



July 22<sup>nd</sup>, 2020

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**PROPOSAL: Invasive Plant Management, Martin Property Boxford, MA**

I visited this site on June 15th, 2020 to assess invasive plant conditions and discuss land management priorities with the landowners at 179C Lakeshore Drive in Boxford, MA. This 60 + acre property is a combination of open field, agricultural field, deciduous and coniferous forest, wetland and riparian areas. The most prominent invasive species is oriental bittersweet and multiflora rose, but there are other mixed woody invasive plants throughout the property as well as patches of garlic mustard. Though invasive plants are found throughout, the main field in the northern portion of the property revealed the highest densities and is the main hotspot where many of the invasive plants are spreading from. There is also significant oriental bittersweet and multiflora rose working its way into the wooded areas south from the field. In the last several years the landowners have been working on managing the bittersweet at the outer edges where the density is lowest and trying to keep it out of the trees. A higher density pocket in the woodland was also cleared by an outside contractor though no herbicide treatment was utilized, and the bittersweet is starting to fill back in.

The main goal discussed for management was to focus in on the highest density field edge in order to manage the more mature, well established oriental bittersweet and multiflora rose and to cut the smaller climbing bittersweet vines from the trees. Once this edge area is under control, the secondary goal is the management of the climbing bittersweet and mature rose further back into the woodland on the south side of the field. It would also make sense to consider and assess managing the oriental bittersweet growing in the field itself. These efforts can be discussed once the treatment of the edge is underway.

In addition to the field edge, the owners would like support in continuing management of the lower density areas where there is scattered woody invasive shrubs and climbing bittersweet. Because of the effort that has already been and will continue to be put into these areas it was discussed that LSI may be of assistance on an as needed basis. We will provide a daily rate and can schedule management season to season depending on how much work and assistance is needed.

Further, it is recommended that the area of oriental bittersweet that was managed previously see continued management. The bittersweet vines are re-establishing very quickly, blanketing the forest floor, and climbing up trees. We can provide a separate cost estimate for management of this area if desirable. Another option here would be continued annual mowing and clearing of bittersweet from trees.

For successful suppression and long-term control of these higher density areas, foliar herbicide application is needed. However, it is understood that the landowners do not wish to use synthetic herbicides for any type of foliar treatment (though direct cut stem application with Rodeo was agreed to). We are providing an alternative organic herbicide management sequence for all foliar work in this proposal. The research for overall effectiveness is new, and long-term control is uncertain. Results will have to be closely monitored and tasks/management re-assessed and adapted as needed on a year to year basis. The use of organic herbicides also requires more frequent and consistent applications each year and is approximately six times more expensive than synthetic options. This increases the overall cost of management significantly. We would be purchasing this organic herbicide specifically for management on your property. The estimated cost of the product for each year of treatment is listed as a separate line item in the proposal for your consideration.

Alternatively, after the initial prep cut and cut stem treatment is conducted, you may choose to manage the field edges through continued annual cutting and mowing. This will not reduce the invasive plant populations, or keep them from growing, but it will keep them at bay and keep the bittersweet from maturing in the trees.

Further Considerations:

Your project falls under the jurisdiction of the Wetlands Protection Act (WPA) in the town of Boxford. Due to your farm status, you may be exempt, but it is still recommended that the Boxford Conservation Commissions be contacted to discuss the project, and that you are prepared for the possibility of having to file a Request for a Determination of Applicability (RDA with the Dartmouth Conservation Commission and with the Massachusetts Department of Environmental Protection (DEP). We can help with this process if it is determined to be necessary.

Your project is also classified as Priority Habitat by the Natural Heritage Endangered Species Project (NHESP), their approval and input will also be necessary and will need to be submitted if permitting is required. We can provide the appropriate maps and proposed treatment methods for NHESP to review. Depending on the rare species habitat that is represented on site, proposed treatment methods or timing of methods may need to be shifted, or the presence of a botanist or specialist may be required. Once NHESP has responded with any special requirements they may have, we can adapt and adjust the proposal as needed.

Listed below is an estimated budget for services associated with managing invasive plants for the total area of management interest. A map displaying all the management areas discussed is included as Appendix A for reference.

Methods and proposed costs for invasive plant control work on this property are described below.

## Methods Summary

### *Foliar spray application (backpack sprayers)*

Our crew will conduct a foliar spray herbicide application using low-volume hand-pumped backpack sprayers. This method is used for invasive shrubs <5' tall and/or with stems < 1" diameter and low-growing bittersweet vines within upland, wetland, sensitive and non-sensitive areas.

### *Mowing*

High density woody invasive plants growing along trail edges will be mowed with a DR Brush mower where site conditions allow access. This equipment reduces the size and foliar density of target species, facilitating subsequent foliar herbicide applications.

