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Title II RAC Project "Invasive plants in Sylvania"

2013 Annual Report

(submitted 3/16/2014)

Background

Invasive plants spread aggressively and outcompete native plants, because of the absence of natural controls and because of specific traits such as the ability to produce numerous seeds (garlic mustard) or the ability to inject chemicals into the soil that inhibit the growth of other species (garlic mustard, spotted knapweed). The spread of invasive plants not only reduces native plant diversity and the wildlife that depends on it but can also affect water quality (Eurasian water-milfoil forms a dense, slimy mat; knapweed taproots lead to decreased soil water holding capacity which increases runoff and sedimentation). The spread of invasive plants is also a health concern (knapweed can cause severe skin reactions, thistle and Japanese barberry have serious thorns).

Several invasive plants are growing in the Sylvania Wilderness, threatening the beauty and natural diversity of this rare ecosystem. The Sylvania Perimeter Area (the Recreation Area to the north of the Wilderness which contains the Entrance Station, the Day Use building and the road between Clark and Crooked Lake, as well as Snap Jack Lake, a band west of FR 6380/CR535, and FR 6320) is the likely source of some of these invasive plants, with people's boots and equipment, boats, and animals as potential vectors. It is therefore important to control invasives in both the Sylvania Wilderness and the Perimeter Area.

The Ottawa National Forest (ONF), with the help of the YCC and volunteers, has done and continues to do some invasive plant monitoring and removal work in Sylvania. To assist ONF in this enormous task, the Friends of Sylvania (FoS) began to work on the control of some of the invasives in Sylvania in 2010. In 2011, the FoS received a 3-year Title II Gogebic Resource Advisory Committee grant (2011-2013). Another proposal, submitted in 2012, resulted in additional funding for 2014 and 2015 (for more detail, see 'Budget' on page 7). This funding empowers FoS to have a significant impact on the invasive plant monitoring and removal work in Sylvania. It permits FoS to hire part-time students and buy needed tools. With the help of these students and several volunteers, we are conducting large area invasives surveys, removing plants, and minimizing seed sources in the Sylvania Wilderness and the Perimeter Area. The results of our work during 2013 are summarized below.

Work Description

We covered 700-1,000 acres, visiting previously reported sites of invasives (coordinates provided to us by the ONF and coordinates we recorded in 2011 and 2012) as well as identifying new sites. The GPS location and number of plants at new sites were noted and entered into a data base provided by the ONF. 2-way radios permitted the team to spread out and thus cover a larger area while maintaining safety and coordination. At each site, all second-year plants found were pulled and flower or seed heads were cut off and bagged. We also pulled first-year rosettes when time permitted in order to reduce the amount of work the following year. In the Sylvania Perimeter Area, we applied cut-stump treatment (using Garlon-4 supplied by ONF) to Japanese barberry. One of the project leaders (W. Brinkmann) is a 'Commercial Pesticide Applicator' with licenses for both Wisconsin and Michigan.

Since the time of year when an invasive is most easily identified (based on early leaf-out, blooming time, etc.) is different for each species, we conducted the surveys throughout the growing season. Some areas were checked several times during the growing season because some plants flower later than others and small plants in large infestations can be easily missed. Since the landing on islands is prohibited from ice-off to July 15 to protect nesting loons, we have started to check all islands in August and remove first year thistle rosettes so that there will be few if any second-year seed-producing thistle growing on the islands the following spring/early summer when we cannot land on the islands.

The spotted knapweed infestation on the northeast beach of Clark Lake was treated in two ways: The ONF mowed the most densely infested patches and FoS crew and volunteers hand-pulled the numerous less densely infested patches.

Our emphasis initially was on what are generally considered to be the most serious invasives known to be growing and spreading in Sylvania: garlic mustard, Japanese barberry, European swamp thistle, Canada thistle, bull thistle, spotted knapweed. But after our invasive surveys and reviewing documentation in Sylvania for several field seasons, we are becoming increasingly concerned about other species. A prime example is tansy which we found in numerous locations both in the Perimeter Areas and in the Wilderness Areas and which, because of its rhizome root system, is extremely difficult to remove and control.

