

# Hickory Hills Park: Invasive Species Management Plan

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Above: Hickory Hills Park

Left: Garlic Mustard

Right: Autumn Olive



**Record of Annual Review and Revisions**

| Year | Date Completed | Reviewers | Revisions |
|------|----------------|-----------|-----------|
| 2012 |                |           |           |
| 2013 |                |           |           |
| 2014 |                |           |           |
| 2015 |                |           |           |
| 2016 |                |           |           |
| 2017 |                |           |           |
| 2018 |                |           |           |

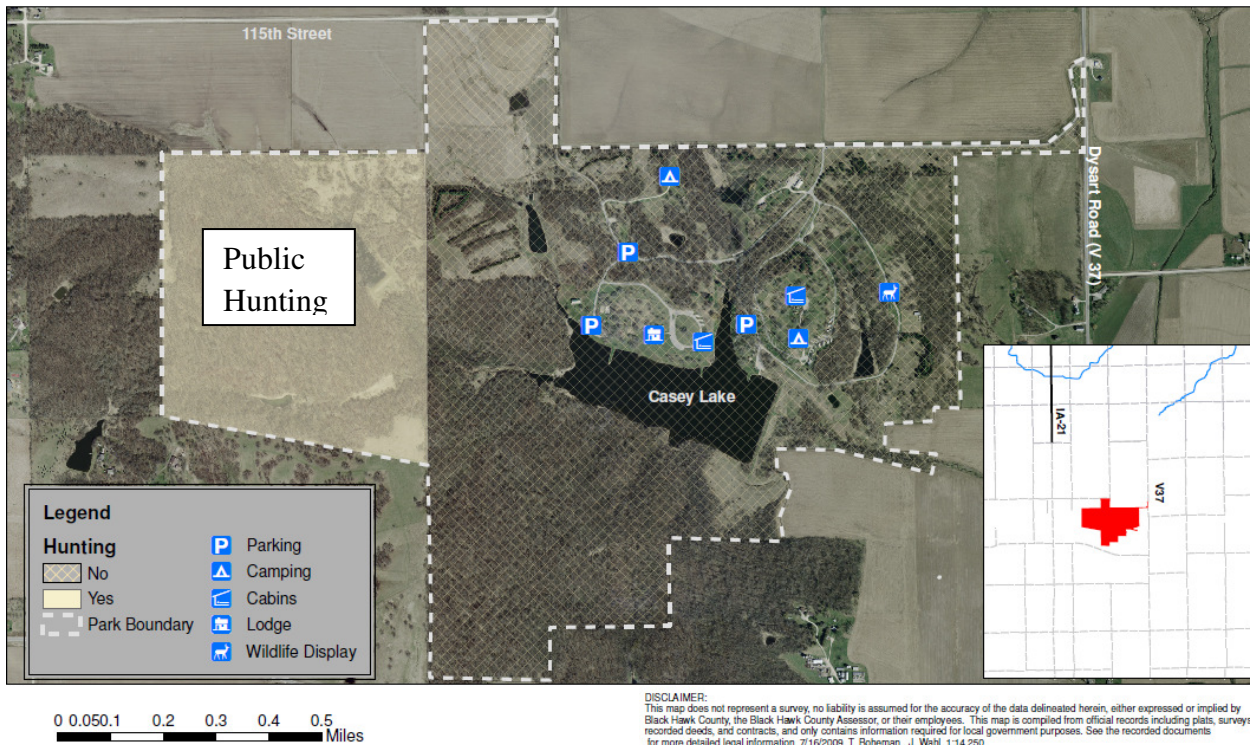
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## Hickory Hills Park Description:

Hickory Hills Park was established in 1969 in Tama County. In 1989 a State Preserve named Casey's Paha was added to the park. These areas are both owned and managed by the Black Hawk County Conservation Board. The white shaded area is owned by the state and is public hunting ground. The area is managed by the Black Hawk County Conservation Board.

