

# Friends of Petrie Island Tree Report- Summer 2020 updates

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This report is a continuation of the 2019 tree survey. As was done last year, collaboration between Al Tweddle and Sherry Nigro (Friends of Petrie Island) (FOPI), and Janet Mason (Ottawa Stewardship Council) and Owen Clarkin (Ottawa Field Naturalists' Club) continued on the inventory of the Island's tree community. The purpose of the inventory is to provide a baseline to measure the health of trees and shrubs on Petrie Island.

The inventory focused on the picnic area and Nature Centre, then shifted focus to the Cottonwoods on the east side of the Island, and the bike trail and the old dump, for the purpose of working in a familiar area while attempting various methodologies.

The 2019 inventory recorded 445 trees, while the present survey added 629 trees that were not counted in the 2019 survey. This was determined by cross-referencing the 2019 records with the 2020 records on iNaturalist. The 2019 inventory did not record some areas of the Island, and so the purpose of continuing the inventory in 2020 was to collect any excluded trees of concern.

Priority species include Butternut (*Juglans cinerea*), Hackberry (*Celtis occidentalis*), Eastern Cottonwood (*Populus deltoides*), large trees over 100 cm in diameter, and invasive species.

When figuring out the most effective way to conduct this inventory with an absence of volunteers due to the pandemic, the following method was attempted:

## Methodology

The summer student traced over the 2019 inventory maps created by the City, and used various landmarks to add trees, by hand, without GPS coordinates. Three maps were created this way: Butternut, Hackberry, and Cottonwood. These maps are at a large scale, and so details are missing, such as where land ends and the River begins. This also compromised the accuracy of added trees.

In addition to these three maps, a spreadsheet was created, and each tree on these maps was numbered, to correspond with spreadsheet entries. Each tab was a tree species, and information included the estimated DBH range, whether the tree was wire wrapped, if it had beaver damage, and if it was dead.

After consulting with Sherry Nigro and Al Tweddle, a refined methodology was developed and tested, and the results were discussed with Janet Mason and Owen Clarkin.

Working with smaller sections of the Island each shift, better accuracy was achieved. From Google Earth, sections of the Island were chosen to focus on each day. These maps were printed out and each tree was plotted by hand with a corresponding number (numbers equate to spreadsheet records), like before, but in addition to this, trees were recorded with their GPS coordinates on iNaturalist. The student worked on this inventory alone, and only used her phone for GPS accuracy consistency. During the first day of sampling, the GPS accuracy in iNaturalist was 6-8 metres.

Materials used included a flexible measuring tape, the paper maps, and a cell phone with iNaturalist.

As per the 2019 inventory, trees less than 1 metre in height and/or less than 5 cm in diameter were not recorded. Dead trees were recorded, to species if possible. Select shrubs, including Speckled Alder and Buttonbush were recorded.

In the field, priority tree species were recorded on iNaturalist and the GPS coordinates were recorded by the app. On the app, in the notes section of each observation, the following was recorded: Diameter at Breast Height (DBH) as circumference (cm), tree characteristics (healthy, dead branches, cracks, cavity/rot, disease), whether the tree is wire wrapped, and if there is beaver damage. There are a handful of species in low abundance on the Island that will also be recorded if found: Slippery Elm, Pin Cherry, Grey Birch, Paper Birch, Prickly Ash, and Blue Beech. Of these species, only paper birch was found and recorded in the present inventory. Other species were identified and recorded, focusing on priority species (see above). For data quantity purposes, a goal of 1000 trees was set, but this inventory recorded 669 trees and shrubs. Some or all of each shift, beginning Saturday, June 20 up to Sunday August 2 was dedicated towards one area of the Island to inventory. If entire stands of a single species (which is not a priority species; see above) were in the areas to be inventoried, the larger trees (greater than 100 cm in diameter) were recorded, with a note of the extent of the stand on the map. This was done with Silver Maples and Manitoba Maples.

