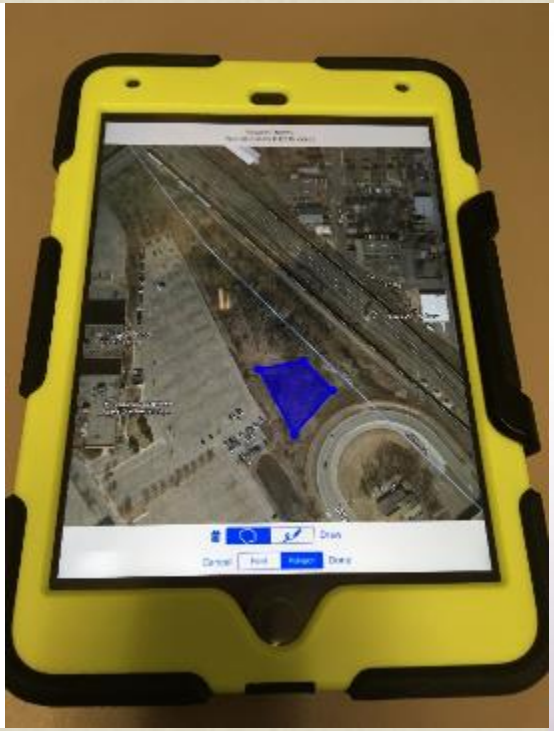
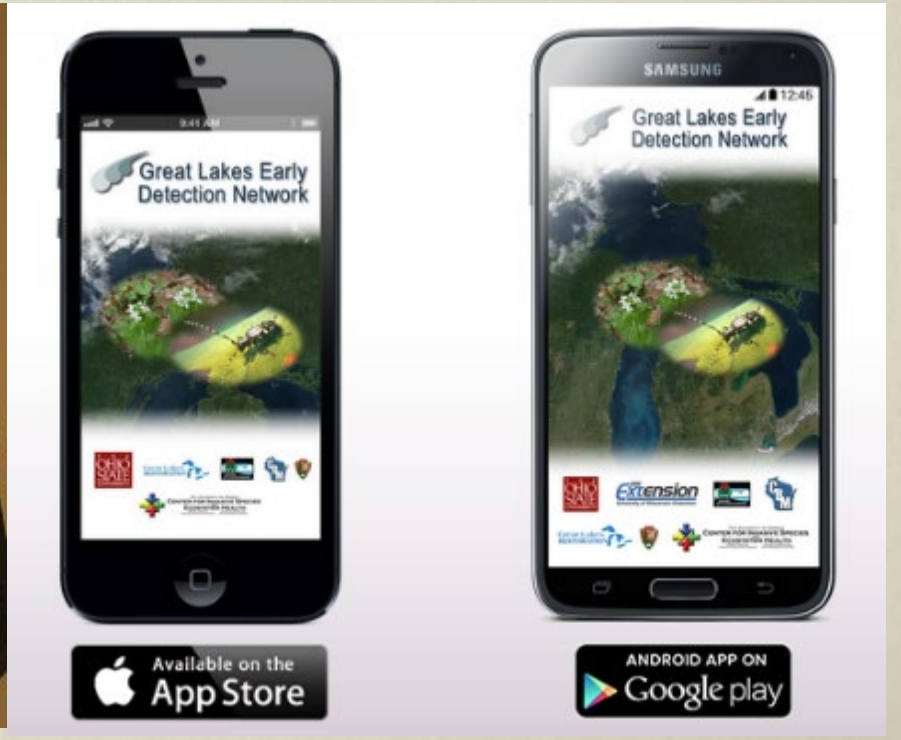
MAPPING INVASIVE WEEDS

NEW TECHNOLOGY FOR INTEGRATED PEST MANAGEMENT





MARK RENZ ASSOCIATE PROFESSOR / EXTENSION SPECIALIST

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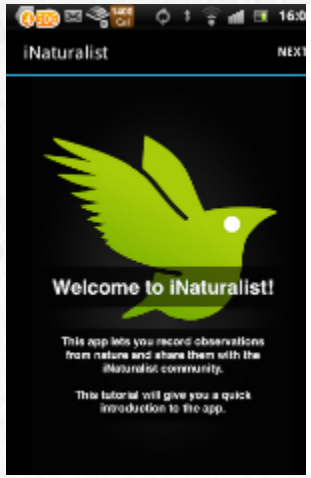
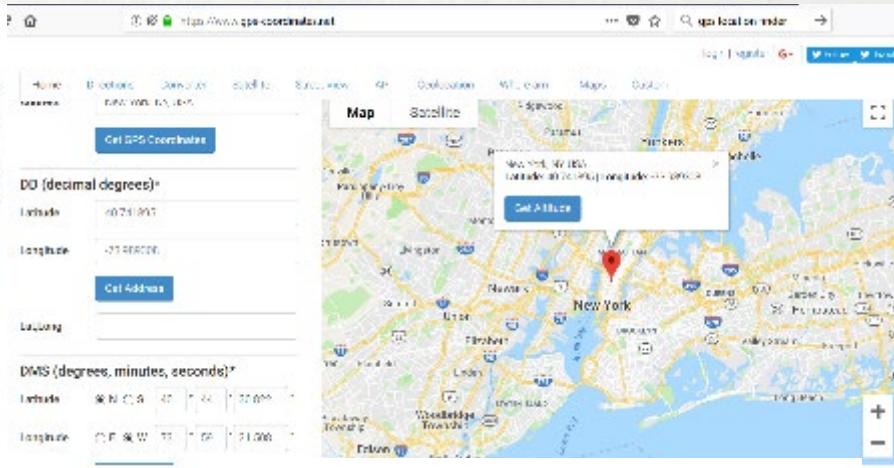
MANY TOOLS AVAILABLE TO ASSIST

- Collect GPS location
  - Apps, GPS device, website





- Data collection/management/reporting
  - Off the shelf vs customizable

ISMTrack
Invasive Species Management Tracking System

ESRI
ArcGIS®

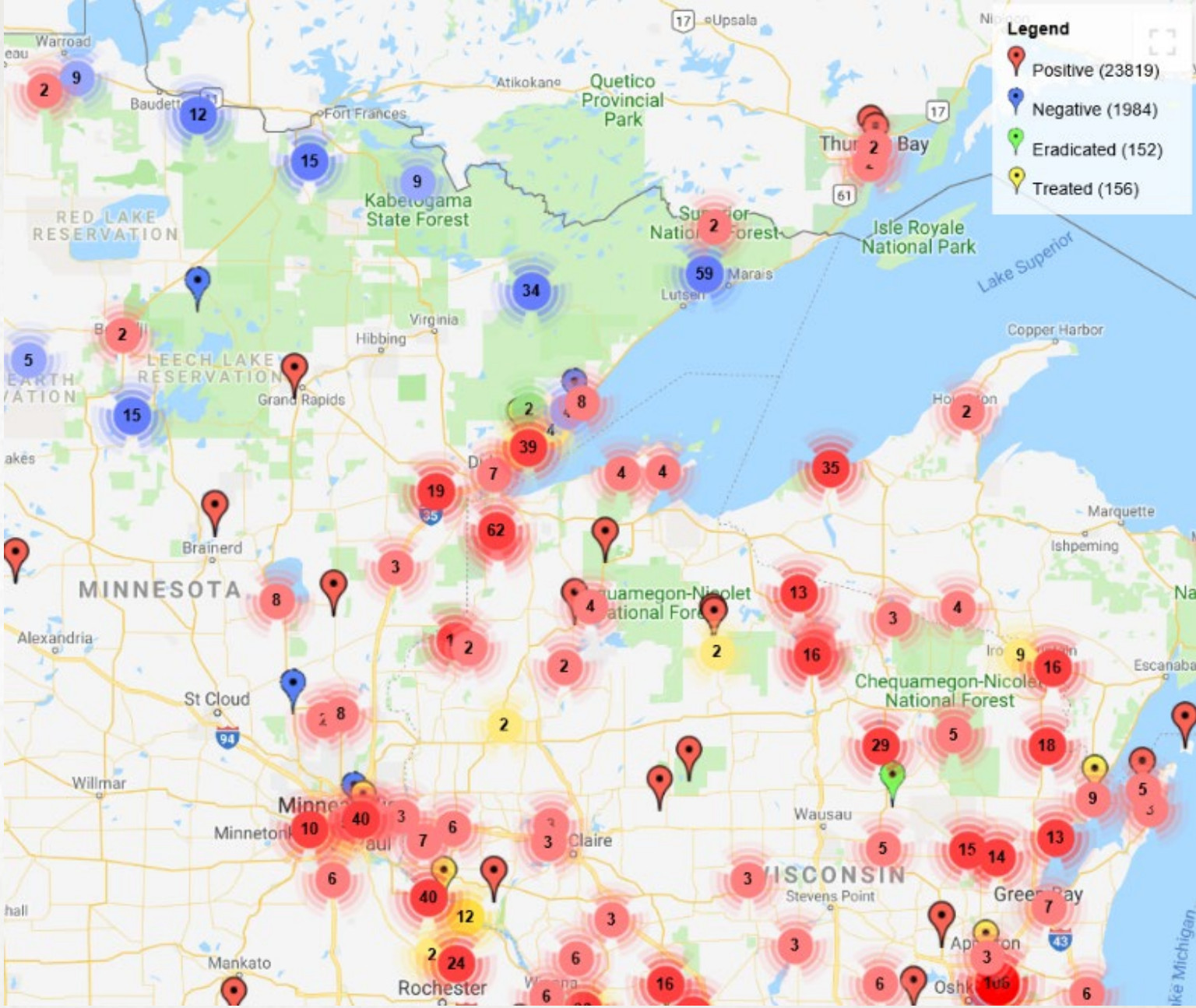
- Sharing

North American Invasive Species Network

Global Invasive Species Information Network

WHY MAP?