The 723 acre park is located 12 miles South of Waterloo, off county road V37, or 6 miles North of Dysart. The park offers a wide variety of outdoor activities for all ages which include: camping, hiking, fishing, public hunting, disc golf, cabins, scenic trails and much more.



## Garlic Mustard (*Alliaria petiolata*) Information:

Garlic Mustard is a highly invasive species found all over the US. It was introduced here in the mid 1800's for medicinal and herbal uses. It grows very rapidly and has no predators to control the out of hand population growth. Garlic Mustard crowds the understory and degrades the soil content. It does this by producing allelochemicals which suppress mycorrhizal fungi and changes the leaf litter decomposition to favor Garlic Mustard.

Garlic Mustard is a biannual flowering plant. It prefers shaded or semi-shaded areas like upland and floodplain forest. The first year plants appear late spring and are scattered individuals or dense ground cover. They have round or heart shaped leaves which form rosettes that stay green through winter.



The second year plants start in April into June where the rosettes become robust or send up flowering stalks with triangular to heart shaped, coarsely toothed leaves. The stems are 1' to 3' tall and have clusters of small white, four petaled flowers at the tips. The seed pods start soon after and are shed July to autumn. The main spread of the seeds are by attaching to animal fur and being transported elsewhere. Also by human travel by being attached to clothing or tires.





## **Management Plan:**

In the Hickory Hills Park area there are scattered, dense and sparse patches of Garlic Mustard. This is an invasive species in the park and needs to be controlled before it gets too hard to handle. There are three kinds of solution to help control the growing invasive plant.

### 1. Herbicides

This method can be used November through March by spraying 1% to 2% glyphosate (Roundup) to all infected areas. It works best in early spring when plants are actively growing.

### 2. Prescribed Burns/Torching

This method should be used early spring or late fall but April is the ideal time. It will kill newly emerged plants and set back the second year plants. A follow up after burning is very important. Also the area might appear worse because of the bared seedbed but the seed bank is being depleted.

### 3. Hand Pulling

This method should be used April through June or when seeds start shedding. Try and pull the entire plant out, roots and all. Discard all plant matter by burn, bury or landfill.

The ideal way to help eliminate Garlic Mustard from Hickory Hills Park is to use a combination of all three methods. The best way is to spray in late fall, this would kill off new plants. Then a prescribed burn/torching of affected areas to also kill new plants and second year plants. The last process before seed shedding starts is to hand pulling Garlic Mustard. When this process is continued every year it will control the spread of Garlic Mustard. Although, not all areas may be able to use all three treatments. The treatments used depend upon equipment access, interspecies of native vegetation, and locality to private property. The treatment applied is up to the discretion of the land manager.

