

Approved by Lexington Conservation Commission on Monday, February 23, 2015

# Principles and Policies for Management of Lexington Conservation Land

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Prepared for the

**Lexington Conservation Commission**

by

**Mass Audubon's Ecological Extension Service**

January 2015



Table B-1. General Management Options.

Method	Good for Volunteers?	Timing	General guidelines	Target Species
Cut and paint	Yes	Late August to November	Preferably done in the fall when woody plants are translocating energy towards roots. Can be done to all trees/ shrubs except black locust (signals root suckering). Preferred treatment for multiflora rose. If berries are present take extra precaution to not spread seed. Best when left in local area and burned in brush pile. Good for volunteers working together with staff: have volunteers cut and haul brush while licensed applicator paints herbicide.	Common reed (stem injection) Japanese knotweed (stem injection) Burning bush Oriental bittersweet Multiflora rose (preferred) Bush honeysuckle (fall) Glossy buckthorn Autumn olive
Hand pull	Yes	Spring and Summer	Great for herbaceous plants with taproot and shallow root system. Best for small infestations. All trees/ shrubs can be hand-pulled when in seedling stage. Garlic mustard should be hand-pulled when second year plants start sending up seed stalk and all plant parts should be bagged and kept out of the sun (seeds can still develop if sunlight is available).	Spotted knapweed Garlic mustard All seedlings for trees and shrubs

<b>Method</b>	<b>Good for Volunteers?</b>	<b>Timing</b>	<b>General guidelines</b>	<b>Target Species</b>
Mechanical (weed wrench/ shovel)	Yes	Spring through Fall, although better before seed set.	Great for small shrubs/ trees. Best when done in early spring when leaves start coming out but before berries develop. Shovels can be used to dig up herbaceous plants with fibrous root systems (Black swallowwort) care needs to be taken to make sure all root system is dug up. Soil should be tamped down after removal or native species planted soon after disturbance to keep additional invasives from re-colonizing area.	Japanese knotweed Burning bush Japanese barberry Black swallowwort Autumn olive Tree of heaven
Basal bark herbicide	No	August through October	This method is best when done in late summer mid fall (Aug-Oct) when sap flow is towards roots. Can be performed on all trees/ shrubs.	Burning bush Autumn olive
Biological	Yes	Dependent on insect.	This method of treatment works well for purple loosestrife. It is the least disruptive method of treatment currently available. Usually agents are released in July/ August. The affect the biological agent will have on the environment should be taken into consideration and the relative ease of other forms of treatment. Depending on infestation size this could be a good way to treat Spotted knapweed.	Purple loosestrife (preferred) Spotted knapweed (needs research)

<b>Method</b>	<b>Good for Volunteers?</b>	<b>Timing</b>	<b>General guidelines</b>	<b>Target Species</b>
Foliar spray herbicide	No	When leaves are out.	For trees and shrubs best when done in the fall when sap flow is towards roots. Can be done any time for herbaceous plants. When spraying, the least amount of herbicide at the smallest effective percentage should be used. The surrounding habitat (wetland vs upland), nesting/ breeding animals, and whether it is a necessary treatment should be considered.	All species
Girdling	If certified in chainsaw safety	Fall	A chainsaw is used to create a ~2" wide cut all around the tree between knee and waist height taking care to remove only the outer layer of cambium, then the fresh cut is painted with herbicide.	Larger trees
Bloody glove	No	When leaves are out.	A rubber glove is worn on the hand with an absorbent cotton glove over it. The cotton glove is dipped in a Glyphosate solution (strength depending on target species) then used to directly apply herbicide to leaves, stems, and inflorescences of target plants. Herbicide is absorbed directly into the plant via the stem and leaves, however, breaking the stem aids in more rapid absorption.	Small patches of common reed, seedlings, etc. particularly in wetlands where impacts to non-target species is a concern.

Table B-2. Species Specific Management Options.