## Data Analysis

iNaturalist records were downloaded and organized in a spreadsheet. Circumference was converted into DBH as data analysis occurred throughout the project. For isolating specific categories of trees, 'tags' were added to each iNaturalist observation. Carrying on from the previous inventory, tags describing the DBH are: **RA** (< 10 cm), **RB** (between 10 cm to 24.99 cm), **RC** (25 cm to 49.99 cm), **RD** (50 cm to 74.99 cm), **RE** (75 cm to 99.99 cm), and **RF** (> 100 cm). **WW** indicates wire wrapping (**NWW** for no wire wrapping), **Dead** if the tree is dead, **BD** if there is any sign of beaver damage (included trees wrapped after some beaver damage) (**NBD** for no beaver damage), **Disease**, if the tree is dying from diseases/pests such as Butternut Canker, Emerald Ash Borer, or Dutch Elm Disease; **AGS** indicates the tree is healthy and is estimated to live for more than five years, **UGS** indicates the tree looks unhealthy and is estimated to die in the next three to five years, and new tags for the present inventory; **Planted** for trees that have been planted by FOPI or the city (which are marked as 'cultivated' in iNaturalist), **Shrub** for shrubs that were to be included in the inventory, and **Invasive**, for invasive species marked for removal.

## Discussion

During her eight-week contract, while completing other tasks in the FOPI Park Monitor job description, the summer student recorded 669 trees and shrubs, spread over the Island. Areas completed include: Picnic area, Turtle Trail, Muskrat Trail, Basswood Trail, bike path, and Sunrise Trail. Areas not completed include everything down the Bill Holland Trail. It appears that areas inventoried this year, compared with the previous inventory were the Sunrise Trail, the bike path, and the wooded area west of Trim Road and off the Basswood Trail (see Figure 1). As previously mentioned, the present inventory focused on priority species of the Island, which include Eastern Cottonwood, Butternut, Common Hackberry, Bitternut Hickory, Black Ash, and

Paper Birch. Other priority species listed in the Methodology section were not found in this inventory (Slippery Elm, Pin Cherry, Grey Birch, Prickly Ash, and Blue Beech

### Eastern Cottonwood

The present inventory included dead standing and felled trees, to show the loss the Island has suffered over the past ten years from beaver damage as well as flood damage. The main areas of damage include shorelines, the end of the Turtle Trail, and off the original road/bike path where there was previously a garbage dump (see Figures 2 and 3). Not much damage has been done along the Sunrise Trail. Along the original road (Trim Road) that came into the Island and the 'bend' (road before the Causeway), there is not much damage and not many of the trees have wire wrapping (see Figure 4). Another important note is that there have been studies on a species of rare moss living under the wire wrapping on the Cottonwood bark.

A note on beavers at the Island: The City used to trap beavers to keep them under control, but this stopped about ten years ago. The beavers at Petrie are Bank Beavers, meaning they do not build dams, but instead build lodges along the shoreline (Figure 5).

### Common Hackberry

Considering the previous inventory, a large stand of Hackberry trees are concentrated on the middle island (see Figure 6), which was not inventoried this summer. There were a number of new trees inventoried off the Sunrise Trail (see Figure 7) and off the Basswood Trail and west of Trim road. A good number of larger trees had saplings growing near them, indicating a continued existence of the trees on the Island.

### Butternut

From 2007 to 2009, FOPI was a participant of RVCA's Butternut Recovery Program, and with help from the Ottawa Stewardship Council, planted approximately 20 seedlings. Of these, as of 2012, six trees had survived, while in September 2013, only five trees were still alive. The present inventory recorded that one of the trees (unknown when planted) has died (still standing) (see Figure 8).

The present inventory found that at least one Butternut on the Island is producing fruit. Although the area it was found in was not inventoried, this specific tree was added to iNaturalist. The tree is located on the right side of the Beaver Loop, when entering where the City of Ottawa trail signs are on the Bill Holland Trail. It was found producing three fruit on July 26, and two of the fruit were collected for seed.

### Bitternut Hickory

There were eight trees recorded on the map from the previous year's inventory, while four were recorded in the present inventory, which are all different than the previous inventory's recordings. One is located near the interpretation centre, while the other three are located in the wooded area west of Trim Road (see Figure 9).

### Willow Species

A complete Willow tree inventory was conducted by Owen Clarkin and Janet Mason in 2019, so no willows were recorded in the present inventory.