Our limited funding does not permit us to search as much of Sylvania for invasive plants as we would like to. We therefore initiated partnerships with other organization in this important task. In June 2013 participants from a Sierra Club Service Trip spent 252 hours working on thistles around Whitefish Lake. Also in June, students and instructors from a University of Dubuque environmental science class worked a total of 30 hours pulling Canada thistle at the southern end of Clark Lake. In July participants from a Land O'Lakes Fish & Game Club Service Outing spent 27 hours pulling a variety of invasive plants along a section of FR 6320. All three groups made significant contributions, learned a lot, and will return in 2014.

Work Results

The following 3 Excel tables, documenting our work for 2013, were submitted to Ian Shackleford, Botanist, USFS ONF, in the fall of 2013:

- Known Invasives Locations
- New Locations 2011-2012
- New Locations 2013

Work Discussion

Invasive Plant Site Numbers

Table 1: Number of sites in Sylvania Wilderness and Perimeter Areas for all species and for 5 of the most invasive plants

Species	# sites previously identified by ONF	# sites identified during the 2011-2012 field seasons	# new sites identified during the 2013 field season	Total # sites identified by FoS during the 2011-13 seasons	Total # of sites
All species	**133**	**496 (422)**	**190 (166)**	**686 (588)**	**819 (721)**
3 species of thistle	**42**	**372 (300)**	**164 (141)**	**536 (441)**	**578 (483)**
Japanese barberry	**29**	**70 (70)**	**6 (6)**	**76 (76)**	**105 (105)**
Tansy	**2**	**27 (27)**	**6 (6)**	**33 (33)**	**35 (35)**
Spotted knapweed	**15**	**6 (5)**	**4 (3)**	**10 (8)**	**25 (23)**
Garlic mustard	**3**	**2 (2)**	**2 (2)**	**4 (4)**	**7 (7)**

a. Total Number of Sites (Table 1)

At several sites, more than one invasive species was found. The top number in each row in Table 1 is the number of sites when counting each species at a site as a separate site. This is the ONF method of counting sites. The bottom number in brackets is the number of sites when counting several species growing together as a single site. This is the FoS method of counting for the purpose of doing field work dictated by GPS and mapping requirements. The difference in the method of counting is most obvious in the case of thistles: on many sites more than one species of thistle was found growing in close proximity.

In 2013 we visited 471 (397) previously identified sites. Previously identified sites that we did not visit are mostly sites that are part of the initial ONF inventory for Sylvania (133 sites provided in 2011) for species that are not within the scope of the FoS invasive removal project.

In 2013 we discovered 190 (166) new sites. Of the 190 new sites, 48 were mapped by the US Forest Service as new infestations (sites 4694-4741). The remainder were merged or included with existing nearby infestations.

We did not find as many new sites as in previous years. This means that the quality of our past searches for new sites has been excellent. We suspect, however, that there are still many 'unknown' sites in areas we have not had time to visit, particularly the eastern portion of the wilderness and in damp spots in the interior of forested areas in central and western areas.

b. Specific species (Table 1)

There are so many **thistle** sites around Clark, Loon, Deer Island, and Big Bateau Lakes that the ONF had stopped noting new sites; instead, the shores of these lakes are considered one continuous site. That is why the ONF had provided us with relatively few previously reported **thistle** sites when we started the project in 2011. We, however, record sites around those lakes to make sure no sites are missed, particularly those hiding among the bushes, when we return the following year.

We spent less time on **Japanese barberry** than in previous years and therefore recorded only a small number of new sites and did not visit many previously treated sites. The reason for this is that we had searched much of Sylvania's western boundary intensively in 2011 and 2012. New Japanese barberry plants or resprouts from previously treated plants will not grow more than a couple of inches per year and such small plants will not produce flowers and seeds. We therefore decided to spend more of our limited time and resources this year on the road system around Sylvania, particularly CR 535 all the way to the Wisconsin state line, which is a major source of invasives coming into the Sylvania.