## **Priority Areas:**

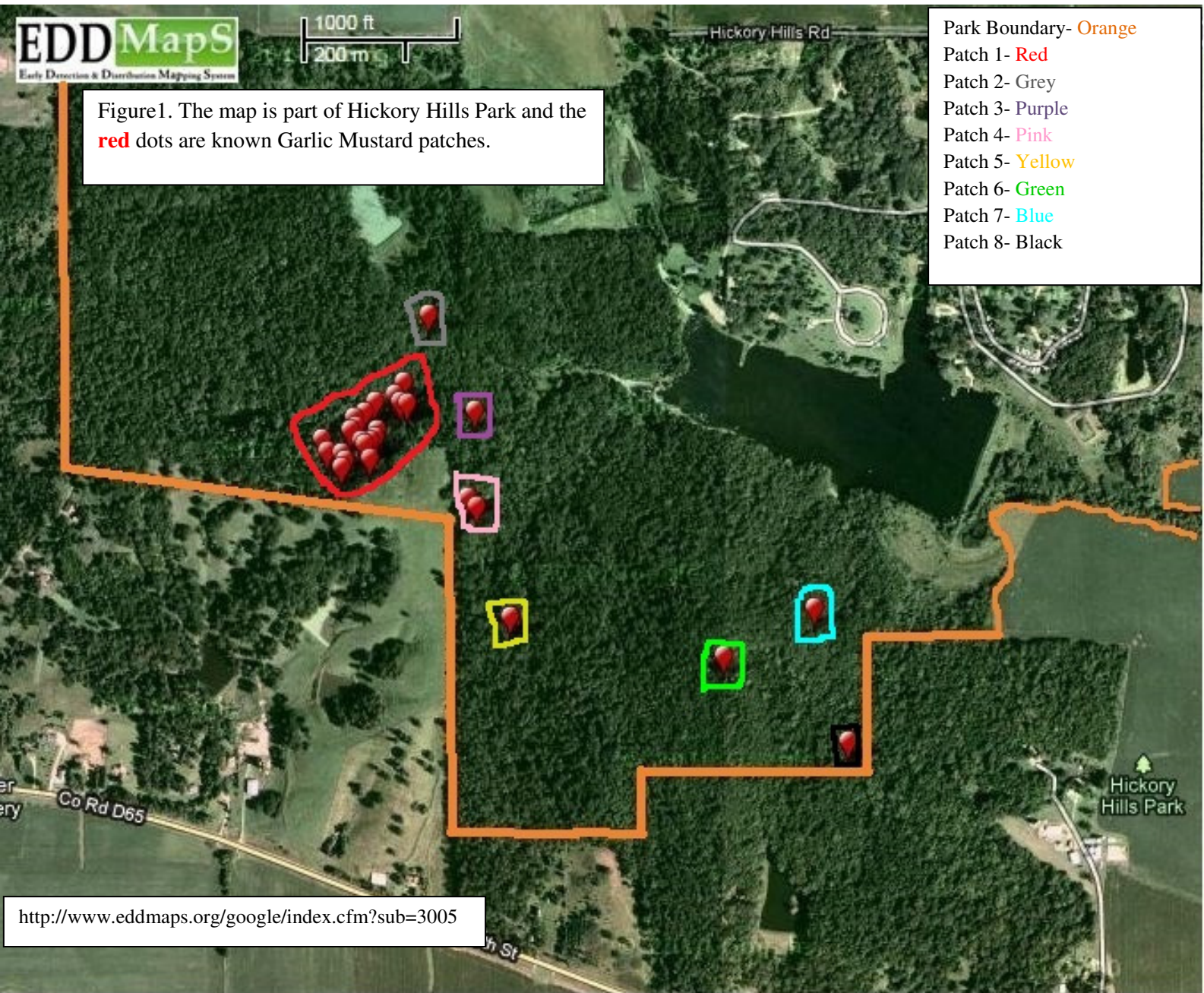
The areas in concern are along trails because it is prime seed spreading area. The ideal way to eliminate seed spreading is to remove Garlic Mustard along all trails and 20 feet back along both sides of the trails in Hickory Hills Park. This would stop seeds from being spread into areas where Garlic Mustard is not found. Another concern is large monoculture patches because there has already been a loss of native vegetation in that area.

Ideas to prevent spread and encourage a healthy ecosystem:

- Informational signs with boot scrapers along trails
- Proper forest management plans such as Timber Stand Improvement

**Surrounding Landowners:**

In helping Black Hawk County Conservation Board to manage and control the spread of Garlic Mustard an informational meeting should be held with surrounding landowners. This would give the chance to show landowners what Garlic Mustard is and explain to them proper ways of controlling the spread. It would greatly help control Garlic Mustard from spreading on to other properties and back onto BHCCB land too.



**EDD MapS**  
Early Detection & Distribution Mapping System

1000 ft  
200 m

Hickory Hills Rd

Figure 1. The map is part of Hickory Hills Park and the red dots are known Garlic Mustard patches.