### Silver Maple

Silver maples were only recorded when a few individual trees were in an area. For areas like off the Sunrise Trail on the River side, where there is a stand of only Silver Maples, each tree was not recorded, but the area was identified on paper maps.

One concern for the silver maples along the shore is bank erosion, and from that, exposed roots and risk of becoming uprooted (See Figure 10).

### Manitoba Maple

These trees were also not recorded, as there are many along the Sunrise Trail. They were often seen displaying coppice growth and spread out, probably shading out a lot of other species.

### Black Ash

There were no Black Ash recorded in last year's inventory (based on the iNaturalist project), and the only ones recorded in the present inventory were located in the wooded area west of Trim Road (See Figure 11). Most were small (RA or RB), but healthy.

### Green Ash

There have been a significant number of Green Ash lost from Emerald Ash Borer and removed by the City of Ottawa (Figure 12). Some were recorded which looked mature and healthy, and were noted as AGS.

### Basswood

There were not many Basswood recorded in the present inventory that had beaver damage, but it has been noted that down the Bill Holland Trail some Basswood have beaver damage. Not many Basswood were recorded, as it was not a priority species.

### American Elm

Most Elms recorded were located in Areas 4, 5, and 7 on Map 1. 12 of them looked unhealthy, and had been affected by Dutch Elm Disease. There are a number of younger trees, which may help the population on the Island (See Figure 13).

### Invasive Species

Invasive species recorded include European and Glossy Buckthorns, Dog Strangling Vine, and Japanese Knotweed. There were only two small areas with a few stems of Japanese Knotweed, so it is not a concern for the Island at this point, but while small and manageable, preventative action should be taken. There are species of Honeysuckle on the Island, but do not exhibit invasive tendencies. The major species of concern are species of Buckthorn and Dog Strangling Vine. There are a few isolated areas of Dog Strangling Vine, one near the house down the Bill Holland Trail.

## **Goals and Next Steps**

A major goal of these inventories is the development of a forest management plan. This will be developed with the Rideau Valley Conservation Authority (RVCA). This management plan would discuss erosion control, tree species stewardship, and conservation measures.

This data is being shared with Carleton University students for analysis as a fall term project. It is recommended they analyze data for species composition, the DBH distribution to indicate maturity of the forests, and highlight trees with wire wrapping that has successfully deterred beavers. Then, an analysis of all data (2019 inventory, Willow data, 2020 inventory) to show species composition, DBH distribution, and a list of the significant trees, based on FOPI criteria (the priority species).

They may also create maps using iNaturalist tags to isolate information useful to future management on the Island. Information to include on maps will be determined later.

Another potential task they could take on is research on invasive species removal.

The north shore of the Island is badly eroded, so students could collaborate with RVCA and develop plans for erosion control.

### **Recommendations and Suggestions**

If the data suggests that wire wrapping in fact works to deter the beavers, FOPI should wrap more large, older Cottonwoods, as a preventative measure (Figure 14). Specifically, Cottonwoods that are adjacent to high-flood areas where beavers have easy access.

For the present inventory, the student went off trail to cover the entire area beside the Sunrise Trail, and began inventorying the forest off of Basswood and west of Trim road, but did not complete that area. This means that for dense areas that were not completely covered, there may be Cottonwood stumps that were not recorded. Therefore, it is recommended that a shorter inventory be done in the fall when there is more visibility in the dense areas.

In general, continued monitoring is recommended, for Emerald Ash Borer, Dutch Elm Disease, Butternut Canker, and beaver damage. Perhaps not as big of a problem, beavers also remove Dogwood and other shrubs along the shoreline. They do grow back, but this may disrupt bird nests and shoreline erosion. Beaver damage is especially apparent along the south side of the Bill Holland Trail, where they have removed Silver Maple, Basswood, Cottonwood, and shrubs. They also target Bur Oak and Trembling Aspen, which are not abundant on the Island.