Our number of **tansy** sites does not reflect the true spread of this invasive since we did not start recording such sites until the end of the 2011 field season when we realized how prevalent and serious this invasive is. We have attempted to remove some tansy and have recorded those sites. Given the difficulty of controlling this plant, we have also recorded other tansy sites to document the seriousness of this invasive.

Because of the prevalence of **spotted knapweed** in the Perimeter Area, we recorded new sites only if there was some special reason, such as documenting its spread.

Of the 7 **garlic mustard** sites, two are on private properties located adjacent to Sylvania.

Invasive Plant Site Distribution

a. Japanese barberry (see Map 1, Attachment A)

This map is not much different from that for last year since we did not spend much time on Japanese barberry this year.

This invasive is abundant on private and public properties to the west and northwest of Sylvania. The large number of previously known (ONF data base) and new (identified by us) sites along the western border (FR 6380) and around Snap Jack Lake are therefore not surprising. Only a few sites have been identified deeper into the Wilderness. The most troubling site is the one in the ditch along 6320 that was found in 2012. It serves as a reminder that Japanese barberry, although less abundant, also grows to the east of Sylvania.

b. Spotted knapweed (see Map 2, Attachment A)

This map is not much different from that for last year since we recorded new sites only if there was some special reason, such as documenting its spread.

There is a large spotted knapweed infestation located on the eastern portion of the north beach of Clark Lake. Since the Clark Lake hiking trail runs through this infestation, it is not surprising to see knapweed spreading across the swimming beach and further west. More troubling is the plant found and treated in 2012 along the trail from the shore to Mallard-2 campsite on Loon Lake. It is most likely due to campers carrying seeds from the infestation located at the Loon Lake end of the Clark/Loon portage. Fortunately, it had not come back in 2013. (Sites like that will remain in our data base and will continue to be visited in following years because there could be a seed bank in the soil and new seeds could arrive on the same vectors.)

c. Thistles (see Map 3, Attachment A)

The highest concentrations of originally identified infestations are found around the shores of Clark, Loon, Deer Island, and Big Bateau Lakes. There were only a few previously known (ONF data base) sites on Whitefish Lake and hardly any in the eastern portion of the Wilderness. Our surveys resulted not only in the identification of numerous new thistle sites along the shores of Whitefish Lake and some of the other lakes to the east (and their islands) but also in the identification of several "Mega" infestations, most notably one on top of Deer Island Lake island (perhaps up to 1,000 plants on our first visit in 2011) and another along the Whitefish Lake outlet (exceeding 2,000 plants in 2012).

In 2013 we discovered new sites, mostly European swamp thistle, around all of the western and central lakes as might be expected given their abundance there.

For the eastern portion of Sylvania, the initial ONF data base contained only Canada and bull thistle sites (with one questionable exception) which suggested that the terrain in the eastern portion is not as well suited to European swamp thistle as the central and western portions. However, we have found new European swamp thistle sites in the eastern section (High Lake for example) and along FR 6320 every year which is disturbing since that species seems to be spreading more rapidly than the other two thistle species.

d. Garlic mustard

Three sites of this invasive had previously been identified (ONF data base): along the trail at the southern end of Clark Lake, and at the Birch and Ash campsites on Clark Lake. The site at the southern end of Clark Lake was a single plant and no new plants have been found there since its discovery in 2008. We did not find any plants at Ash during our 2011 and 2012 searches which made us think that the number of sites in Sylvania has been reduced to 1. Unfortunately, we discovered garlic mustard on the trail between the shore and the fire pit at Squirrel-1 campsite on Crooked Lake in 2012. This year, we did find plants at Ash; and a new site was discovered at the drive-in campground by ONF personal.

The two sites at the north bay of Crooked Lake (in close proximity so it looks like one site on the map) are located on private properties. We intend to keep removing the plants as long as the property owners allow access.

e. Other species

As mentioned above, we are becoming increasingly concerned about the spread of **tansy** which, because it cannot be easily pulled without breaking root segments, is difficult to control.