- Park Boundary- Orange
- Patch 1- Red
- Patch 2- Grey
- Patch 3- Purple
- Patch 4- Pink
- Patch 5- Yellow
- Patch 6- Green
- Patch 7- Blue
- Patch 8- Black

<http://www.eddmaps.org/google/index.cfm?sub=3005>

Co Rd D65

Hickory Hills Park



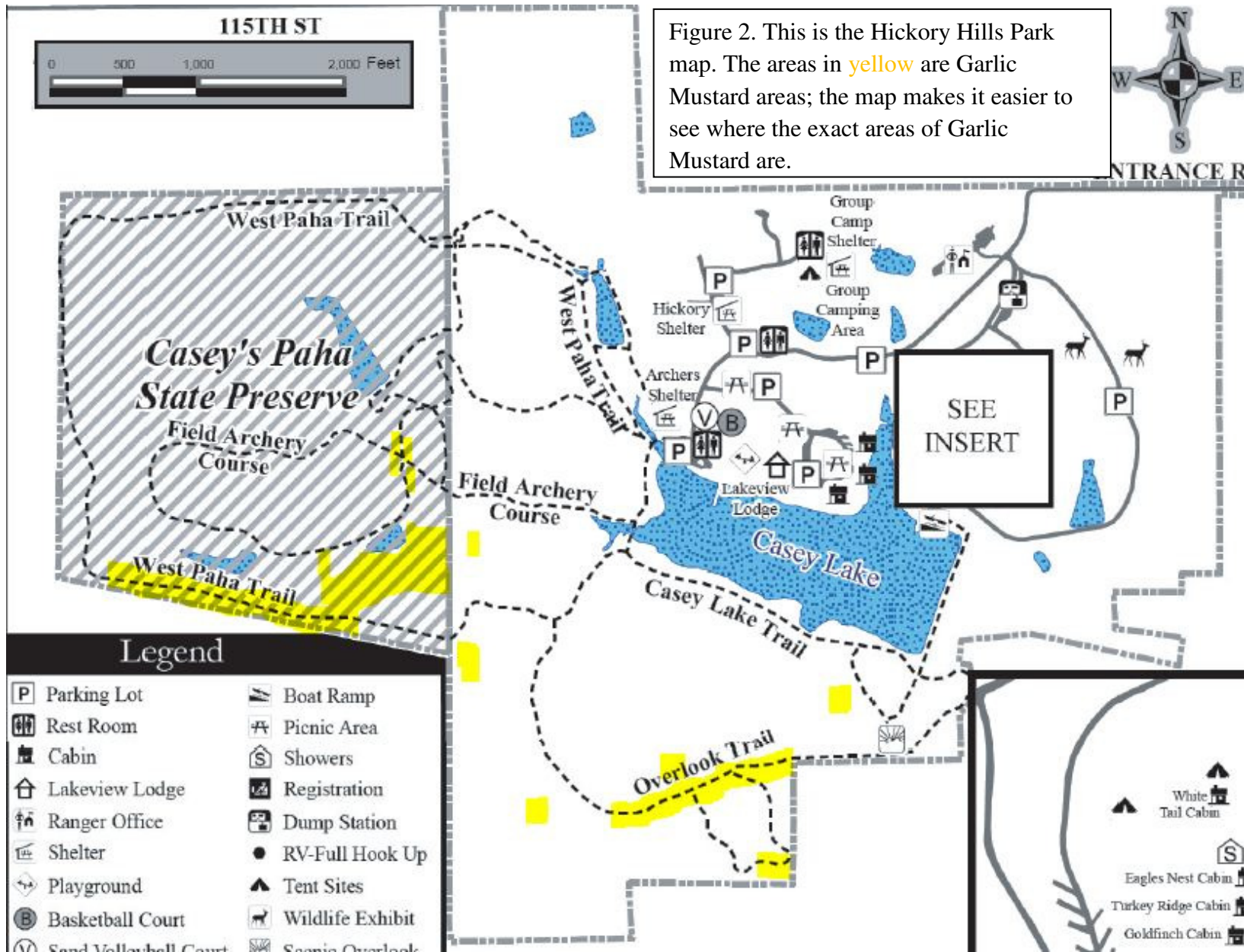


Figure 2. This is the Hickory Hills Park map. The areas in yellow are Garlic Mustard areas; the map makes it easier to see where the exact areas of Garlic Mustard are.