- Strategize
- Track
- Report
- Communicate



APPROACH TO MANAGING INVASIVE PLANTS

Step 1: Plant identification

Step 2:Distribution of population

Step 3: Select appropriate control

Step 4: Apply control method(s)

Step 5: Monitor and adapt

ion of Population

management techniques

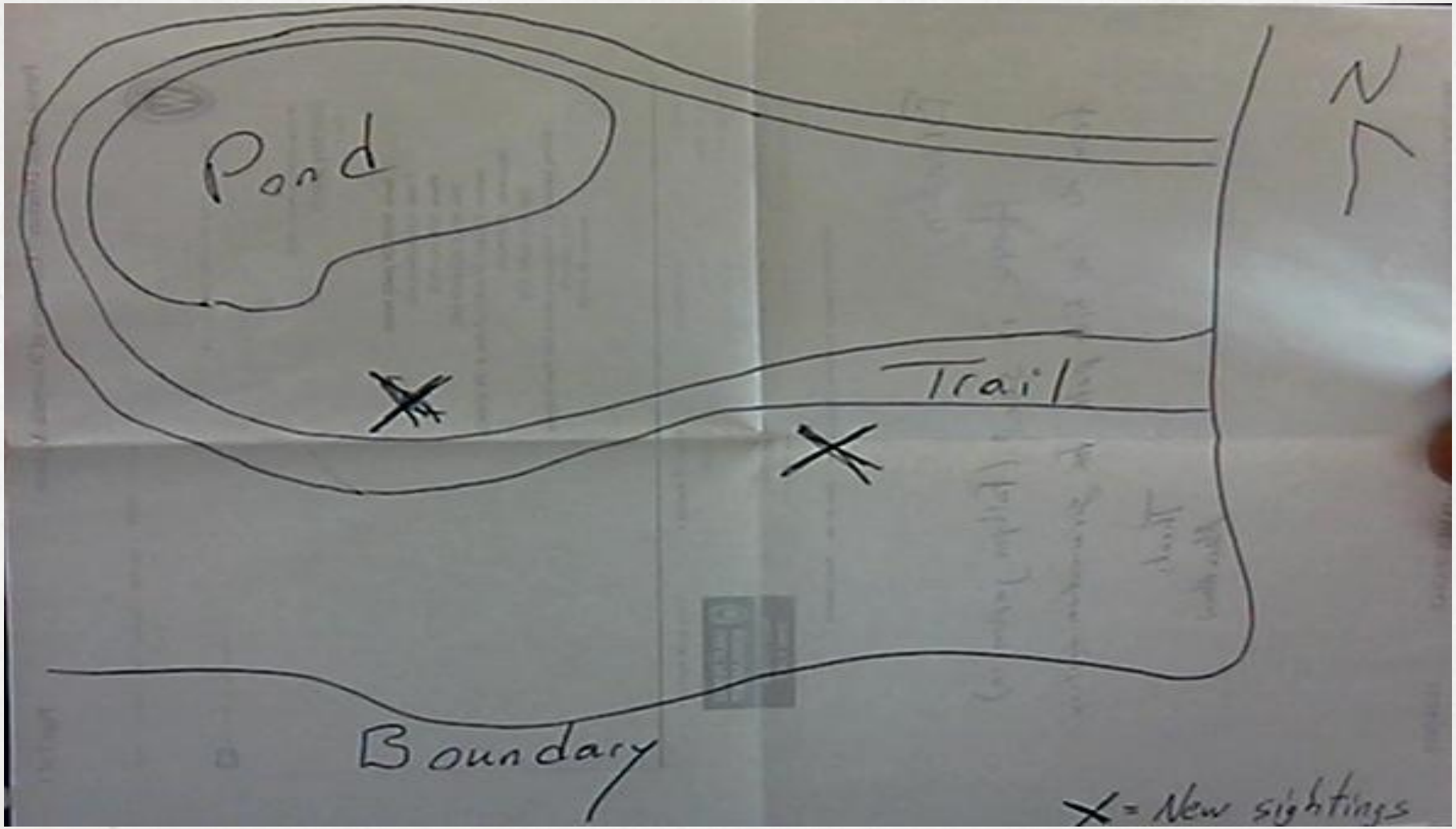

Golden Alexander
Wild parsnip

MAPPING EFFORTS CAN IMPROVE HOW YOU STRATEGIZE TO MANAGE INVASIVE PLANTS

ALL OF THESE TAKE EXTRA TIME = $$$

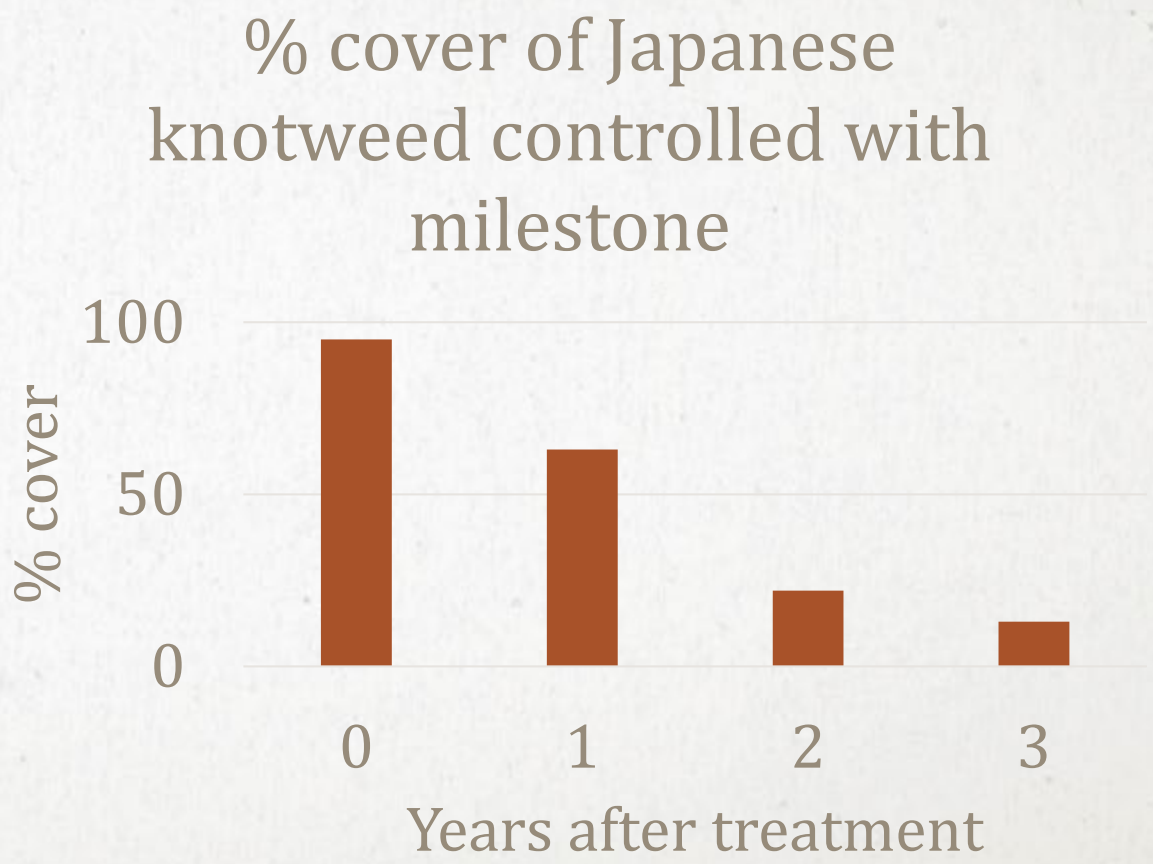
1. Size of the population
2. Habitat/area working
3. Knowledge of desirable species present
4. Knowledge of previous efforts

SOMETIMES TECHNOLOGY ISN'T NEEDED



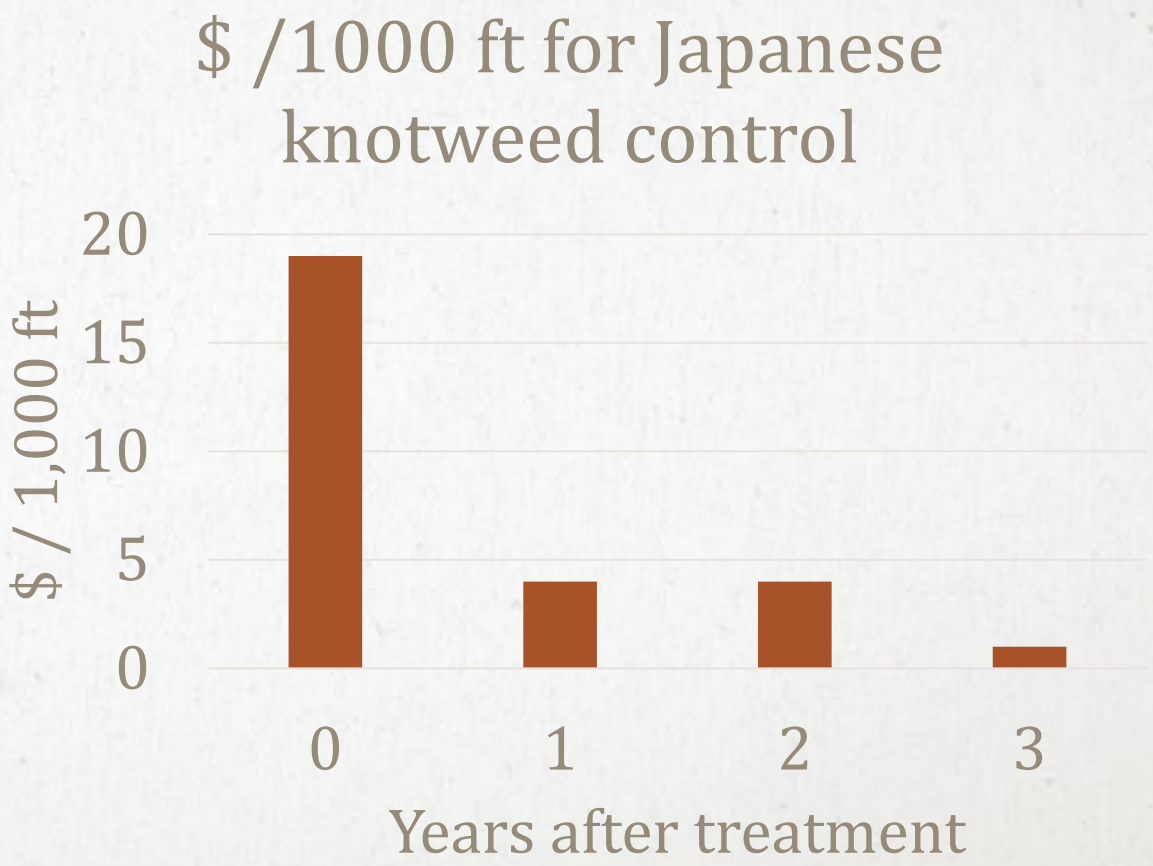
HOW CAN MAPPING IMPROVE TRACKING?

