Smith Conservation Land
Invasive Species Control Report

9/15/2022
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This report covers activities from November 2021 to early September 2022. The report provides information on the various invasive species control efforts at the Smith Conservation Land located at 199 Whitcomb Ave. in Littleton, MA. More information about the project can be found at the project web page.

Mechanical/Manual Control

1. **Spring Forb Pulling Unit 4**

Work Completed:

- Staff and volunteers have conducted manual removal of invasive forbs that emerge in the spring. These include garlic mustard, narrow-leaved bittercress, greater celandine, Dame's rocket and wall lettuce. Area covered = 0.7 Ac.
- Total hours spent in 2022: 18 hrs staff, 18 hrs. volunteers. (36 total)

Results/Recommendations:

- We have not been able to recruit enough volunteers to remove all of the invasive plant material each year. This effort will require *at least* 10 years of consistent pulling to be effective (based on our experience with use of this technique at other sites). Priority should be placed on full removal of wall lettuce as this species is not yet as widespread and established as the others.

2. **Forest Margin Pulling. Unit 4**

Staff and volunteers periodically walk this boundary and remove invasive plants that may be encroaching into the forest. This has been an effective technique.

3. **Cardboard solarization**

Work Completed:

In the southeast residential buffer area, staff laid down 900 sq.ft. of cardboard. The cardboard was partially covered with wood chips. 20 hrs

Results/Recommendations:

Unfortunately, bittersweet and other plants did come up through some of the cracks. Staff will cut the vegetation and "repair" the cracks in the cardboard.

SVT will add a plastic solarization plot adjacent to the cardboard plot.

4. **<u>Bittersweet Root Extraction (Unit 1 and Unit 2)</u>**

Work Completed:

Staff have been working on root extraction of Asian bittersweet in the residential buffer area and half of the 100 ft. wetland buffer area of the red pine stand (Unit 1). 160 staff hours + 4 volunteer hours, covering approx. 0.2 acres (95 % removal).

SVT hired Backyard Invasives to conduct bittersweet root extraction in a portion of the 50 ft. wetland buffer area of the European tamarack stand (Unit 2). Contractor spent 40 hours on 0.2 acres, removing 50% of the bittersweet.

Results/Recommendations:

The root extraction technique is working well but it is **extremely** time consuming, it is difficult to maintain worker morale, it becomes more challenging to extract the smaller roots, and the poison ivy and ticks sometimes cause health issues. It was harder to extract roots in the drought because it was more difficult to dig in the dry soil. These efforts were assisted by a few volunteer hours, but we found that volunteers were unwilling to work in this area of such abundant poison ivy.

Before (July 2021)

After (September 2022)

Photos taken in approximately same location.

In Unit 2/Tamarack, it may be best to do a more rapid pulling of a good portion of roots this fall in order to reduce overall abundance and then go back in next year with a more thorough technique of root extraction.

5. **<u>Cutting (Unit 1 and 5))</u>**

Work Completed:

Repeated cutting of bittersweet (2x in 2021 and 1x in 2022) (0.4 Acre plot/half of the 100 ft wetland buffer area in the red pine stand.) 24 hrs.

In Unit 5, we mowed the field area during the summer in an attempt to weaken the bittersweet.

Results/Recommendations:

The cutting technique in the red pine stand worked much better during this past summer's drought, with very little regrowth after only one cutting. This year's treatment eliminated approximately 90% of the bittersweet. We may expand the cutting technique to an additional wetland buffer area in the tamarack stand (Unit 2), although this is risky if it will NOT be a dry summer next year.

We are concerned that the mowing only technique in the field will yield more abundant and robust bittersweet growth, even though it does prevent seed set.

Herbicide Control

Herbicide application (Units 1,2, and 5)

Work Completed:

9.8 acres were treated: cut-stump treatment in fall 2021 and foliar treatment in summer 2022. This was primarily bittersweet, but other invasive plants treated included honeysuckle and common buckthorn.

Additionally, a targeted foliar spray was used to treat a patch of black swallowwort (approximately 400 sqft.).

Red Pine Stand – Heavy infestation area post foliar application

Winterberry alive amidst treated/dead bittersweet. Example of how applicators are able to work around native vegetation.

Results/Recommendations:

Upon return in summer 2022, the contractor noted that the cut-stump work was not as thorough as we had hoped, but results on treated stumps was good. The foliar treatment yielded 98% mortality of Asian bittersweet and other invasives. There was a low level of non-target plant mortality (a few plants) and impressive saving of native plants amidst invasive plants. We should re-assess success next June and evaluate percent resurgence of bittersweet.

We are optimistic that our targeted treatment of the isolated patch of black swallowwort will yield full elimination of this species at this site.

Biological Control

Biological Control – Hemlock Wooly Adelgid

Work Completed:

Staff released three colonies of beetles, *S. tsugae*, in the hemlock stand to control the hemlock wooly adelgid.

Results/Recommendations:

SVT will not be able to assess the results until a few years into the project as it will take time for the beetles to do their work. The release of *S. tsugae* beetles into the environment has been studied for almost 30 years, and there haven't been any adverse effects on native species. So far they have been released in 16 states and have shown promising results in some forest study sites in Connecticut.