## **Autumn Olive (*Elaeagnus umbellate*) Information:**

Autumn Olive is an invasive species found in the US. It was brought here in the 1830's from East Asia. The main purpose of the tree was for revegetation of severely disturbed areas like strip mines. It was also planted for wildlife food and cover. Autumn Olive is a rapid growing shrub/small tree that supplies heavy shade to areas making it shade out native vegetation. Autumn Olive interferes with natural plant succession and nutrient cycling.

Autumn Olive can be found in grasslands, open woodlands, and other disturbed areas. It is drought tolerant allowing it to thrive in a variety of soil and moisture conditions. Also it is capable of fixing nitrogen in its roots so it can grow on bare ground.

Autumn Olive is a deciduous shrub/small tree that can grow to 20 feet tall. The stems, buds and leaves have a covering of silvery to rusty scales. The leaves are alternate, lance shaped, smooth, and dull green with brown scales underneath.



In June and July pale yellow flowers which turn into red-brown fruit in August through October. The main way of transportation of the seeds are by animal travel such as birds.

## **Management Plan:**

In Hickory Hills Park there is a dense patch of Autumn Olive and maybe some sparse shrubs scattered throughout the park. It needs to be controlled or eliminated so it doesn't out-compete native species in the area. There are three treatments to help control/eliminate Autumn Olive in the Hickory Hills area.

1. Hand Pulling

This method is useful for removing young seedlings. It is best to pull after rain so the whole plant will come loose because if root fragments are left it can re-sprout.

2. Cutting

This is the main method of removing large shrubs/trees. It is best to cut the tree to ground level with a saw. After the fresh cut apply herbicide to kill the root system and prevent re-sprouting.

3. Herbicides

Triclopyr is the best herbicide to use against Autumn Olive. Apply it to the fresh cut stump with undiluted solution of Triclopyr. There still might be re-sprouts but continue with treatment. The best time to apply is July-September.