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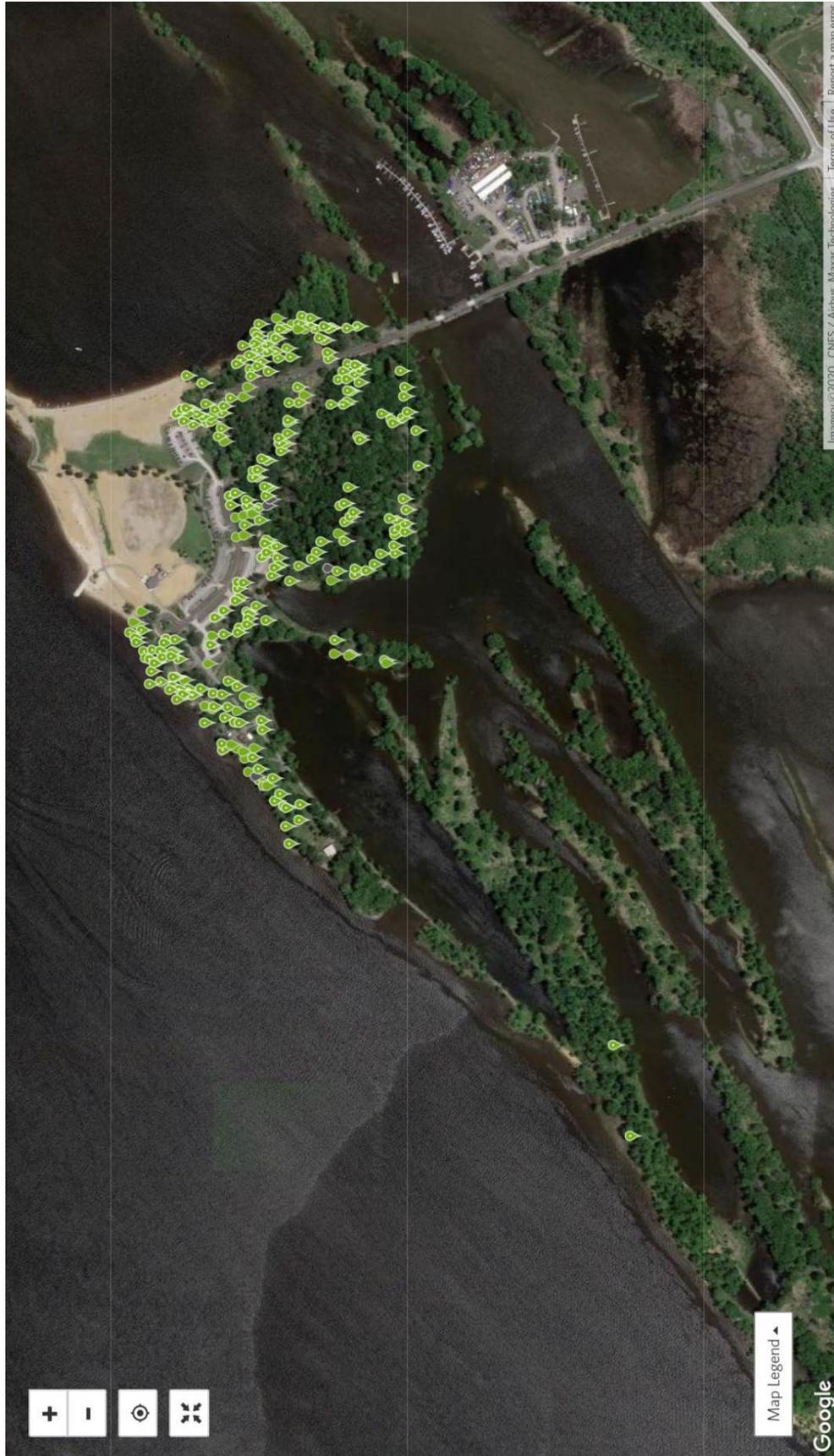


Figure 1. All trees inventoried. Map from iNaturalist.

