Introduction to Invasive Plant Management

Elements of a Successful Invasive Plant Management Project

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Topics to cover

- Elements of an effective invasive plant management program

 Mapping (monitoring/record Keeping)
 - Prioritization
- Integrated Management
 - Manual/Mechnical
 - Judicious herbicide use
 - Revegetation/Restoration

Elements of a Successful Project

Planning Framework

- Goals- articulate intention for site
- Planning (Management Plan)
- Site Analysis
- Mapping
- Prioritization
- Initial, Follow-ups, ongoing Stewardship program
- Early Detection
- Success Criteria
- Monitoring
- Management Documentation
- Revegetation & Ecological Restoration Considerations

Mapping

- Invasive species
- Distribution
- Area (acres or square footage)
- Density (cover class)
- Size: diameter & height (plant type/age: seeding, sapling, etc.)
- Non-target/native vegetation
- Sensitive resource areas (wetlands/NHESP)



Glossy Buckthorn Small tree (> 7 ' tall)



Glossy Buckthorn Shrub (< 7')



Glossy Buckthorn Seedling (< 2')







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March 24, 2010

Map prepared by Land Stewardship Inc Based on Information collected by Andrew Morrison, March 2016

Summary Figures

Michael Bathory Homestead Parcel intended to accompany parcel map from April 5, 2016

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JB japanese barberry Barbaris thunbargii 3 2 - 4' JK japanese knotweed Polygonum cuspidatum 4 4 - 6' MR multiflora rose Rosa multiflora 5 6 - 8' OB oriental bittersweet Calastrus orbiculatus 6 8 - 12' WE winged exonymus Eluonymus alatus 7 12' +	HS	honey suckle		L	Lonicero spp.				2	1 - 2" im	2" immeture		
JK japanese knotweed Polygonum cuspidatum 4 4 - 6' MR multiflora rose Rosa multiflora 5 6 - 8' OB oriental bittersweet Calastrus orbiculatus 6 8 - 12' WE winged exonymus Exonymus aliatus 7 12' +	JB	japanese barbe	rry	B	erberis thu	nbergii			3	2-4"			
Instrument source Instrument source	JK	japanese knotw	reed	P	orygonum o	org			4	4-6			
WE winged euonymus Euonymus alatus 7 12' +	OB	oriental bitters	weet	2	elastrus ori	biculatus			6	8-12			
	WE	winged euonym	nus	E	uonymus ai	otus			7	12'+			

Prioritization

E arly D etection R apid R esponse

Weed Infestations & Control Potential











Seedlings



Common buckthorn



Bittersweet



Japanese barberry



Japanese knotweed

Integrated Management

The Importance of Timing Management Activities



Level 1: Manual Methods



Hand-pulling







Community/Volunteers/Partners/Stakeholders











Level 2



Judicious Herbicide Use

- Integrate management activities (cutting, mowing, etc.).
- Use selective herbicide methods that minimize amount used.
- Timing to maximize effectiveness of treatment
- Glyphosate & Triclopyr (active ingredients) based general use herbicides.
- Always read and follow the label directions, safety & environmental precautions.

Cut Stem/Stump Application

- 20%-50% glyphosate product in water (apply immediately after cutting).
- Timing: Anytime, but sap season. Wait till late spring/early summer







Mechanical Methods Small-Medium Scale









IP Success Criteria

- 1. Year 1. Initial treatments (combination of mechanical and chemical results in 90%, control
- 2. <u>Year 2.</u> The first follow-up theatment (targeted dhemical) results in 95% centrol.
- 3. <u>Year 3. The second follow-up (manual or</u> targeted chemical) results in 99% control.
- Annual Stewardship and Maintenance (primarily manual) maintains 99% control.

Upland IP Management











Active Revegetation







Wetland IP Management





Glyphosate (Roundup, Rodeo, etc.)

- Derivation of glycine, an amino acid
- Inhibits an essential plant enzyme (EPSP synthase).
- Blocks production of aromatic amino acids: phenylalanine, tryptophan, tyrosine
- Non-selective herbicide
- Systemic translocates to meristems/roots.
- Gradual yellowing (chlorosis) newest leaves first.
- Non-volatile, but still need to avoid spray drift.

Glyphosate – Environmental Fate

- Very stong adsorption (binding) to soil particles:
 - No herbicidal activity in soil (inactivated).
 - Not mobile in soil.
- Minimal potential for leaching into groundwater or contamination of surface waters via runoff.
- Readily biodegraded by bacteria, fungi
- Half life in soil: generally short, but variable.
- Very low toxicity to most non-target organisms.
- Due to surfactants in most glyphosate products Not approved for aquatic sites.
- Rodeo, AquaPro formulations approved for water.

Triclopyr (Garlon, Renovate, Tahoe)

- Disrupts normal plant hormone (auxin) function
 abnormal elongation & division of plant cells.
- Selective herbicide most grasses, sedges tolerant.
- Controls broadleaf weeds, woody plants.
- Systemic translocates to meristems/roots.
- Initial symptoms appear rapidly distorted growth (leaf cupping, stem twisting).
- Formulations: Ester (Garlon 4) more volatile than amine (Garlon 3A).