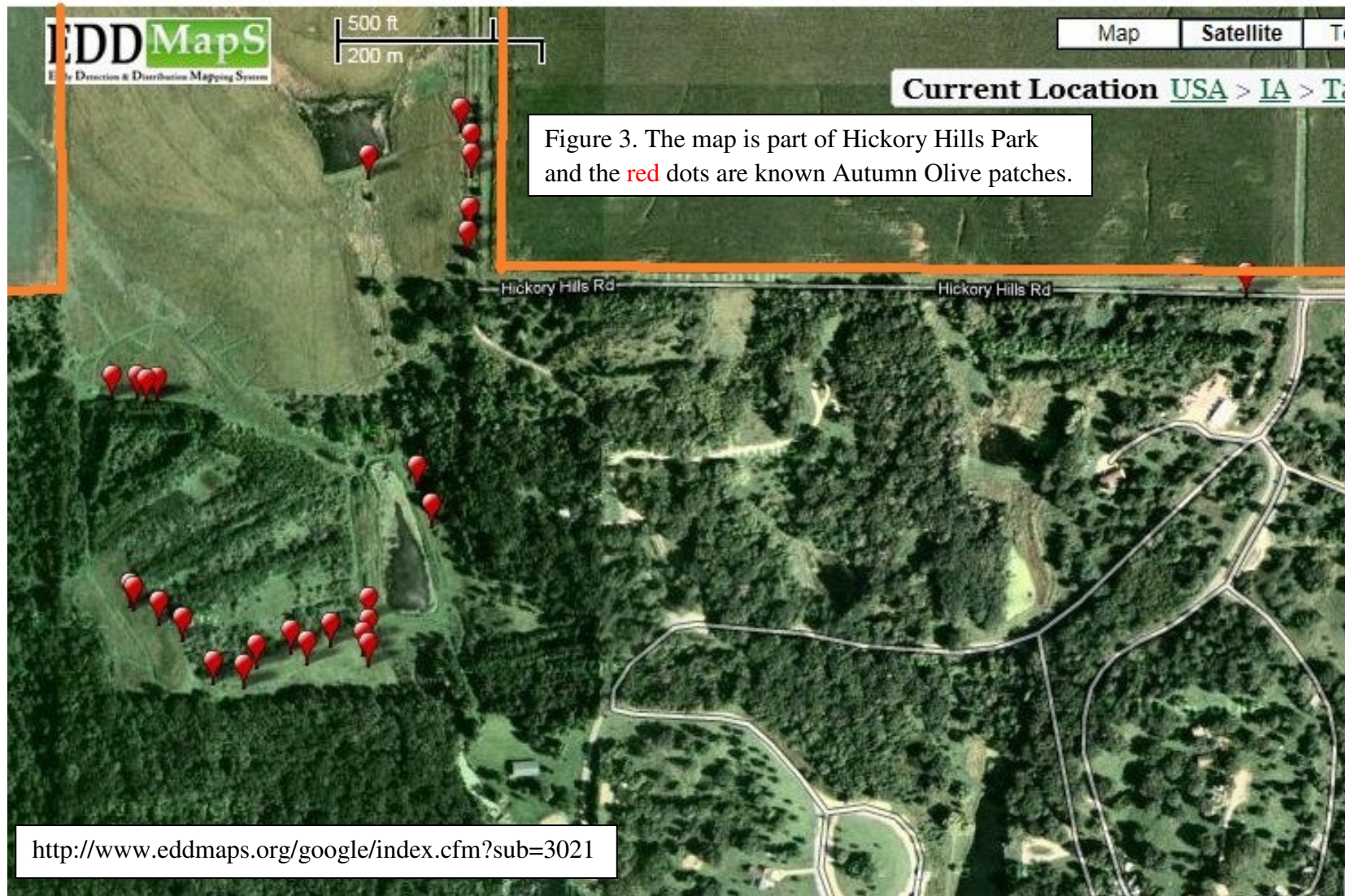
The best way of eliminating Autumn Olive from Hickory Hills Park is to found all adult shrubs/trees and pull seedlings out. Then cutting down the larger plants and treat the stumps with Triclopyr. This would insure the spread of seeds since all the plants would be gone. The last thing is to continue to check the areas for re-sprouts, cut and treat, and seedlings, hand pulled. Also to note fire has little to no effect on the plant so refrain from using fire as a control to this species.

Autumn Olive is an invasive, non-native species but it does provide nesting and a food source for birds. When it is removed from an area it is crucial to replace it with a native species to provide continual nesting sites.

## **Surrounding Landowners:**

In helping Black Hawk County Conservation Board to manage and control the spread of Autumn Olive an informational meeting should be held with surrounding landowners. This would give the chance to show landowners what Autumn Olive is and explain to them proper ways of controlling the spread. It would greatly help control Autumn Olive from spreading on to other properties and back onto BHCCB land too. Even though Autumn Olive is great for bird nesting habitat other native plants can be planted to replace the Autumn Olive.