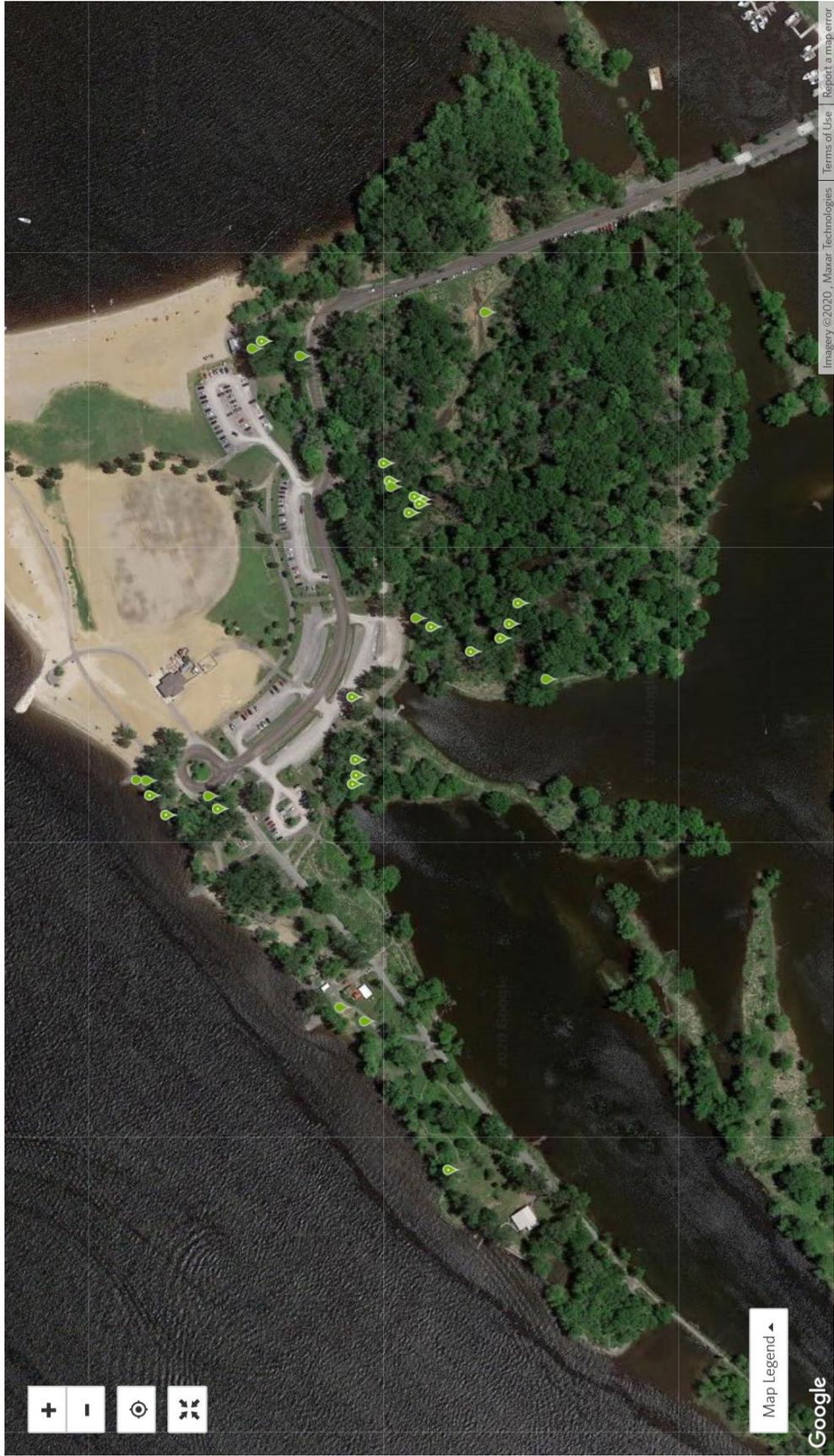


Figure 2. Eastern Cottonwood trees recorded in the present inventory that are dead with beaver damage. Map from INaturalist.



Figure 3. Eastern Cottonwood trees that have been wire wrapped, as well as have been damaged.



Figure 4. Eastman Cottowood trees without beaver data



Figure 5. Example of a beaver lodge made of primarily Red Osier Dogwood, with soil collected from the pile in the photo. Photo by Al Tweddle.