Bird's-foot trefoil, another difficult to control invasive, is wide-spread in an open area to the east of the Sewage Lagoon. It also grows around the Sylvania Entrance Station and along the road to the Crooked Lake boat landing. These could be the source of patches of this plant found elsewhere within the Recreational Area and which are spreading. On the north beach of Clark Lake, for example, we identified a small patch beneath a fallen tree about 3 years ago. By 2012 it had spread and formed 3 separate patches. This plant seems to be associated with disturbance from road construction and contaminated reseeding mixes.

Recent road work on FR 6320 (which represents the eastern boundary of the Sylvania Wilderness) resulted in a wide band of disturbed soil along either side of the road. These disturbed areas have become infested with a variety of invasives, particularly **curly dock** (Rumex crispus) but also thistle, spotted knapweed, burdock, sweet clover. The control of this area is hard work and time-consuming because the deep curly dock tap roots need to be dug up completely. The curly dock infestation is so dense in some spots that we had to seed the resulting bare spots with native plants provided by the ONF.

Evidence of Work Effectiveness

Although we have been pulling plants and cutting off flower and seed heads for only 3 field seasons, we are already beginning to see evidence of the effectiveness of our work.

The **difference in the number of hours of work** it took to pull thistle plants on top of Deer Island island is a good example. A fire about 20 years ago had opened up the forest there and provided disturbed soil. Nobody realized that thistle plants had become established. When we discovered that infestation in 2011, it took 3 people over 6 hours (total of 18 work hours) to pull all of the plants. In 2012 there were fewer plants and it took 5 people only 0.75 hours (a total of about 4 hours, most of which was searching) – a reduction of 75%. In 2013 it took 6 people 0.5 hours (a total of 3 hours). Again, most of which was searching.

Another example is the **number of hours of work** it took to pull thistle plants around the Whitefish Lake outlet. This infestation was discovered in 2012, and it took several days for our crew and some volunteers, it took only one day in 2013.

It is clear that we are finding additional sites every year. We believe that is because we are getting better at knowing where to look. The number of new sites this year is also less than last year which suggests that we will have identified and will be controlling nearly all existing sites in the not too distant future in the areas covered by our searches.

Personnel

1. Hired personnel:
    a. 3 part-time college students and 1 high school student (David Sirvio, Samuel Hein, Haily Bares, and Sarah Zelinski-Sauter) who worked a total of 831 hours between May and August

2. Volunteers:
    a. 2 Project Leaders (Daniel Wallace and Waltraud Brinkmann) who donated a total of 500 hours of field work
    b. Several local (Watersmeet area) and out-of-town (Madison area) volunteers, including participants in the Sierra Club Service Trip, the Land O'Lakes Fish & Game Club and an Iowa college class, who donated a total of 488 hours of field work

2013 Budget:

Expenses:	
Student stipends	$ 11,766.00
Supplies	$ 490.59
Total Expenses	**$ 12,256.59**
Income/Payments:	
FS Agreement # 12-PA-11090700-011	$ 7,803.31
Shortfall, paid by donations to FoS	$ 4,453.28
Total Payments	**$ 12,256.59**
Forest Service Non-Cash contribution: day passes, camping permits, use of aluminum boat	$ 464.00
Friends of Sylvania Non-Cash contribution: 988 hours of volunteer field work @ $21.36/hr* (our MOU with the FS required a contribution of 130 hours)	$ 21,093.00

