Bates Shepley Invasive Project Update
August 6, 2014

The Groton Conservation Trust, with funding from a grant from The Community Foundation of North Central Massachusetts, embarked on a project at the beginning of July to study different invasive species removal techniques at two different properties in Groton, the Bates Land and Shepley Hill. The project has been conducted under the direction of trustee David Black with assistance from trustee Michelle Ruby. Most of the work has been carried out by technician Sarah Black and intern Nicole Fronsdahl. At each property, a study area was designated and divided into six treatment areas (see Figures 1 & 2). Each property had two treatment areas in which all invasives were to be mechanically removed, two in which invasives were to be cut and the herbicide triclopyr painted on the cut stump, and two in which the invasives were to treated with a foliar spray of glyphosate (note that at Shepley Hill, the two foliar spray areas and the two cut-stump areas were contiguous with each other). In each of the treatment areas, a 5 meter radius plot was marked and all plants within the plot were inventoried. The inventory identified each species of plant present and counted the number of stems for large (over 1 meter) and small (under 1 meter) woody plants, as well as categorized ground cover species as present, common, or abundant. After completing the inventory, all invasive plants within the mechanical treatment areas were pulled. Smaller plants were pulled by hand, while larger shrubs had to be removed by using a weed wrench and sometimes a combination of chopping, digging, and pulling. Care was taken to remove as much of the roots of the plant as possible. After being removed, plants were placed in brush piles outside of the study area to be chipped at a later date. In one of the treatment areas at the Bates Land, the volume of brush removed was so large that a second pile was started within an already cleared area within the treatment area. Literature research shows that cut-stump herbicide application is unnecessary for plants under one centimeter in diameter, so at both properties, stems under one cm in the cut-stump treatment areas were also pulled and added to the brush piles.

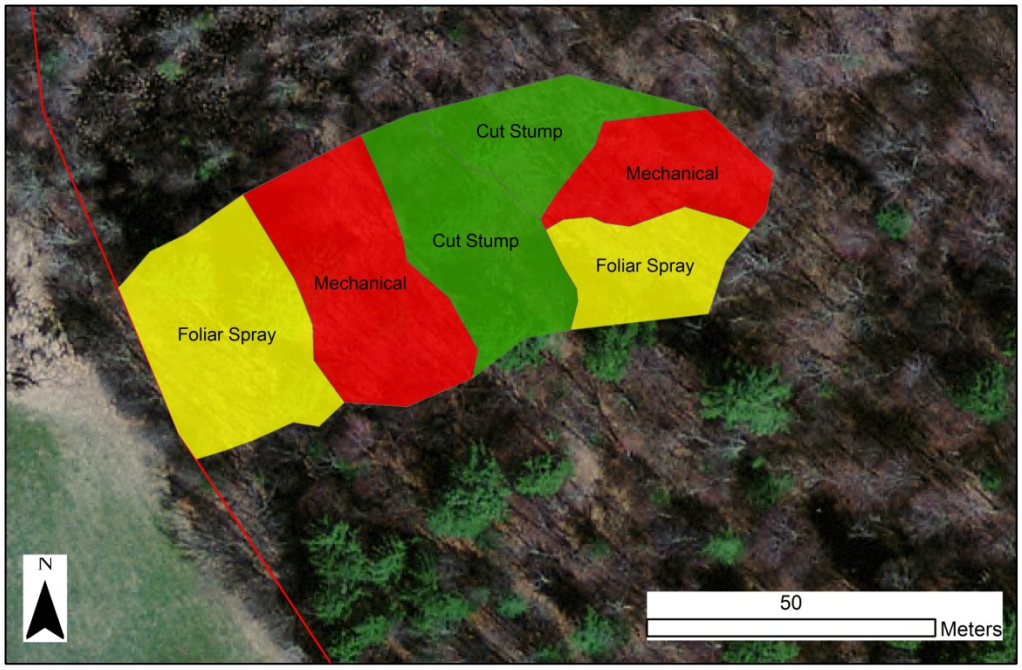

Figure 1. Map of treatment areas at the Bates Land. Area 1 is furthest west, while the eastern areas are number 4 to the south, 5 in the middle, and 6 to the north.