- Periodic recording of invasive plant specific information
  - Presence/absence
  - area invaded
  - cover of invasive plant
  - # of plants/stems
  - level of control



HOW CAN MAPPING IMPROVE TRACKING?

- Can associate other information with location
  - Management activity
  - Personnel
  - Amount of material used
- Depending on goals other info can also be recorded



WHEN LINKED WITH REPORTING TOOLS THIS CAN BE POWERFUL

- Create reports to clients/regulatory agencies

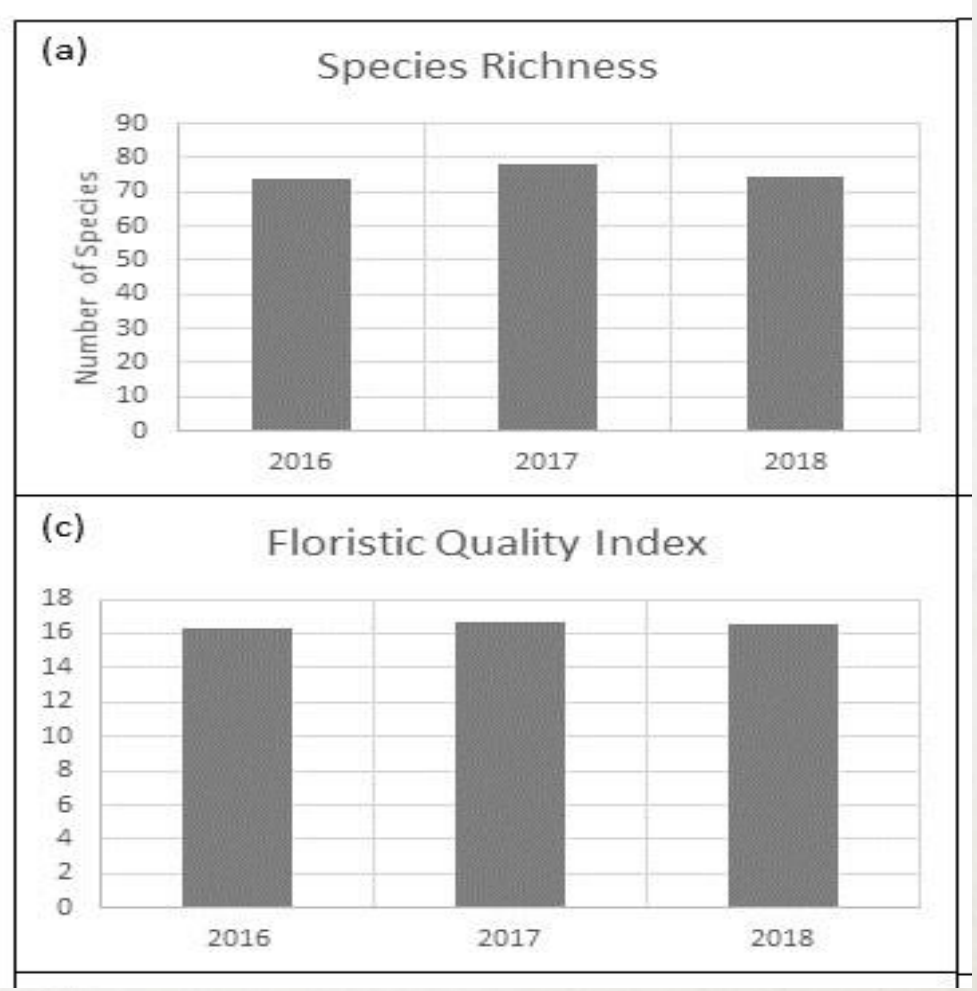
Southern Illinois Invasive Species Strike Team

January, 2016 – April, 2017 Report

Chemically Treated:	276.27 acres
Manually Treated:	53.34 acres
Treated with Prescribed Fire:	13,782.56 acres
Total Acres Treated:	14,112.17 acres

WHEN LINKED WITH REPORTING TOOLS THIS CAN BE POWERFUL

- Create reports to clients/regulatory agencies
- Allows to view how "things" are changing over time
  - Adaptive management/IVM/IPM



Time 0

HOW DATA SHARING HELPS

YEAR 0

YEAR 1

HOW DATA SHARING HELPS

YEAR 2

YEAR 3

HOW DATA SHARING HELPS

YEAR 4

YEAR 5

HOW DATA SHARING HELPS

YEAR 10

YEAR 15

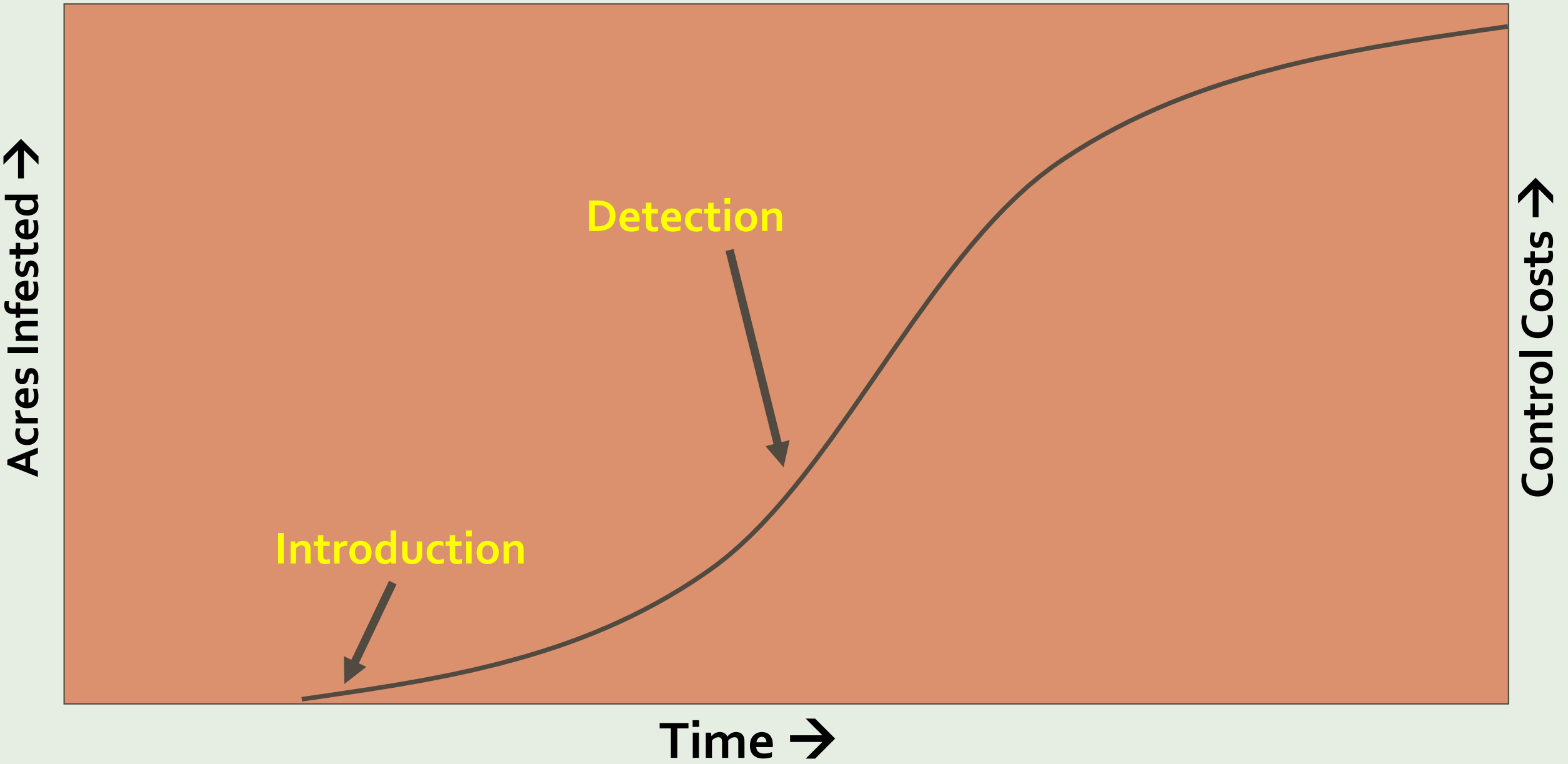
HOW DATA SHARING HELPS

YEAR 20

YEAR 25

HOW DATA SHARING HELPS

The Invasion Curve



HOW DATA SHARING HELPS

- Invasive plants often can be eradicated with minimal effort if detected early
  1. Increases awareness of distribution of plants
  2. Improves ability to be regulated
  3. Informs land managers so can act