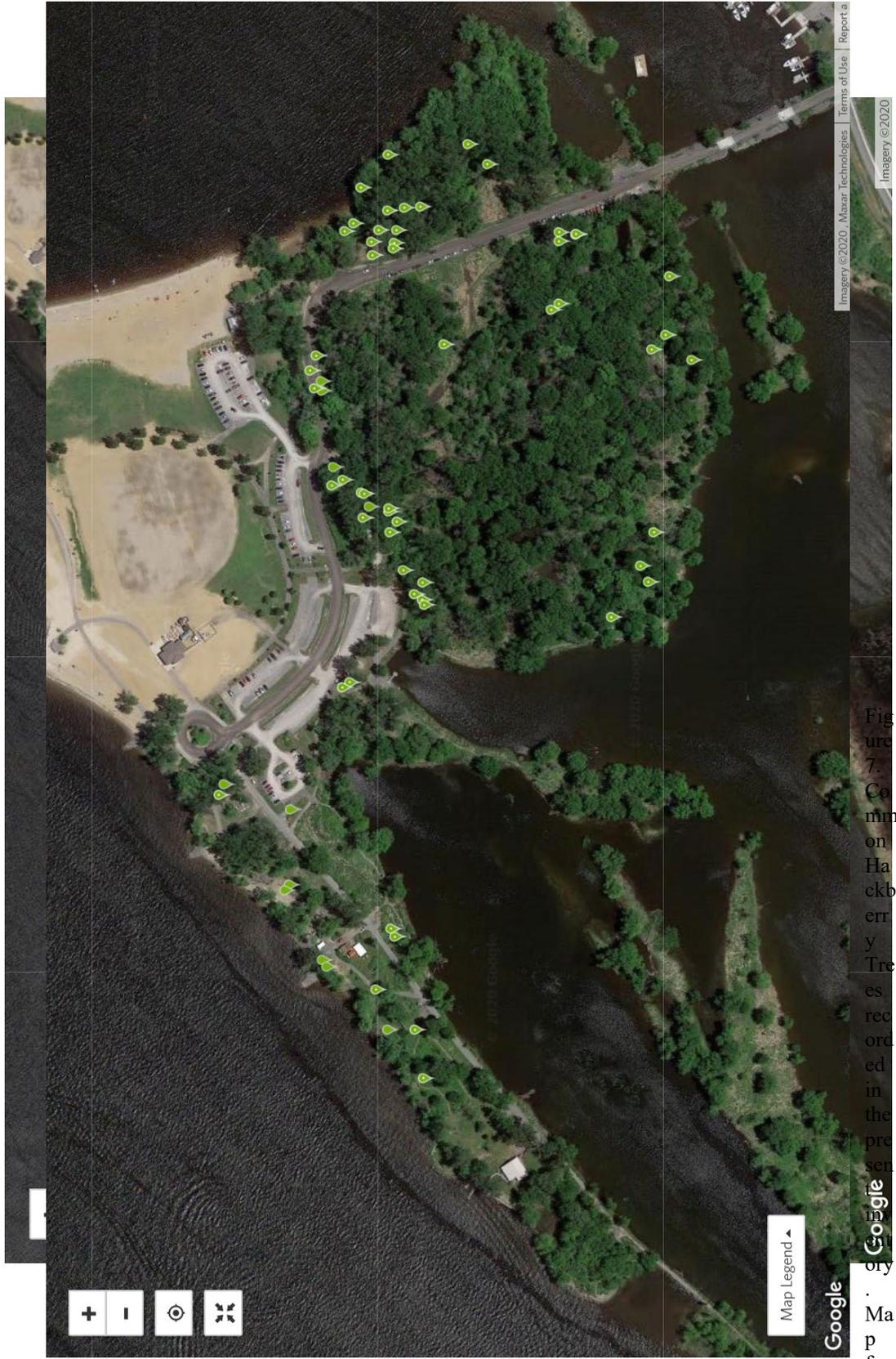


Figure 6. Common Hackberry trees recorded in the previous years in the present or y.

Figure 7. Common Hackberry trees recorded in the present or y.



Figure 8. Butternut trees planted by FOPI. Map from iNaturalist.