*****The rate of $21.36 for volunteer work is the one the FS uses to determine matching funds

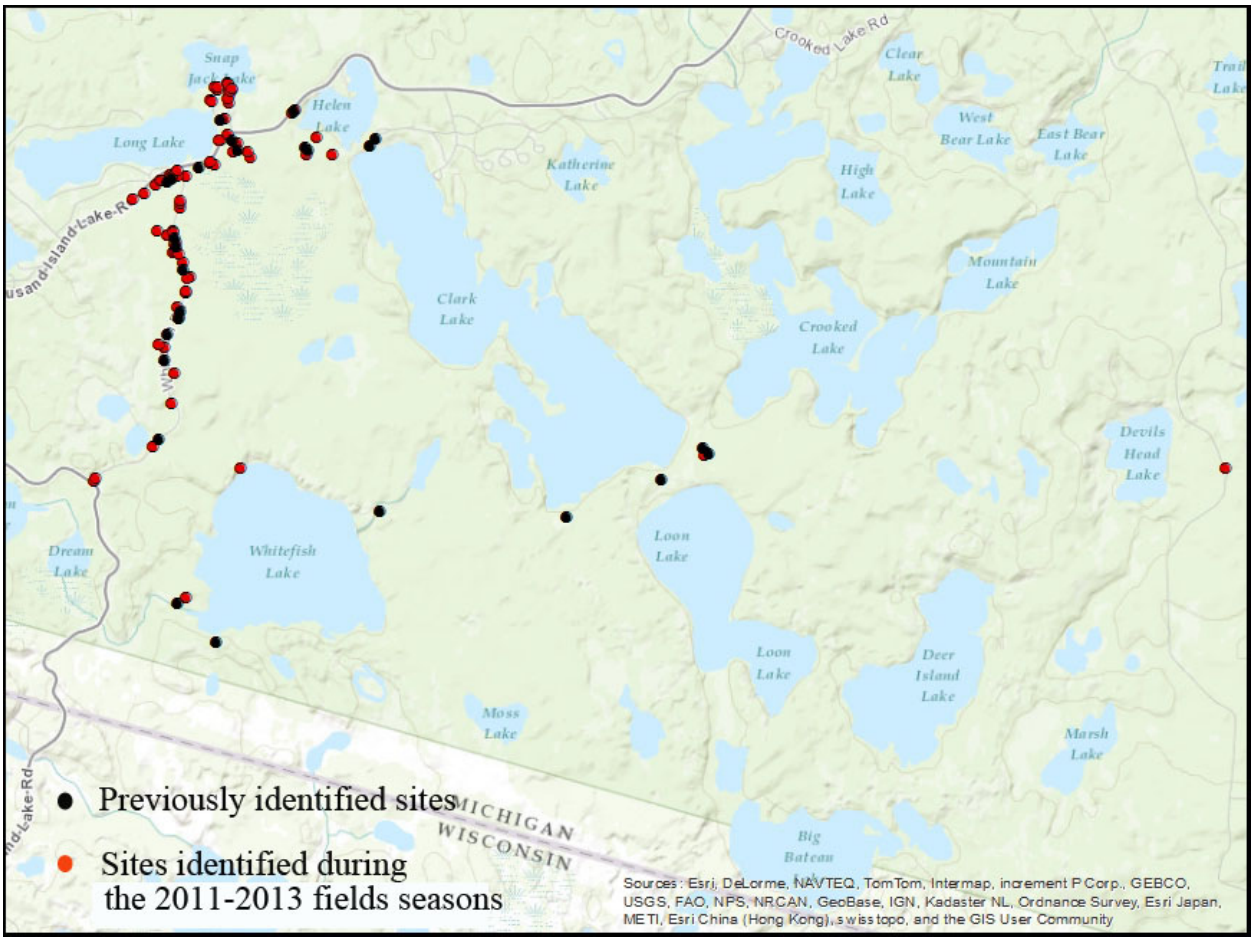
2014-15 Budget:

In 2013 FoS was awarded a Gogebic Resources Advisory Committee grant, from a 2012 application, in the amount of $18,492. The USFS and FoS signed Modification #1 to the existing agreement to deliver the additional funds. In this agreement modification, FoS promised $9,289.80 of in-kind work. This funding will support Sylvania invasive plant work in 2014 and 2015.

The Friends of Sylvania sincerely thank all our volunteers and the Forrest Service for their assistance in protecting Sylvania with this critical invasives removal project.