"sharing information……. enables resource managers and decision-makers to mount a more effective response to biological invasions." Annie Simpson USGS

MAPPING CAN IMPROVE INVASIVE PLANT MANAGEMENT

Benefits need to be considered in conjunction with the

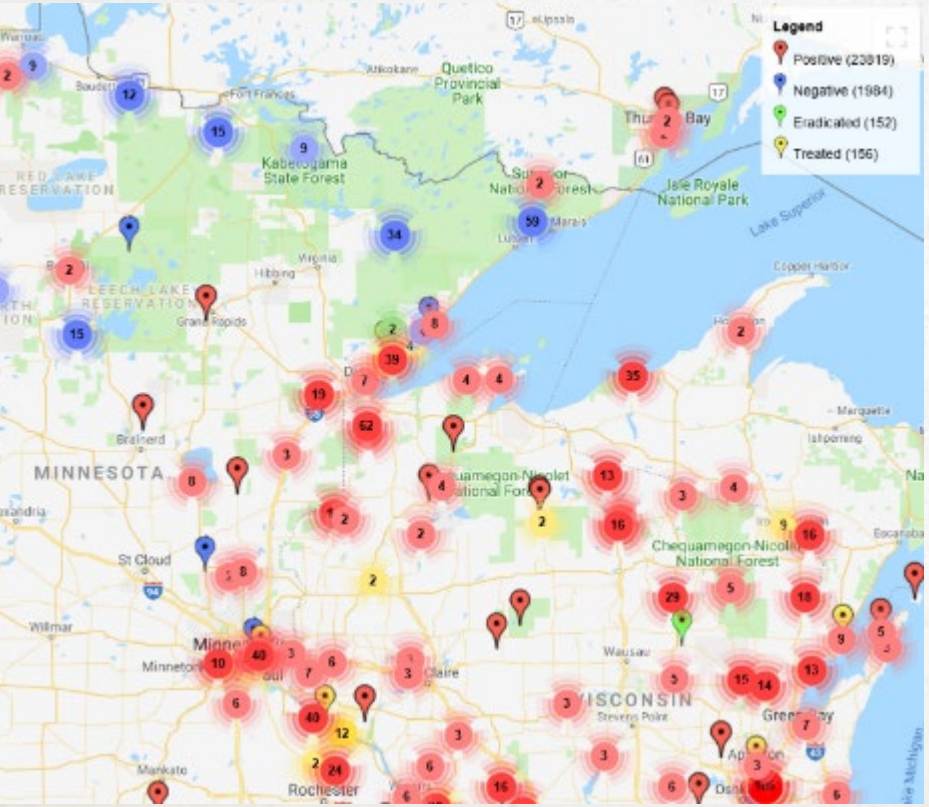
1. Goals of the land
2. Requirements of the manager/land owner
3. Equipment/software available
4. Skill-set of employees/volunteers

Remainder of my talk will discuss how to map and items to consider when developing a mapping program

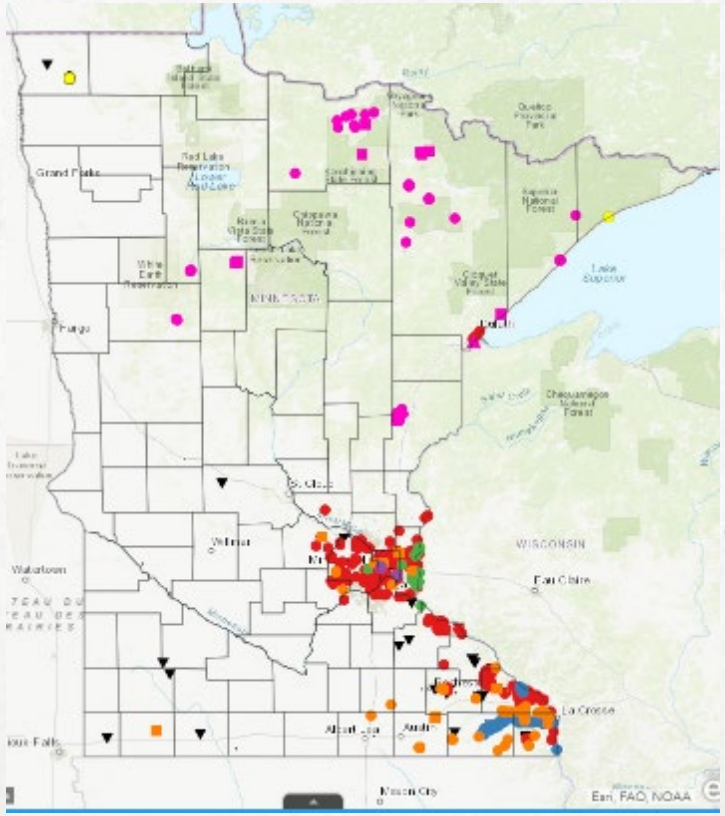
MAPPING CAN BE DONE AT DIFFERENT SCALES

How will creating a map help you or your client?

REGIONAL



STATE



LOCAL

SOME DATA PROVIDERS WILL PROVIDE TOOLS AND SHARE DATA

- EddMaps, MISIN, ImapInvasive , INaturalist
  - Provides Apps to collect location and other info
    - Tools vary, but all record location, picture (verification), data about infestation
    - Provide resources to assist in identification
  - Some also allow for management info
    - EddMaps = ISMtrack
    - ImapInvasive

EDDMapS
Early Detection & Distribution Mapping System

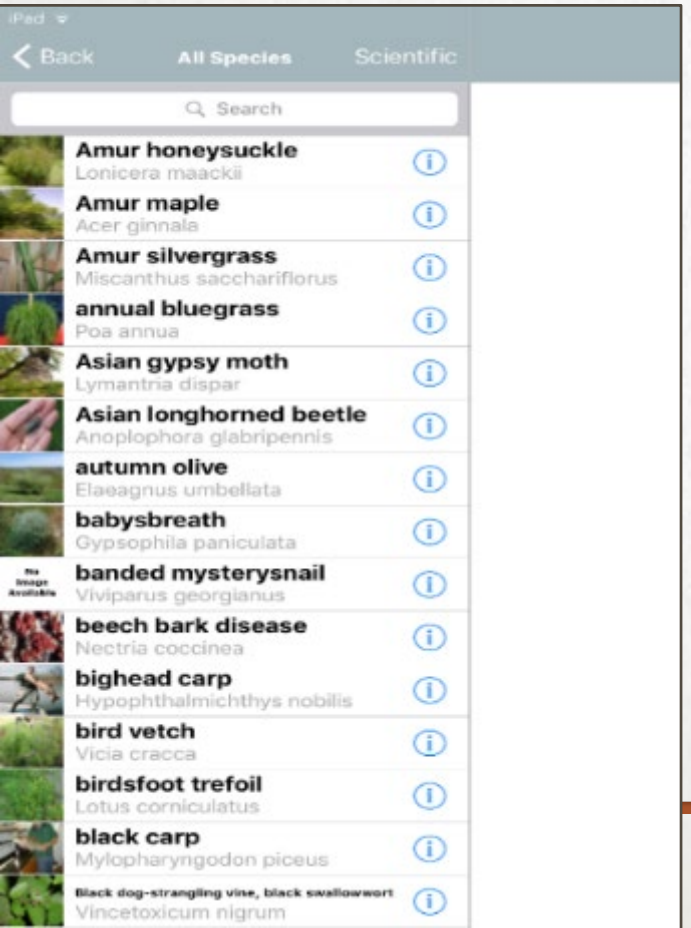
MISIN
Midwest Invasive Species Information Network

iNaturalist

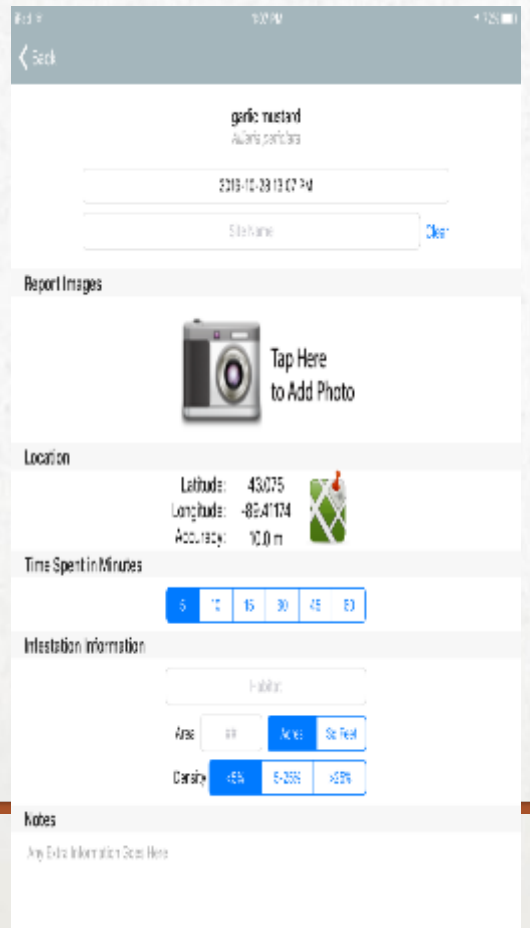
iMapInvasives

WE USE EDDMAPS
GLEDN = EDDMAPS MIDWEST

SELECT A SPECIES

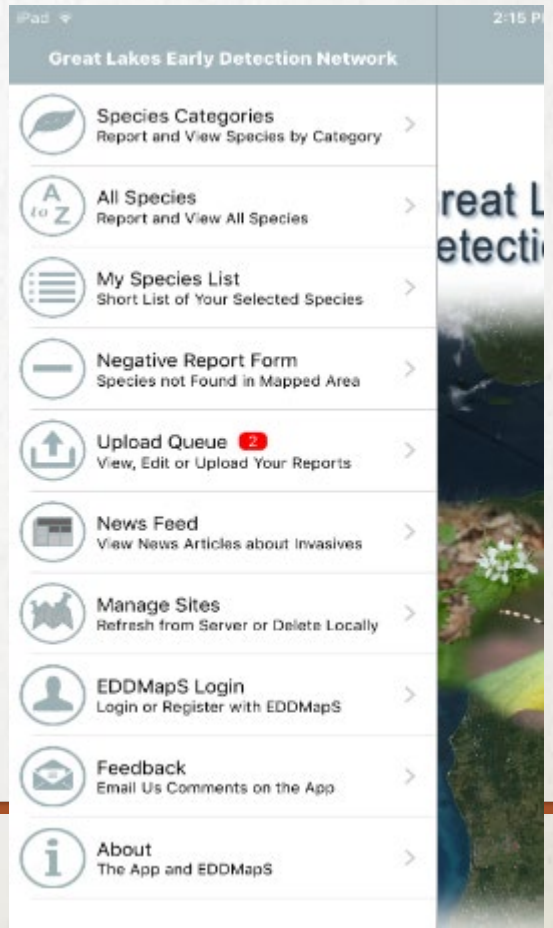


TAKE A PHOTO



POINT/POLYGON

UPLOAD



DATA IS VERIFIED PRIOR TO PUBLIC RELEASE

- Designated specialist involved
- Any regulated species is forwarded through the proper channel
- Options that allow for location to be kept private