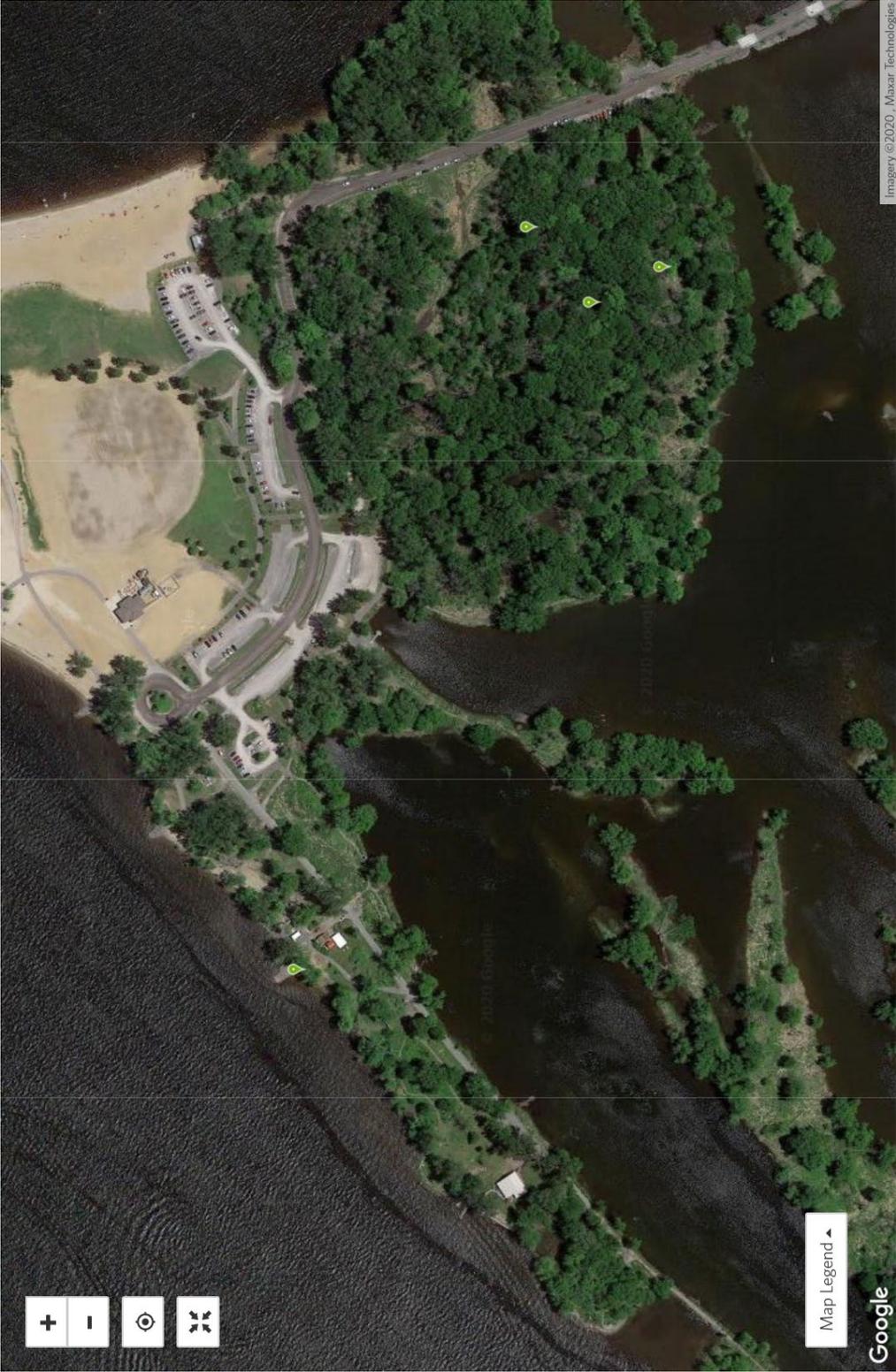


Figure 9. Bitternut Hickory trees recorded in the present inventory. Map from iNaturalist.



Figure 10. Silver Maple uprooted from shoreline erosion. Photo by Al Twedde.



Figure 11. Black Ash trees recorded in the present inventory. Map from iNaturalist.