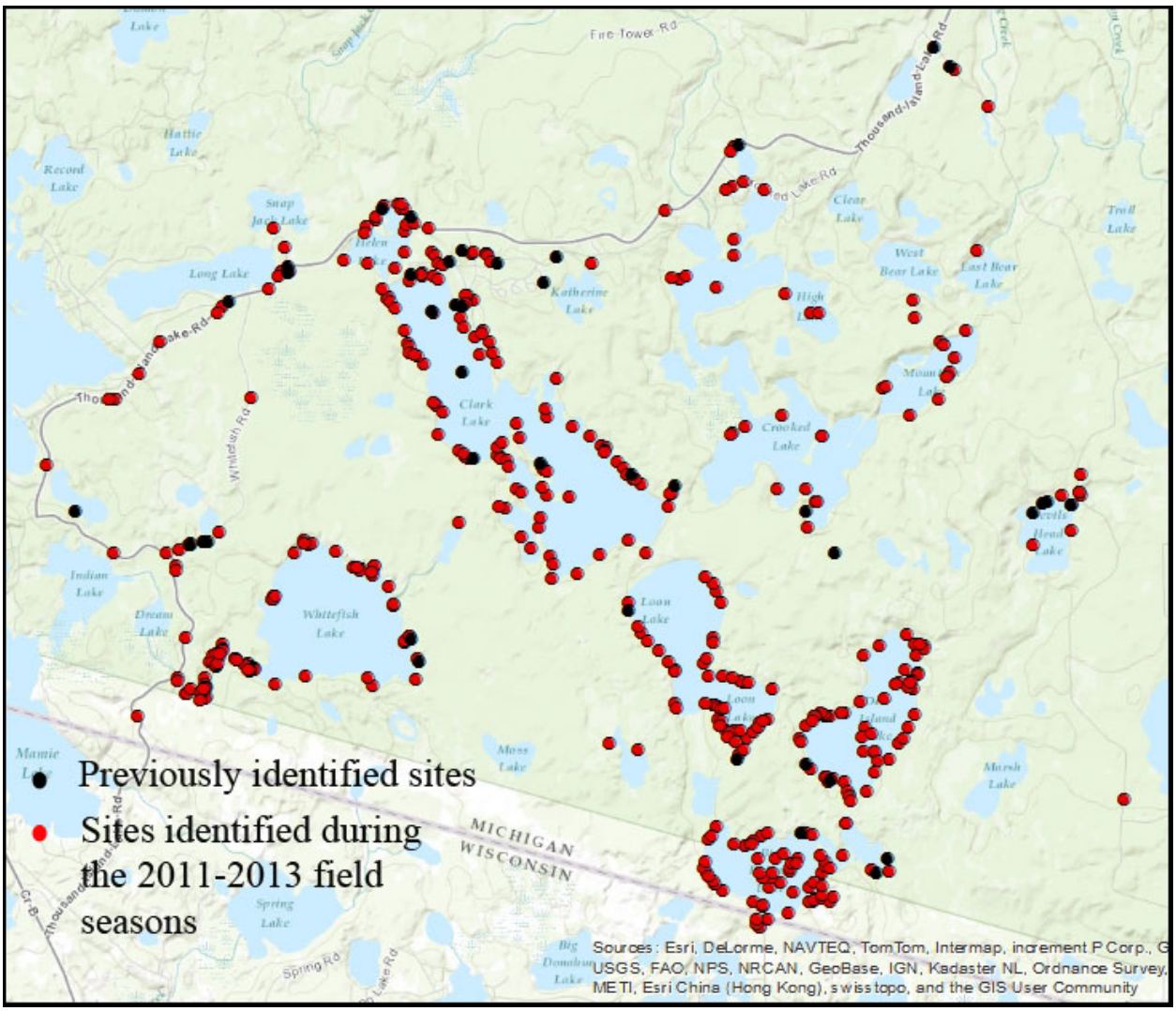
Attachment A

Map 1: Japanese barberry (*berberis thunbergii)* sites in Sylvania



Map 2: Spotted knapweed (*Centaurea maculosa)* sites in Sylvania

Map 3: Thistles (*Cirsium palustre, arvense & vulgare)* sites in Sylvania



Map 4: Garlic mustard (*Alliaria petiolata)*sites in Sylvania