EDDMapS Data Verification

Duties of a Verifier(s): A verifier is a person or persons who have identification skills for particular taxa and are willing to verify occurrence records that are submitted to EDDMapS. Ideally, there will be many experts/professionals in each region, state or county who are willing to be part of a network to help with verification of records. Verifications may occasionally need a follow up to identify the specimen in the field. This can be done by a verifier when possible, otherwise the person submitting the data may need to provide additional data for verification of the occurrence they are reporting.

Verification Steps: Every record entered into EDDMapS goes in as unverified until someone reviews it. When something is reported an email is automatically generated and sent to verifier.

Verification Directions: When you receive the email notification of a record submission, click on the link to go to the record to be verified. You will see a list of unverified records with the most recently submitted record at the top.

Review Status:

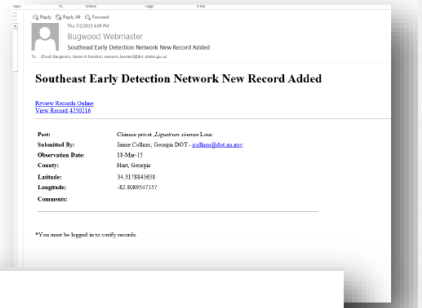
>Pending more information from either the reporter or someone else

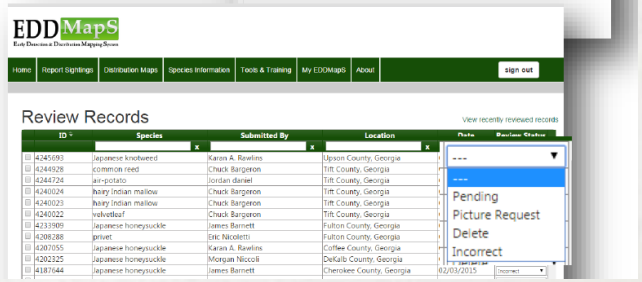
>Waiting for a picture to be submitted

>Delete record (Unable to correct the record)

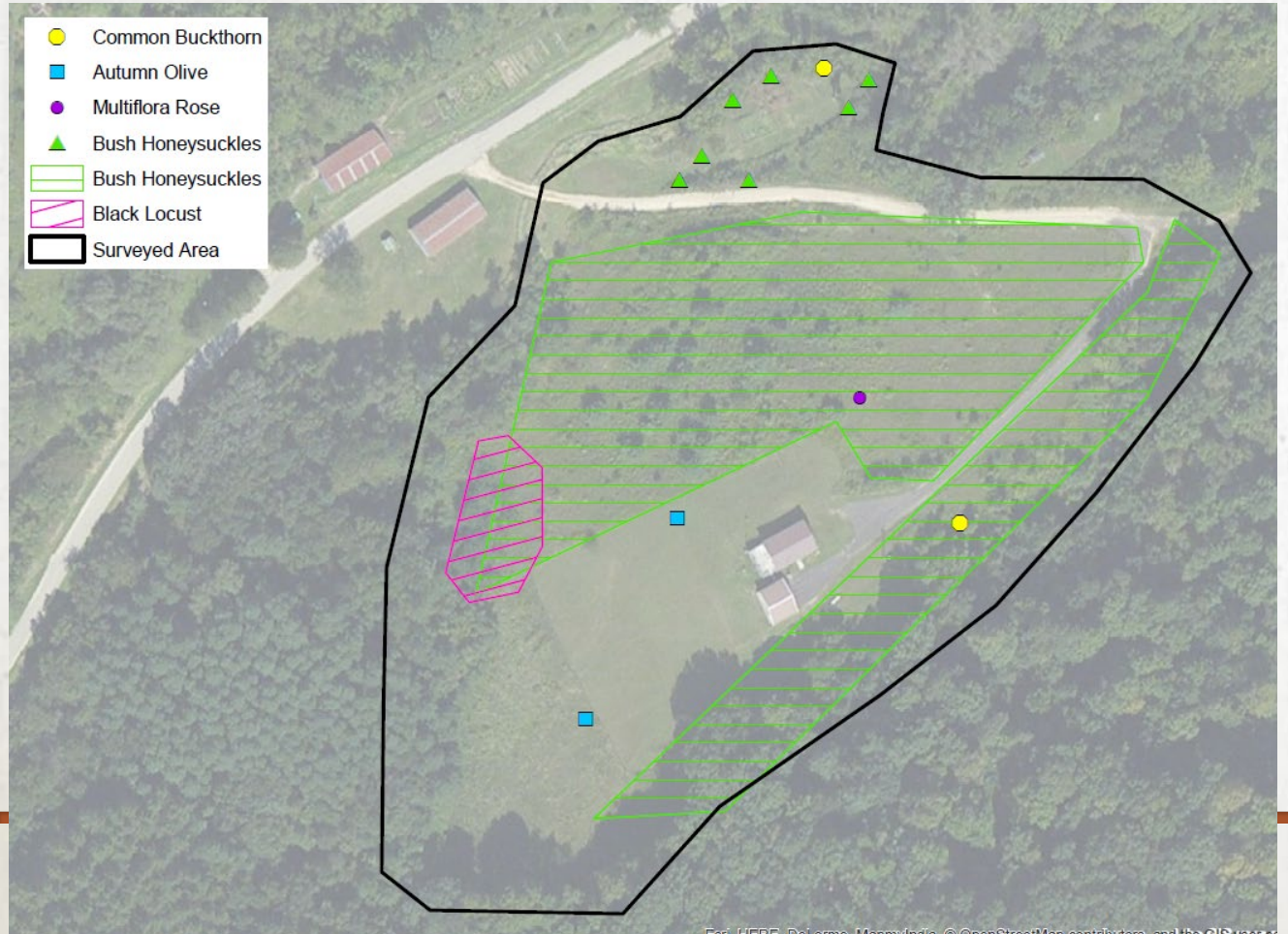
>Record is incorrect (Waiting for correction)

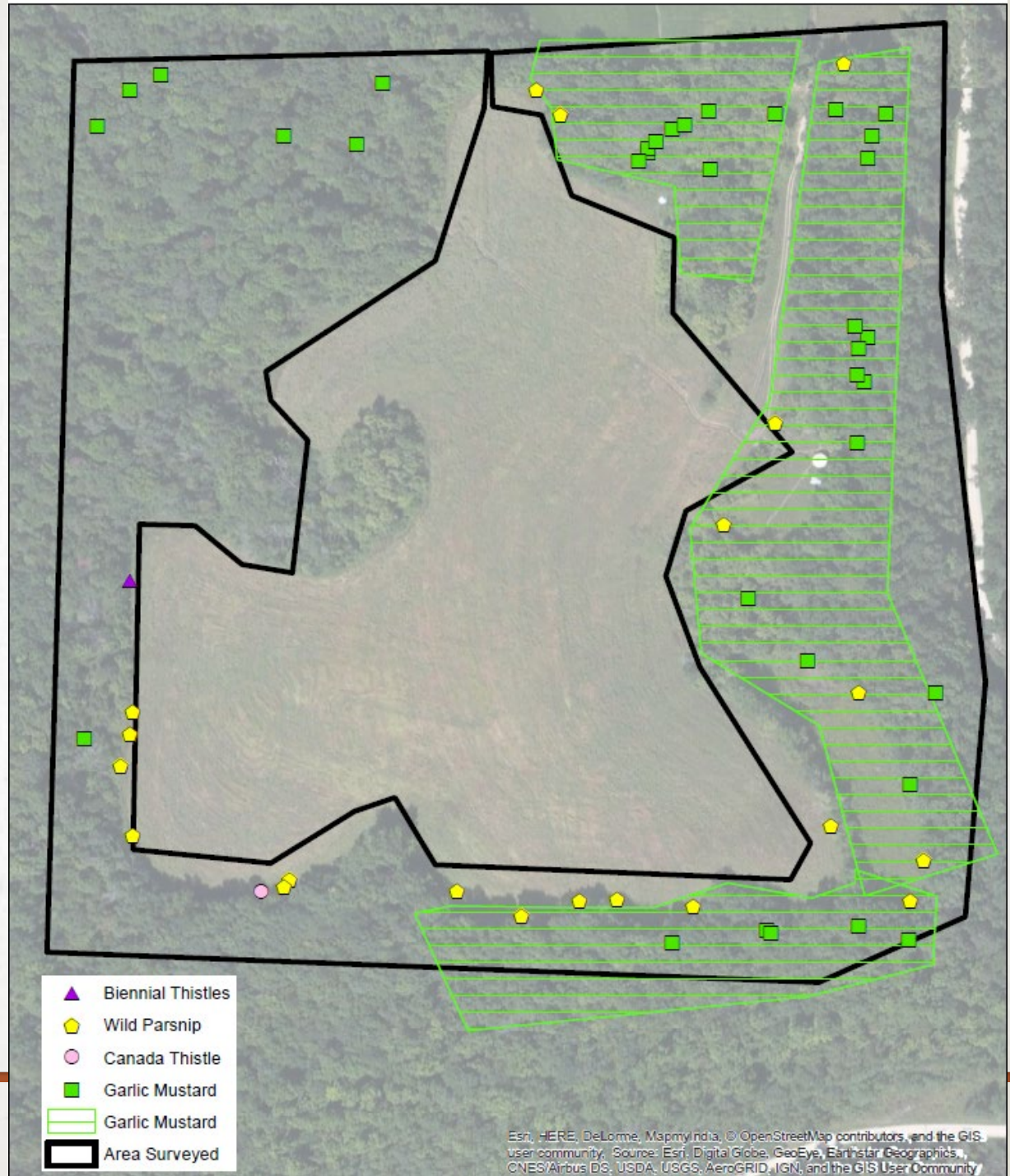
Click on the ID number (for a record). When it opens, the GPS coordinates provide a live link to a point on a Google map so