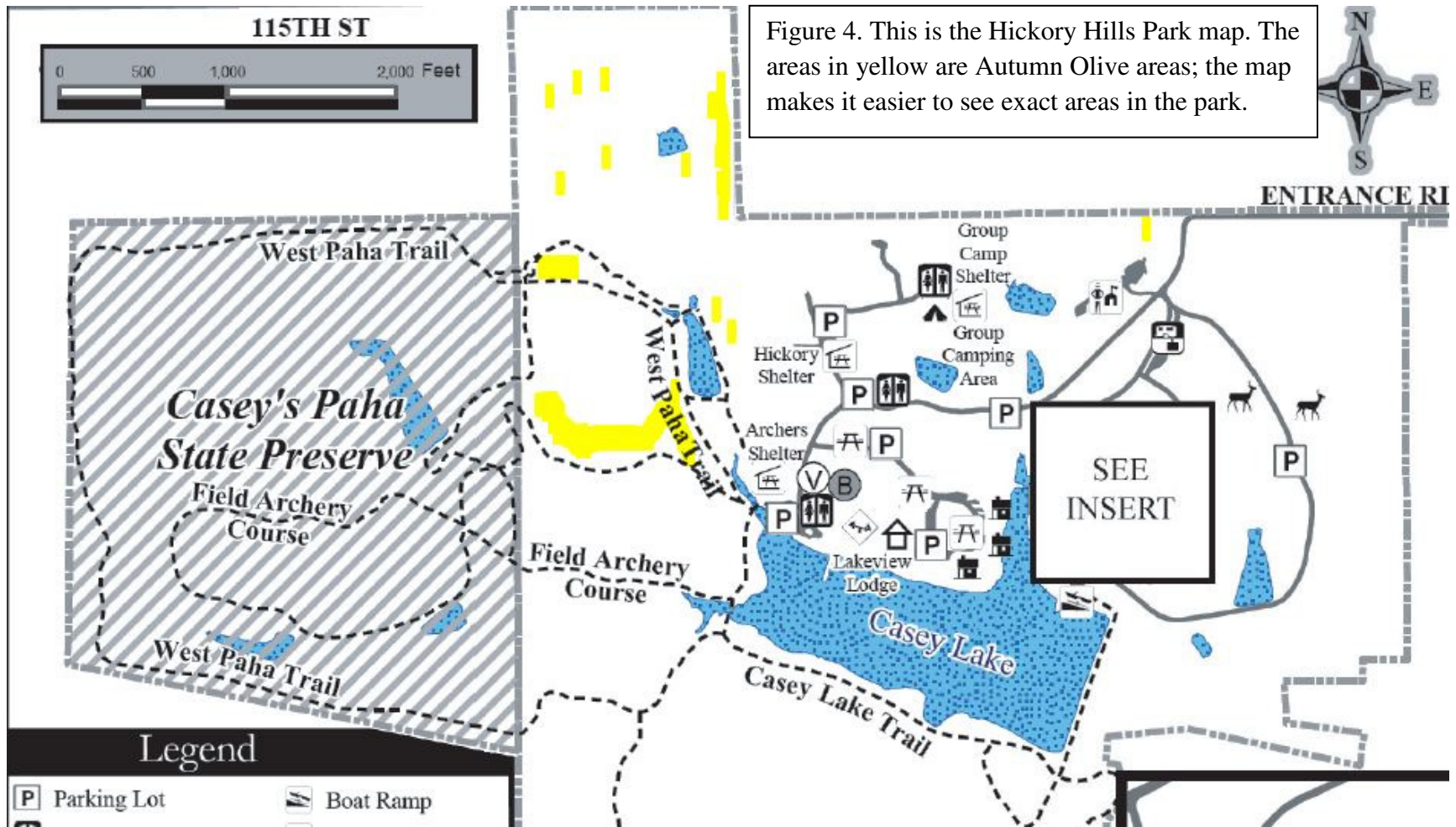


Figure 4. This is the Hickory Hills Park map. The areas in yellow are Autumn Olive areas; the map makes it easier to see exact areas in the park.