Species	Biology	Control Recommendations		Monitoring Period
		Manual	Chemical	
Autumn olive	Autumn olive flowers in May-July (plants have to be at least 3 years old to flower). Seeds are produced August – November and nuts usually ripen in September. Adults produce less seed in the shade than the sun. Autumn olive reproduces primarily by seed.	Seedlings can be hand-pulled. Bigger plants can be removed with weed wrenches. Care should be taken to get entire root system. Plants re-sprout vigorously when cut without the use of herbicide.	A foliar treatment with at 2% solution of Triclopyr or Glyphosate can be used when leaves are present. A 25% solution of Triclopyr or Glyphosate can be used for cut and paint. A 20% solution of Triclopyr is recommended for basal bark treatments.	3 years  No information available on seed viability.
Black swallowwort	Black swallowwort spreads vegetatively and by seed. It flowers in June-August. The seeds are released from August to October;	Plants can be dug up with a shovel. The entire root system would need to be removed and this method is very time consuming.	A 2% foliar spray of Glyphosate or Triclopyr is recommended before mid-July. Chemical treatment is recommended from May-June, this would be before the plants flower so there would not be a possibility of spreading seed.	6 years  Seeds remain viable up to five years.
Burning bush	Burning bush reproduces by seed and vegetatively.	Small plants can be hand pulled while a weed wrench will need to be used for larger plants. Care should be taken to remove entire root system.	A 2% foliar solution of Glyphosate is recommended when leaves are present. A 20% solution of Glyphosate or Triclopyr is recommended for cut and paint and a 20% solution of Triclopyr should be used for basal bark application.	5 years  No data on seed banking.

Species	Biology	Control Recommendations		Monitoring Period
		Manual	Chemical	
Bush honeysuckles	The berries are mildly poisonous if eaten.	small plants can be hand pulled or removed with a weed wrench. Care should be taken to remove all roots and not to spread berries.	Foliar spraying can be done as long as there are leaves present a 2% solution of Triclopyr or Glyphosate is recommended. A 25% solution for cut and paint treatments can be used, put the solution right into the hollow stem and around the stem edge. This is best during the fall when all of the plant fluids are headed towards the root system.	3 years  Few seeds viable for more than one year.
Common reed	Common reed reproduces by seed and vegetatively. Inflorescences develop in late June.	Plants can be cut. The shoots should be removed to prevent re sprouting.	A 2% solution of Glyphosate is recommended. Since Common reed is an aquatic species an aquatic safe herbicide must be used. The best results are when the herbicide is applied in the late summer or early fall when Common Reed is actively growing and in full bloom. Remove dead stems if possible by mowing or clipping.	2 years  Seed viability is typically low, although it may vary year to year.
Garlic mustard	Garlic mustard is a biennial plant and is allelopathic.	Basal rosettes and second year plants can be hand pulled. Plants should be pulled at base near ground to ensure that the root is removed.	A 2% Glyphosate solution can be sprayed in April/May before the basal rosettes go to seed and in September/October when other plants are dormant.	6 years  The seed bank is viable for 5 or more years.
Glossy buckthorn	Reproduces by seed.	Seedlings can be hand-pulled and larger plants can be removed with a weed wrench.	Cut and paint with a 20% solution of Glyphosate or 25% Triclopyr. A 2% foliar spray can be used while there are leaves. Remove dead stems if possible by mowing or lopping.	7 years  Seeds remain viable for 5-7 years.
Japanese barberry	Japanese barberry spreads by seeds and vegetatively. The seeds have a 90% germination rate.	Small plants can be removed by hand pulling or using a weed wrench.	A 2% foliar spray can be used when leaves are present (April). Both Glyphosate or a Triclopyr solution can be used. A 25% cut and paint solution of Glyphosate or Triclopyr can be used, it is most effective in the fall when sap flow is towards the root system.	2 years  Do not persist in seed bank.