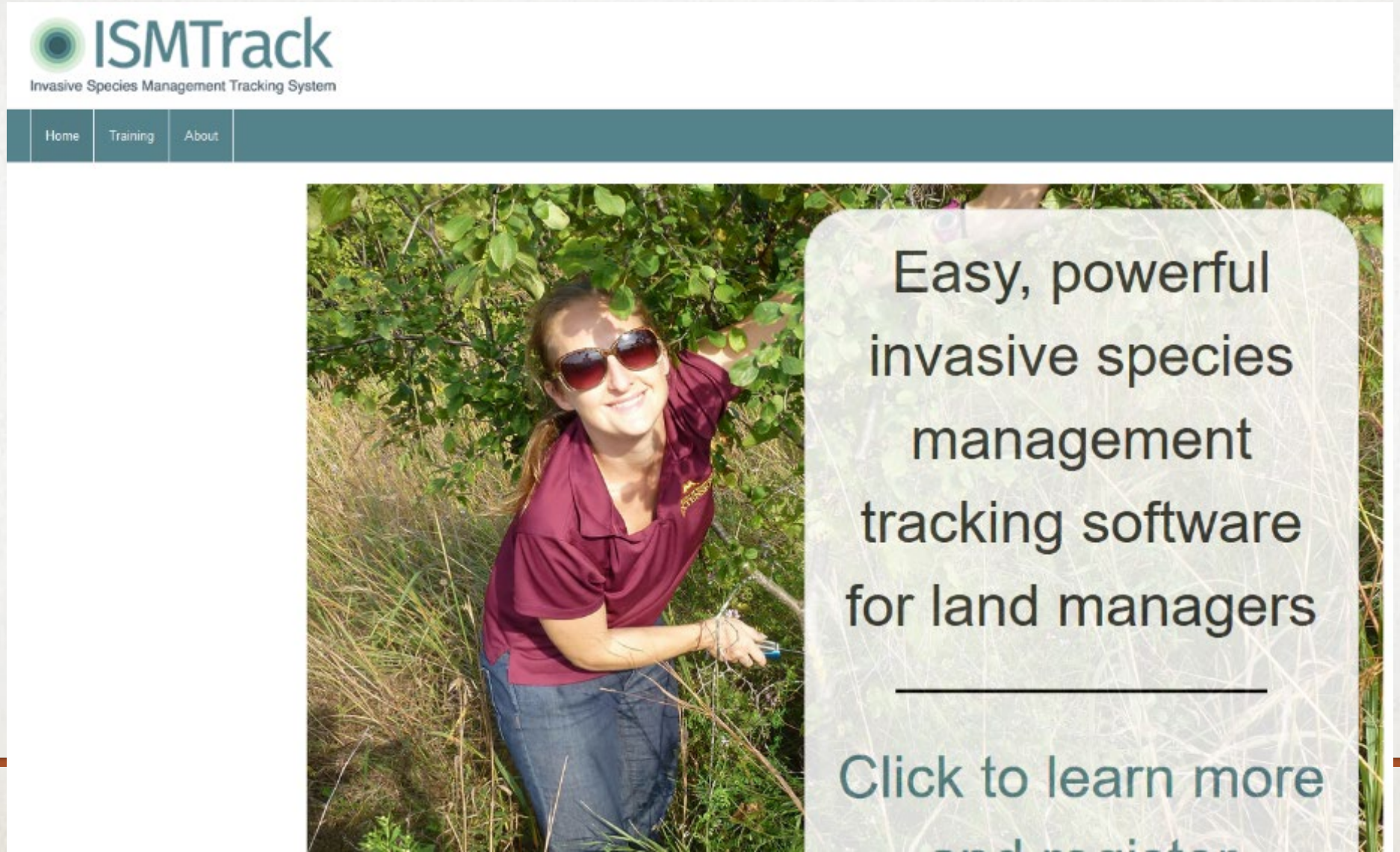


DOWNLOAD OBSERVATIONS TO MAKE MAPS





MN AND WI ARE WORKING WITH EDDMAPS TO TRACK MANAGEMENT ACTIVITIES



Pesticides Used

Show 50 entries

Export as:

Search:

Record ID	Site Name	Crew	Pesticide	Date	Total Solution (gal)	Percent Solution	Amount (gal)
7651	Lakeshore Preserve- Tent Colony Woods	Emily Jorgensen	Triclopyr ester (Garlon 4)	14-Jun-2018	0.265625	7 %	0.01859375
7652	Lakeshore Preserve- Caretaker's Woods	Emily Jorgensen	Clethodim (Intensity)	14-Jun-2018	2.5	0.5 %	0.0125
7678	Lakeshore Preserve- Tent Colony Woods	Emily Jorgensen, Preserve Volunteer	Triclopyr ester (Element 4)	25-Jun-2018	0.1953125	7 %	0.013671875
7687	Lakeshore Preserve- West Lakeshore Path	Ben Winesett	Glyphosate (Makaze)	25-Jun-2018	N/A	0.5 %	N/A
7687	Lakeshore Preserve- West Lakeshore Path	Ben Winesett	Triclopyr amine (Element 3A)	25-Jun-2018	0.75	2 %	0.015
8682	Lakeshore Preserve- 1918 Marsh	Emily Jorgensen	Triclopyr amine (Element 3A)	02-Jul-2018	2.5	2 %	0.05
8682	Lakeshore Preserve- 1918 Marsh	Emily Jorgensen	Triclopyr amine (Element 3A)	02-Jul-2018	2.5	2 %	0.05
8682	Lakeshore Preserve- 1918 Marsh	Emily Jorgensen	Triclopyr amine (Element 3A)	02-Jul-2018	2.5	2 %	0.05
8683	Lakeshore Preserve- Tent Colony Woods	Ben Winesett, Emily Jorgensen	Glyphosate (Makaze)	02-Jul-2018	N/A	N/A	N/A
8683	Lakeshore Preserve- Tent Colony Woods	Ben Winesett, Emily Jorgensen	Triclopyr amine (Element 3A)	02-Jul-2018	2	2 %	0.04
8684	Lakeshore Preserve- 1918 Marsh	Ben Winesett, Emily Jorgensen	Triclopyr amine (Element 3A)	02-Jul-2018	0.5	2 %	0.01
8684	Lakeshore Preserve- 1918 Marsh	Ben Winesett, Emily Jorgensen	Triclopyr amine (Element 3A)	02-Jul-2018	0.5	2 %	0.01
8684	Lakeshore Preserve- 1918 Marsh	Ben Winesett, Emily Jorgensen	Triclopyr amine (Element 3A)	02-Jul-2018	0.5	2 %	0.01
8684	Lakeshore Preserve- 1918 Marsh	Ben Winesett, Emily Jorgensen	Triclopyr amine (Element 3A)	02-Jul-2018	0.5	2 %	0.01
8717	Lakeshore Preserve- West Lakeshore Path	Emily Jorgensen	Triclopyr amine (Element 3A)	11-Jul-2018	4.75	2 %	0.095
8717	Lakeshore Preserve- West Lakeshore Path	Emily Jorgensen	Triclopyr amine (Element 3A)	11-Jul-2018	4.75	2 %	0.095
8717	Lakeshore Preserve- West Lakeshore Path	Emily Jorgensen	Triclopyr amine (Element 3A)	11-Jul-2018	4.75	2 %	0.095
8717	Lakeshore Preserve- West Lakeshore Path	Emily Jorgensen	Triclopyr amine (Element 3A)	11-Jul-2018	4.75	2 %	0.095
8717	Lakeshore Preserve- West Lakeshore Path	Emily Jorgensen	Triclopyr amine (Element 3A)	11-Jul-2018	4.75	2 %	0.095
8717	Lakeshore Preserve- West Lakeshore Path	Emily Jorgensen	Triclopyr amine (Element 3A)	11-Jul-2018	4.75	2 %	0.095
8718	Lakeshore Preserve- West Lakeshore Path		Triclopyr amine (Element 3A)	11-Jul-2018	0.75	2 %	0.015
8718	Lakeshore Preserve- West Lakeshore Path		Triclopyr amine (Element 3A)	11-Jul-2018	0.75	2 %	0.015

ISMTrack

Invasive Species Management Tracking System

WHO IS USING ISMTRACK?