### *Cut Stem Treatment*

For invasive shrubs that are >5' tall and/or with stems > 1" diameter, and for bittersweet vines growing vertically into trees, we will conduct a cut stem/stump herbicide application in areas that mowing is not feasible. Larger plants will be cut with loppers, brush saws or chainsaws. A concentrated herbicide mix will be applied directly to the cambium or outer layer of each individual cut stem or stump to ensure targeted treatment.

Upon your authorization, Land Stewardship, Inc. (LSI) will provide the following services:

## Treatment Methods, Schedule, and Cost

### **Field edge**

2020

- Task 1. Cut Stem Treatment (CST)/Prep cut. Fall 2020. Cut stem treatments will be performed on all large mature invasive shrubs and mature climbing bittersweet within 15ft of the field edge or up to stone wall property boundaries. Prep cut work using a mower may also be conducted where/if feasible. Cut material will be left in place to break down naturally but will be pulled back from the field.

\$5,000.00

2021

- Task 2. Initial foliar. Early Summer. All remaining woody invasive plants and low growing/mat bittersweet will be foliar treated with backpack sprayers. \$1,500.00
- Task 3. Follow up foliar treatment. Late Summer. Foliar applications to any resurgent or missed woody invasive woody plants and low growing/mat bittersweet. \$1,500.00
- Organic Herbicide. Approximate cost associated with purchasing and shipping the necessary amount of herbicide anticipated to complete all three treatment tasks for 2021. Any remaining product will belong to you for continued management needs. \$800.00

2022

- Task 4. Initial foliar. Early Summer. All remaining woody invasive plants and low growing/mat bittersweet will be foliar treated with backpack sprayers. \$1,200.00
- Task 5. Follow up foliar treatment. Late Summer. Foliar applications to any resurgent or missed woody invasive woody plants and low growing/mat bittersweet. \$750.00
- Organic Herbicide. Approximate cost associated with purchasing and shipping the necessary amount of herbicide anticipated to complete all three treatment tasks for 2022. Any remaining product will belong to you for continued management needs or can be saved for next year's treatment to help reduce cost if there is enough left over. \$500.00

2023

- Task 6. Follow up foliar treatment. Early Summer. All remaining woody invasive plants and low growing/mat bittersweet will be foliar treated with backpack sprayers. \$500.00
- Task 7. Follow up foliar treatment. Late Summer. Foliar applications to any resurgent or missed woody invasive woody plants and low growing/mat bittersweet. \$500.00

- Organic Herbicide. Approximate cost associated with purchasing and shipping the necessary amount of herbicide anticipated to complete all three treatment tasks for 2023. Any remaining product will belong to you for continued management needs. \$250.00

**TOTAL: \$12,500.00**

**Additional Areas (as needed)**

We can provide a 2-person crew at a daily rate of \$1,500.00 to help in the lower density areas when the landowners need management assistance with cut stem treatment work to climbing bittersweet vines. Availability of crew and the number of days of work we can offer will depend on the time of season and current scheduling demands.

## **Success Criteria**

The use of organic herbicides is still a relatively new practice and has not been studied long enough to ensure lasting results. Though initial research is promising, we cannot be certain of the overall effectiveness for long term control. That said, we predict the following:

65% control of invasive plants resulting from 2020 & 2021 treatment; 80% control resulting from 2022 follow-up treatments; 90% control resulting from 2023 follow-up treatments.

We will monitor the results of treatments year to year and work with you to adapt management as needed.

## **Quality Assurance and Reporting**

I will serve as the project manager for your project. We will inspect all crew work firsthand to ensure that the treatment was well executed, thorough and effective. We will keep in close contact with you to keep you informed of our schedule and progress. Our crew leaders use smart phones to submit daily work logs with photos and GPS to document areas treated. Upon completion of each task, we will prepare a land management record which will summarize work completed each day (crew, weather, hours worked, herbicide used, herbicide amount and notes). A GIS aerial map will accompany the land management record to show areas worked for each task performed.

## **Maintenance & Stewardship**

Successful invasive plant management requires a long-term, ongoing commitment to protect your investment in this project. Invasive plants can be reintroduced to the project area by wind, birds and other animals. In addition, residual seed bank sources can continue to produce seedlings for several years after the mature plants have been removed from a site. To keep invasive plants out of the area it will be necessary to monitor the area by scouting for new patches and individual plants even after the treatment. Options for managing invasive plants after the initial two years usually include hand-pulling, spot herbicide spraying, and/or repeated cutting. Arrangements can be made for continuous stewardship of the property on an annual basis. I am available to help you plan invasive plant stewardship treatments.

However, successful long-term maintenance is ultimately the responsibility of the landowner who must actively manage the property in order to take appropriate preventative management actions.

## **Payment Schedule**

We will provide you an invoice within one week of each task completion. The land management record will follow within two weeks of task completion. Payment is due upon receipt of invoice.



**Appendix A. Map displaying management areas, DEP wetlands, wetland buffers and NHESP Priority Habitat**