Species	Biology	Control Recommendations		Monitoring Period
		Manual	Chemical	
Japanese knotweed	The majority of literature recommends spraying after flowering; this makes it harder for the plant to have enough reserves to re-sprout that year. When the plant is in flower (August) there are a lot of bees around this species; care should be taken to avoid spraying bees when present and if possible, efforts should be made to spray multiple times a year before flowering.	Due to its extensive root system, hand pulling Japanese Knotweed is not recommended as an efficient form of control.	A 2% solution of Triclopyr or Glyphosate is recommended for foliar spraying and is recommended to be done soon after flowering. For cut and paint techniques a 25% solution of Glyphosate or Triclopyr is recommended.	4 years  Seeds do not remain viable beyond one year, but rhizomes and other plant parts can sprout up to three years after treatment.
Japanese Stiltgrass	Japanese stiltgrass emerges in late August.	Small patches can be hand pulled and bagged. Be sure to remove entire root system.	A 2% Glyphosate or Triclopyr solution can be used for foliar spray in August/September.	7 years  Seeds remain viable for 5-7 years.
Multiflora rose	It flowers from April to June and fruits July- Dec. It reproduces by seed and vegetatively.	Hand-pulling small plants is recommended as long as all the roots are removed. It is not recommended for established plants.	Foliar application is best when near flowering time. A 2% of Triclopyr or Glyphosate can be used. Cut and paint or basal bark applications can also be applied in the fall. A 25% solution of Triclopyr or Glyphosate is recommended for cut and paint and 20% of Triclopyr can be used for basal bark treatments.	20 years  Seeds of multiflora rose are viable for up to 20 years.

Species	Biology	Control Recommendations		Monitoring Period
		Manual	Chemical	
Oriental bittersweet	The seeds are viable for several years, but can sprout from roots and runners.	Seedlings are easy to hand pull. Bigger vines can be removed by unwinding them from their host and using a weed wrench to uproot them. This can be done year round, but use caution when berries are present.	You can foliar spray with a 2% solution of Glyphosate or Triclopyr. A 20% solution can be used for basal bark treatment. A 25% solution is recommended for cut and paint treatments, both Glyphosate or Triclopyr can be used.	5 years Seeds do not remain viable, but resprouts from roots.
Purple loosestrife	<i>Galerucella spp.</i> beetles are recommended for bio control agents.	Plants can be removed by hand pulling. All roots should be removed.	An aquatic safe herbicide (Rodeo) should be used. A 2 % foliar spray is recommended in late August early September.	Ongoing Produces nearly inexhaustible seed bank. Bio-control will not eliminate plant.
Spotted knapweed	Plants may contain carcinogenic compounds and skin irritation can also occur, gloves should be worn when handling	Plants can be hand pulled and bagged. Care should be taken to get entire root system and not to distribute seeds if present.	A 2% Glyphosate foliar spray can be used. Plants are most susceptible if sprayed in the late stages of flower buds (late June).	10 years Seeds can survive for 8 or more years.

Species	Biology	Control Recommendations		Monitoring Period
		Manual	Chemical	
Tree of heaven	Tree of heaven flowers May-June, and fruits starting in July. It reproduces by seed and vegetatively. Plants need to be 2 or 3 years old to produce viable seed. It re-sprouts vigorously when cut without herbicide.	Small plants can be removed by hand-pulling or using a weed wrench. Care should be taken to remove entire root system.	A 2% solution is recommended for foliar spray. Either Triclopyr or Glyphosate can be used. Triclopyr is recommended for cut and paint (30% solution) and basal bark (20% solution) treatments.	2 years  Few seeds remain viable after one year.
Water chestnut	Water chestnut emerges in June and sets seed in August	Small patches can be hand pulled in canoes and kayaks. Vegetation can be used as compost.	An aquatic specific herbicide would be used. Also required NPDES permits would have to be in place before control.	15 years  Seeds remain viable for 12 or more years.