- Wisconsin
  - Land Trusts, Nature Preserves
  - CWMAs
  - County parks
- Minnesota
  - Dept. of Agriculture & Natural Resources
  - Volunteer groups

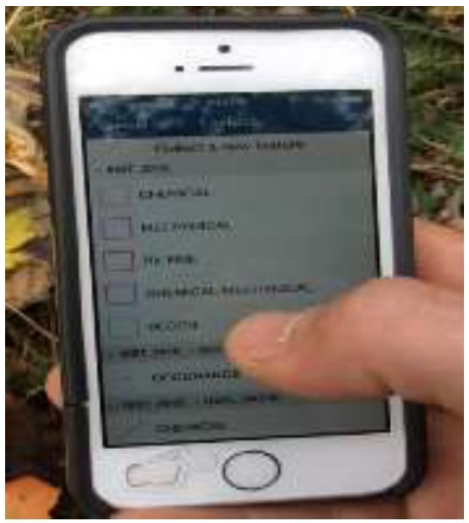
IS ISMTRACK PERFECT?

- No, it is an off the shelf software/website
  - Emphasis on not for profits, county/state agency
- If you need specific resources
  - Develop one specific to your needs
    - $$$$
    - Requires skill in coding
    - maintenance

IF INTERESTED IN A CUSTOMIZABLE SYSTEM

- Start looking for a software engineer/designer
  - PROS: completely customizable
  - CONS: expensive

- ESRI has several tools that can help customize a solution (collector App)
  - PROS: very flexible in customization
  - CONS:
    - need an Arc-GIS license
    - Requires someone to program/code



Mapping Infestations Using ESRI's Collector App

WHAT TO CONSIDER WHEN MAPPING

- What to map
  - How many different species?
  - What attributes to include?
- How to map it
  - Point
  - Polygon
- How frequently do you revisit/remap?

PLANT SPECIES TO MAP

Depends on management goals

- invasive species management then just map them (EASIEST)
  - Typical of most contract work

- improving a feature of area that invasives are impacting consider including (HARD)
  - Think if client would be ok with invasives if goals were met.

CALLERY PEAR EXAMPLE

CYPRESS SPURGE INVADING OAK SAVANNAH

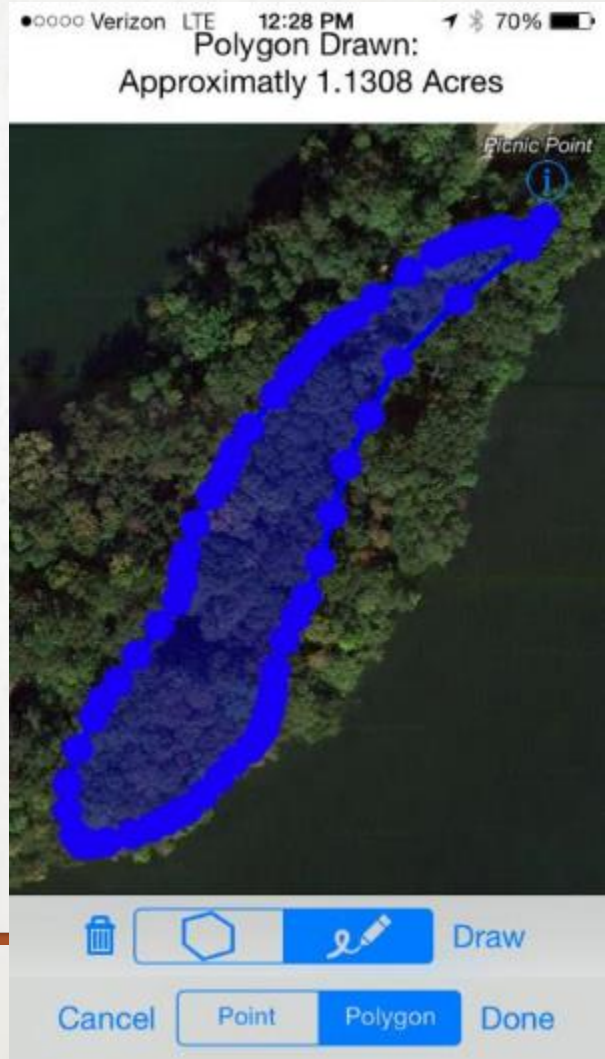
HOW TO MAP: POINTS VS POLYGONS

Depends on the goal of mapping

- Points
  - PRO: fast to do, good at estimating population #s
  - CON: poor at estimating size of infestation, time consuming if a lot

