late fall glyphosate sprays are effective and reduce potential injury to non-target plants.	Monitoring and follow-up treatment are necessary for several growing seasons.	Chemical has potential to eliminate infestation if done at correct time, and if correct concentration is used Relatively rapid effect	Potential of addition of chemical to waterbody. May impact non-target species if not applied according to label restrictions. Could be environmentally damaging if not applied per label restrictions.
Cut-stump treatment (Herbicide)	Cut stems near ground level and paint or spray glyphosate or triclopyr herbicide on the stump. This method is also effective late in the growing season.	Monitoring and follow-up treatment are necessary for several growing seasons.	Chemical has potential to eliminate infestation if done at correct time, and if correct concentration is used. Relatively rapid effect. Greatly reduces or eliminates drift.	Herbicide may impact non-target species if not applied according to label restrictions. Herbicide could be environmentally damaging if not applied per label restrictions.

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Bush Honeysuckles: *Lonicera tatarica* L.(Tatarian Honeysuckle) & *Lonicera morrowii* A. Gray (Morrow's Honeysuckle)

Action	Description	Time Span Required	Advantages	Disadvantages
Grubbing/Pulling (Manual/ Mechanical)	Using a digging tool remove the entire plant, including all roots. Juvenile plants can be hand pulled depending on soil conditions and root development. Larger stems, up to 6 cm (2.5 in) can be removed using a Weed Wrench or similar uprooting tools. All plant parts should be bagged and disposed of to prevent reestablishment.	Monitoring & Follow-up treatment required at least once a year for 3 to 5 years.	Appropriate for small populations or where herbicides cannot be used.	Any portion of the root system not removed can re-sprout. Open soil can support rapid re-invasion. Labor intensive.
Repeated Clipping (Manual/ Mechanical)	Clip twice yearly, once in the early spring and again in late summer or early autumn. Winter clipping should be avoided as it encourages vigorous re-sprouting. All plant parts should be bagged and disposed of to prevent reestablishment.	Monitoring & Follow-up treatment required at least once a year for 3 to 5 years.	Appropriate for shaded forest habitats. Reduces seed sources (at least temporarily).	Mature honeysuckle wood is tough and easily dulls power-tool blades. Not an effective means of control on its own because re-sprouting will occur. Results from cutting may be poor without an herbicide application.
Prescribed Burning	Repeated annual prescribed burns during the growing season will top-kill shrubs and inhibit new shoot production.	Because bush honeysuckles readily re-sprout, it may be necessary to re-burn every year or every other year for several years to achieve good control.	Has shown promise for use in open habitats. Useful in controlling the growth of small seedlings. May be effective in some cases where the density of honeysuckle is low and sufficient fuels are available.	
Foliar Spray (Herbicide)	2% solutions of glyphosate or triclopyr can be used for foliar treatments. Should be applied late in the growing season. The subsequent flush of seedlings that follow herbicide treatments also be controlled. Air temperature should be above 65°F to ensure absorption of herbicides.	Monitoring & Follow-up treatment required at least once a year for 3 to 5 years.	Effective for large thickets of bush honeysuckle where risk to non-target species is minimal. Relatively rapid effect.	Risk of herbicide drifting or running off into water. May impact non-target species if not applied according to label restrictions. Could be environmentally damaging if not applied per label restrictions.

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Action	Description	Time Span Required	Advantages	Disadvantages
Cut-stump treatment (Herbicide)	20-25% solutions of glyphosate or triclopyr can be applied to the outer ring (phloem) of the cut stem. Should be applied from late summer through the dormant season. The subsequent flush of seedlings that follow herbicide treatments also be controlled.	Monitoring & Follow-up treatment required at least once a year for 3 to 5 years.	<p>Effective when treating individual bushes or where the presence of desirable species precludes foliar application.</p> <p>Greatly reduces or eliminates drift.</p> <p>Relatively rapid effect.</p>	Higher labor costs.
Basal Bark Treatment (Herbicide)	Apply Garlon 4 as a 20% solution in commercially available basal oil, diesel fuel, or kerosene with a penetrant to young bark as a basal spray or apply a mixture of 25% triclopyr and 75% horticultural oil to the basal parts of the shrub to a height of 30-38 cm from the ground. Thorough wetting is necessary for good control.	Monitoring & Follow-up treatment required at least once a year for 3 to 5 years.	Lower labor costs than cut-stump treatment.	Higher herbicide costs than cut-stump or foliar treatment.