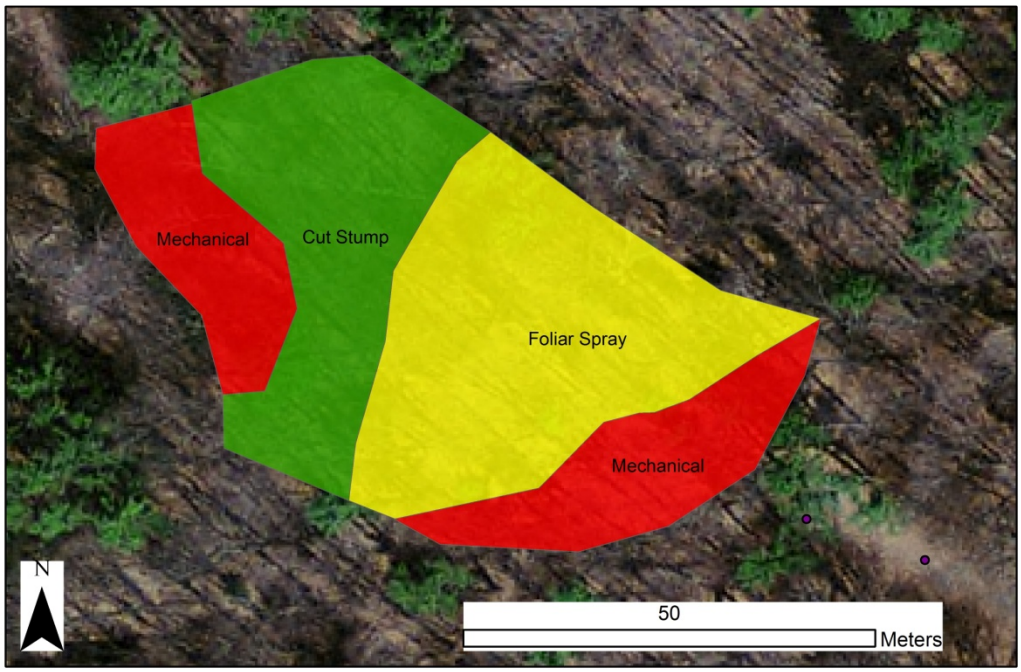

Figure 2. Map of treatment areas at Shepley Hill. Area 1 is the eastern mechanical removal area. Plots 2 and 6 are in the foliar spray area, plots 3 and 5 are in the cut stump area, and plot 4 is in the western mechanical removal area.

As of July 29, the mechanical removal at both properties is complete. The two properties differed drastically in the type and size of vegetation encountered. While both had many of the same species present, common buckthorn (*Rhamnus cathartica*) and Japanese barberry (*Berberis thunbergii*) were the most common at Shepley Hill, with densities reaching 405 per 5 meter plot for buckthorn and 35 per plot for barberry, but most plants were small, under one meter in height (See Figures 3 & 4). At the Bates Land, Tatarian honeysuckle (*Lonicera tatarica*) was by far the most abundant, with densities as high as 344 per 5 meter plot. The individual plants were also much larger, with up to 108 honeysuckle plants over one meter in height in a single plot. Many of these were 2-3 meters tall, had stems 10-15 cm in diameter, and had thick stems that sprawled 2-3 meters out along the ground as well (See Figure 5). As a result, the removal of the plants within the treatment areas but outside the plots at Shepley Hill was completed in two days with three workers, but the removal within the treatment areas but outside the plots at the Bates Land required six days (see Figure 6 for after treatment photo). A small number of invasive plants within each mechanical removal area could not be removed using the tools available as they were too large and too well rooted to be pulled up. These were flagged and will be cut and the stumps painted with triclopyr. As of August 6, the smaller brush piles at the Bates Land (see Figures 7) have been removed using a portable chipper. The larger brush pile (see figure 8) will be left to decompose. We plan to recruit volunteers to help chip the multiple smaller brush piles at Shepley Hill. We have been working with an herbicide application company to set up a time to conduct the cut-stump and foliar spray herbicide applications. We are hoping to do this in mid-late August, but the exact date will depend on weather and availability.

Figure 3. Shepley Hill plot 6 before treatment. Common buckthorn present in lower left is typical of site.

Figure 4. Shepley Hill plot 5 before treatment. Barberry is very common, but many stems originate from single plant.

Figure 5. Bates Land plot 5 prior to treatment.

Figure 6. Bates Land plot 5 after treatment. Large honeysuckle to right of photo has since been removed.

Figure 7. The original brush pile at Bates Land treatment area 5. Pile extends about 8 feet back.

Figure 8. The secondary brush pile ate Bates Land treatment area 5 after 1 day of pulling. Pile is now much larger, approximately the size of a 14-passenger mini-bus.