Figure 12. City of Ottawa staff removing Green Ash trees affected by the EAB. Photo by Al Twedde.

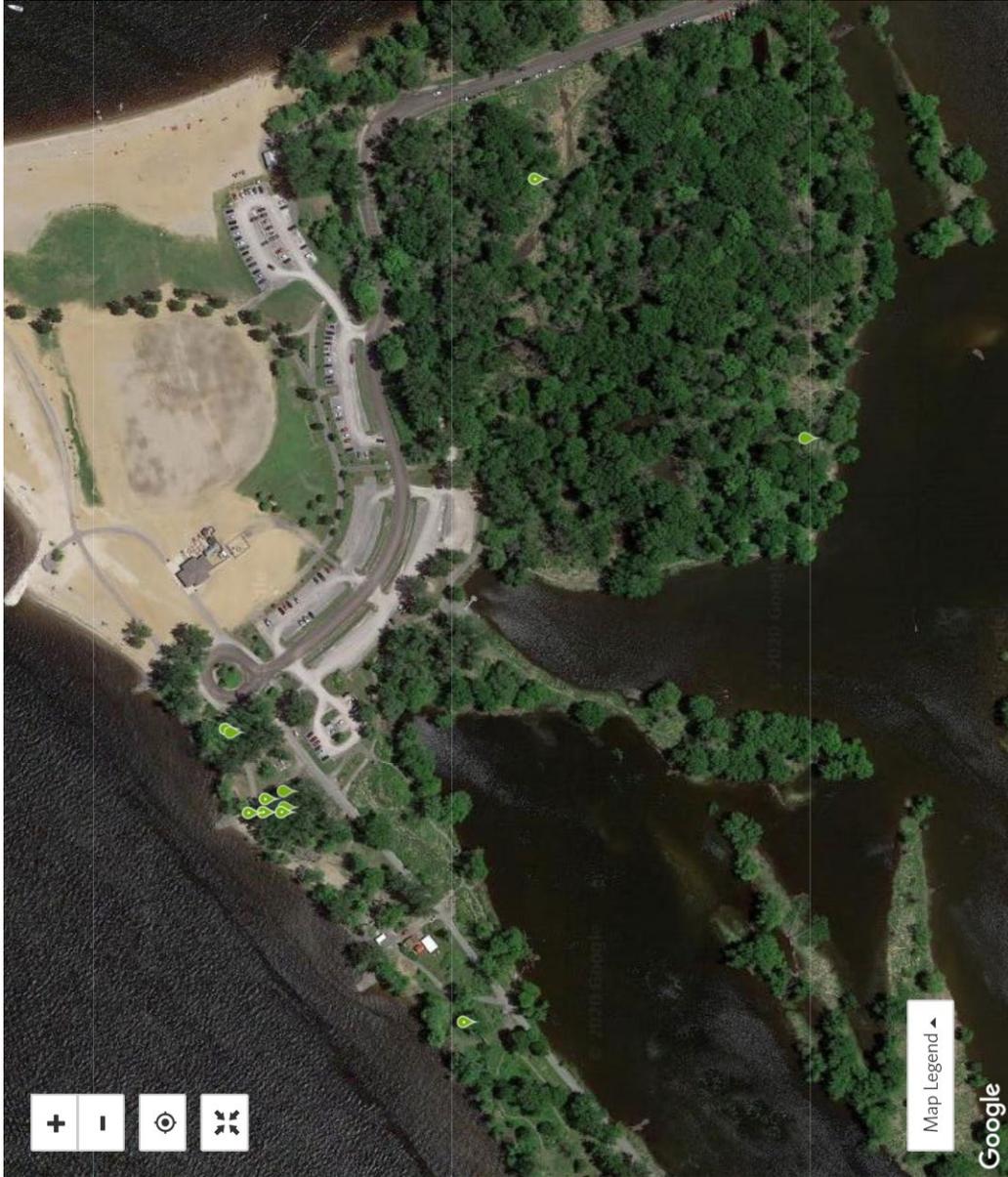


Figure 13. American Elm trees assumed to have



Figure 14. Summer students recording Eastern Cottonwood trees that have been wrapped with wire. Photo by Al Tweddle.