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Norway Maple¹ *Acer platanoides*

Action	Description	Time Span Required	Advantages	Disadvantages
Pulling/Digging (Manual/ Mechanical)	Pull seedlings and saplings either by hand or with a weed wrench when soil is moist. Dig out larger plants including the root system. Cut down mature trees and grind out the stump or clip off regrowth.	Monitoring and follow-up treatment necessary for several growing seasons.	<p>Effective when dealing with seedlings and saplings.</p> <p>Target specific.</p> <p>Plants are physically removed.</p> <p>Cutting mature trees removes potential seed sources.</p>	<p>Labor intensive.</p> <p>Not practical for dense infestations.</p> <p>Removing large trees may open gaps in the canopy by which other exotics may invade.</p> <p>Increases disturbance</p>
Repeated Pruning (Manual/ Mechanical)	Remove seed bearing limbs season after season, eventually leaving a standing dead tree.	Long-term management option	<p>More forest structure is allowed to remain while slowly eliminating seed-bearing limbs.</p> <p>Standing dead tree is available for habitat.</p> <p>Minimal disturbance.</p>	<p>Requires yearly treatments and a long time span to see results. (Time and labor intensive)</p> <p>Standing dead trees may be a liability if located near homes, businesses, roads, etc.</p>
Girdling (Manual/ Mechanical)	Cut into the cambium layer around the trunk in a continuous ring. Most effective in spring.	Monitoring and follow-up treatment necessary for several growing seasons.	<p>More forest structure remains/prevents immediate hole in canopy.</p> <p>Useful where removal is not practical.</p> <p>Standing dead tree is available for habitat.</p>	<p>Standing dead trees may be a liability if located near homes, businesses, roads, etc.</p>
Mowing/Cutting (Mechanical)	Repeated cutting/mowing of seedlings and saplings to ground level.	Requires follow-up treatments for several years	Useful for large areas dominated by young seedlings.	<p>Increases disturbance.</p> <p>Not target specific.</p>

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Action	Description	Time Span Required	Advantages	Disadvantages
Foliar Spray (Herbicide)	Foliar spraying of glyphosate is effective on seedlings and young trees.	Monitoring and follow-up treatment necessary for several growing seasons.	Effective on small trees and seedlings. Relatively rapid effect.	Potential of addition of chemical to waterbody (drift). May impact non-target species if not applied according to label restrictions. Could be environmentally damaging if not applied per label restrictions.
Cut-stump treatment (Herbicide)	Cutting followed by treatment of the stem with triclopyr or glyphosate. Treatment is most effective	Monitoring and follow-up treatment necessary for several growing seasons.	Greatly reduces or eliminates drift. Relatively rapid effect. Can use on trees of all sizes.	May impact non-target species if not applied according to label restrictions. Could be environmentally damaging if not applied per label restrictions.
Basal Bark Treatment (Herbicide)	Trees up to 4 inches in diameter can be controlled by an application of triclopyr in oil to the bark for a distance of 12-18 inches at the base of the trunk. This treatment is most effective between Feb 15 and March 31 or from June 1 to Sept 30.	Monitoring and follow-up treatment necessary for several growing seasons.	Effective on small trees and seedlings. Relatively rapid effect.	Potential of addition of chemical to waterbody (drift). May impact non-target species if not applied according to label restrictions. Could be environmentally damaging if not applied per label restrictions.

¹ Doug Cygan recommends allowing the mature Norway maples growing along the stream corridor unless seedling/sapling infestations become a problem along the stream in the future. Currently, Norway maples only appear to be growing as mature trees in the yards of private residences.