## **Helpful Resources/Reference**

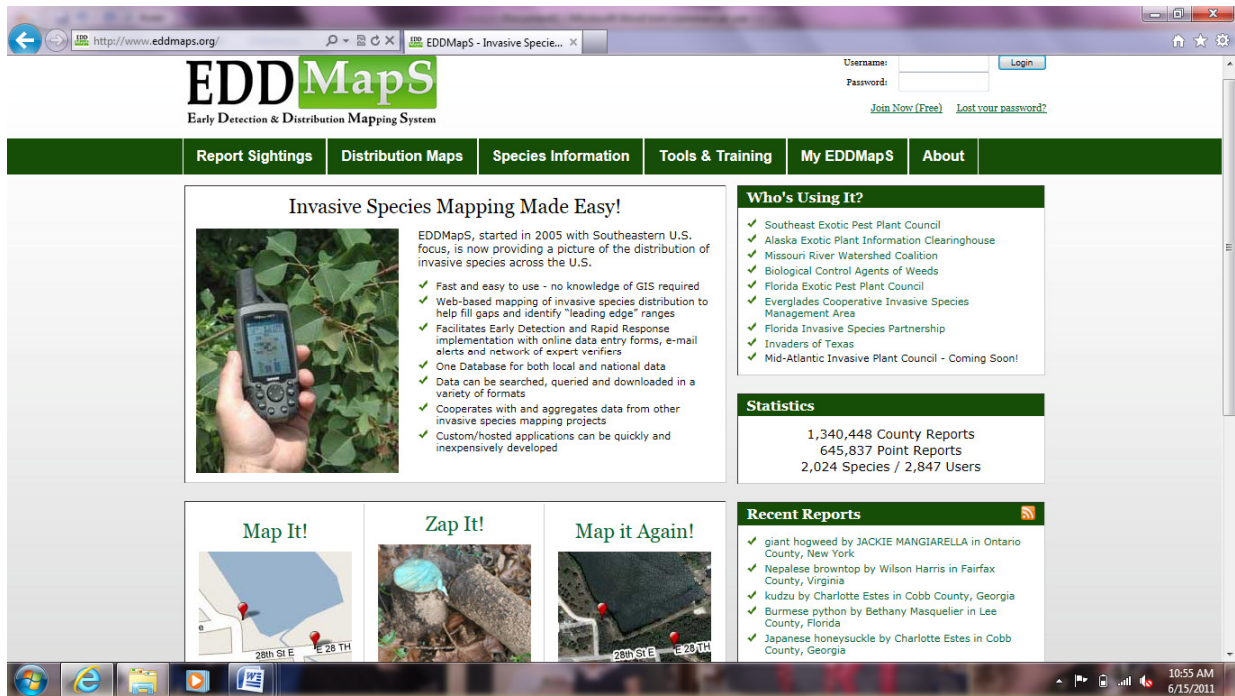
- <http://www.invasiveplantatlas.org/>
  - This website has all the invasive plant species that are in the US. It has pictures and descriptions of the plants. So it makes it easy to identify invasive species anywhere.
  
- <http://www.eddmaps.org/>
  - The EDD mapping system makes mapping invasive species easy. You can look up where different invasive species are in the US and shows it to you on a map. Also you can map invasive species you find. This helps other people know where these invasive plants have started to inhabit. This is a very important tool in controlling invasive species.
  
- <http://www.garlic-mustard.org/wp-content/uploads/2010/03/Garlic-Mustard-Management-Plan2.pdf>
  - This is a management plan of Garlic Mustard from the Northwest Michigan Cooperative Weed Management Area. It has lots of information on Garlic Mustard and a management plan they put together to control the invasive species.







# EDD Mapping System



The EDD Mapping System is the main way to track Garlic Mustard and Autumn Olive in Hickory Hills Park. Any updates or new finding should always to be mapped on this site. The website shows very easy directions on how to map the infected area. This will help us in the future to control and manage the invasive species in the park. Also use this site for any sightings on invasive species because it will help determine how far the invasive plant has spread. This is a very helpful tool in combating invasive species.