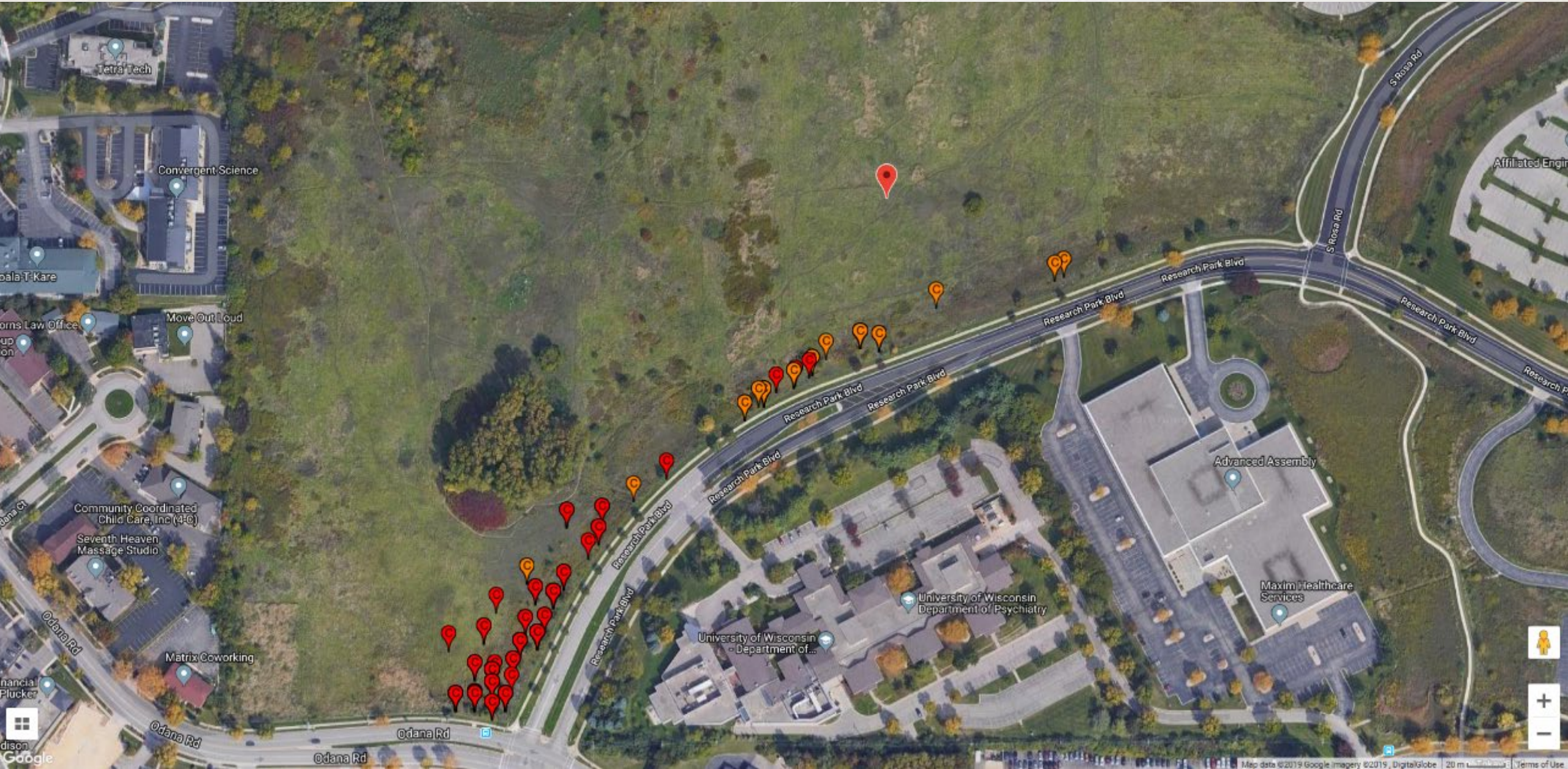
Polygons

- PRO: delineates area infested
- CON: doesn't estimate #, have to draw



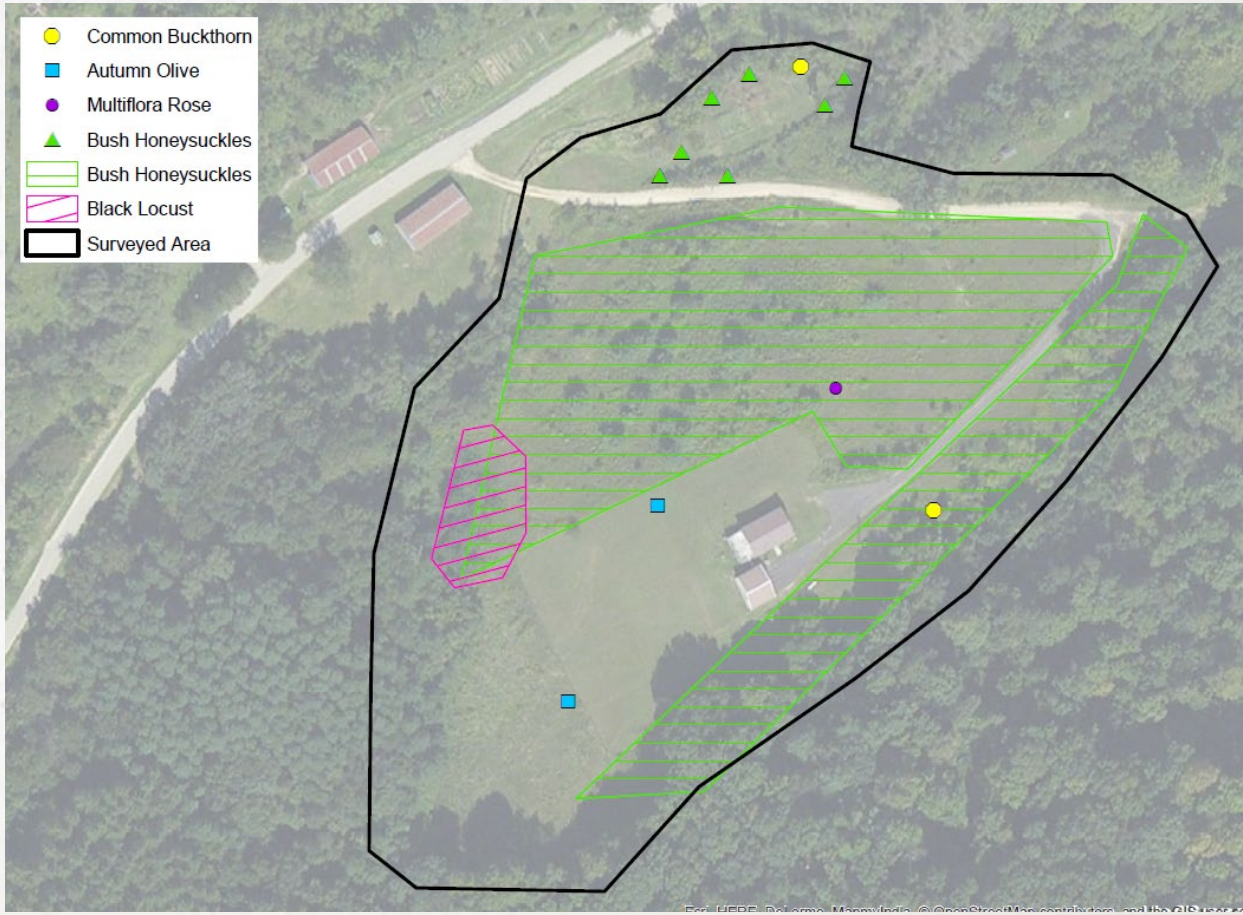
CALLERY PEAR EXAMPLE, WHICH IS THE BEST APPROACH?

THIS IS WHAT I DID.....



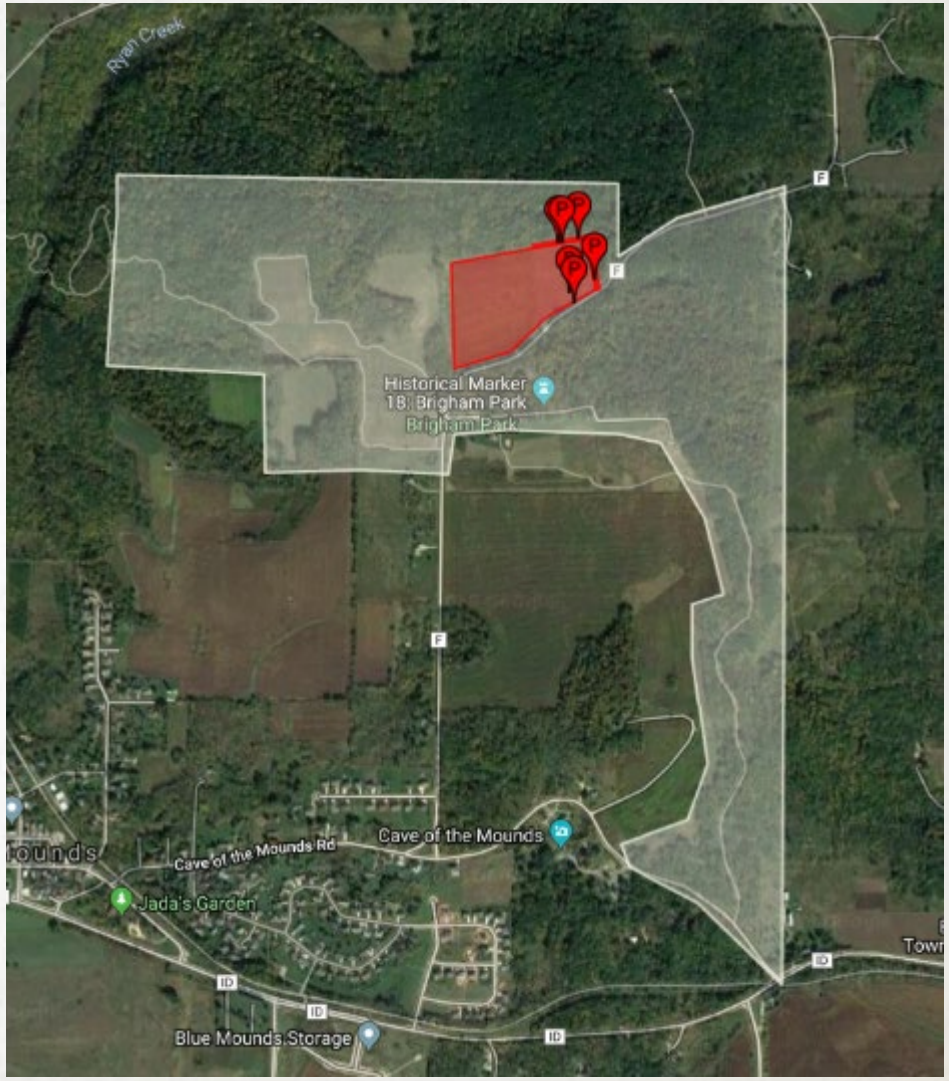
IF FOCUS IS ON REDUCING COVER, POLYGONS ARE BEST APPROACH

- Automatically calculates area infested
- Can redraw after control and compare to initial size (reduction in area
- Need to take important data about infestation
  - Density
- Decide how to deal with outliers

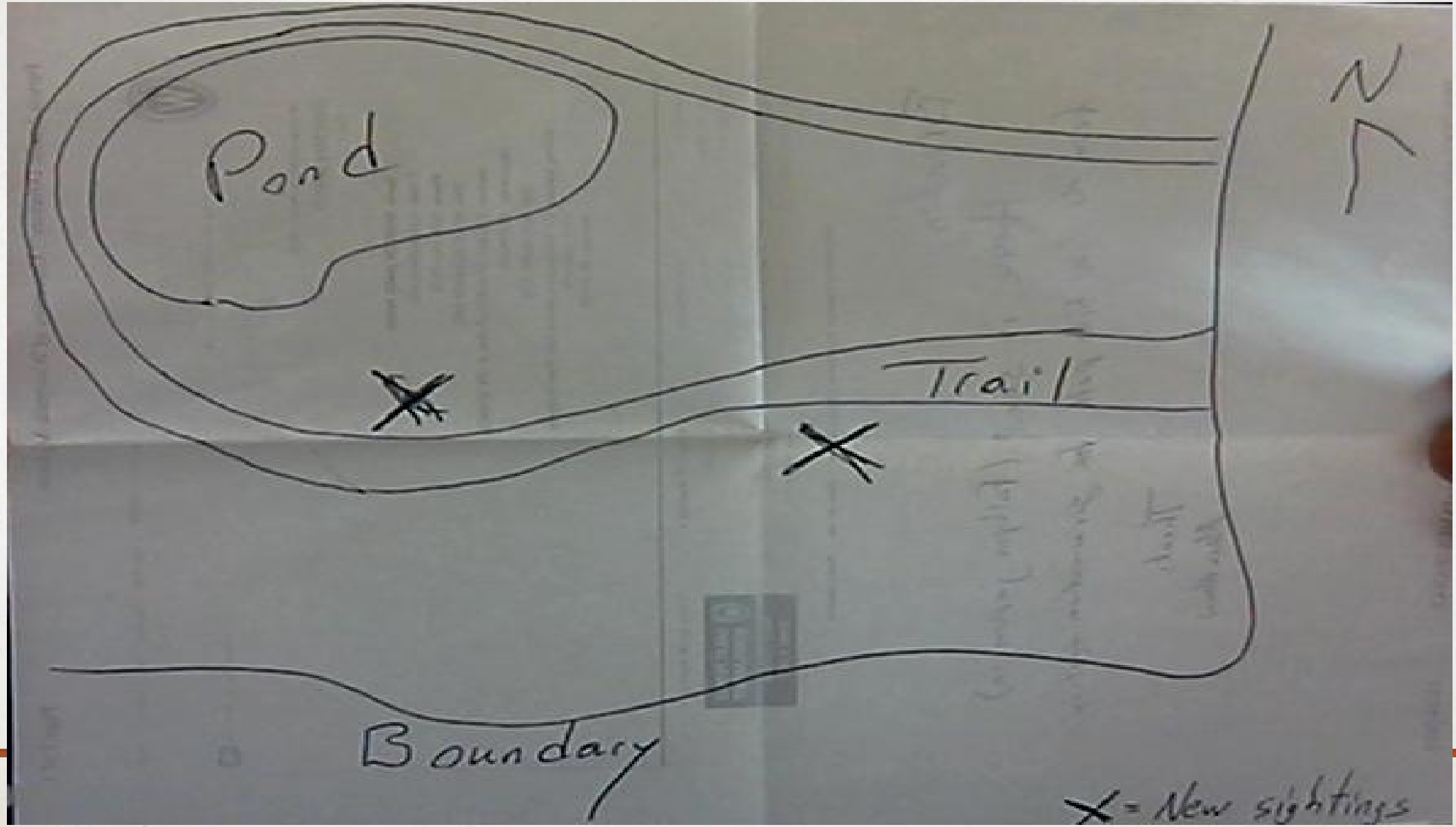


HOW FREQUENTLY DO YOU REVISIT AND REMAP?

- Depends on management goals and species
- If controlling I would recommend **annually** after control
  - Provides a good idea of success/reinfestation
- If just monitoring could do less often



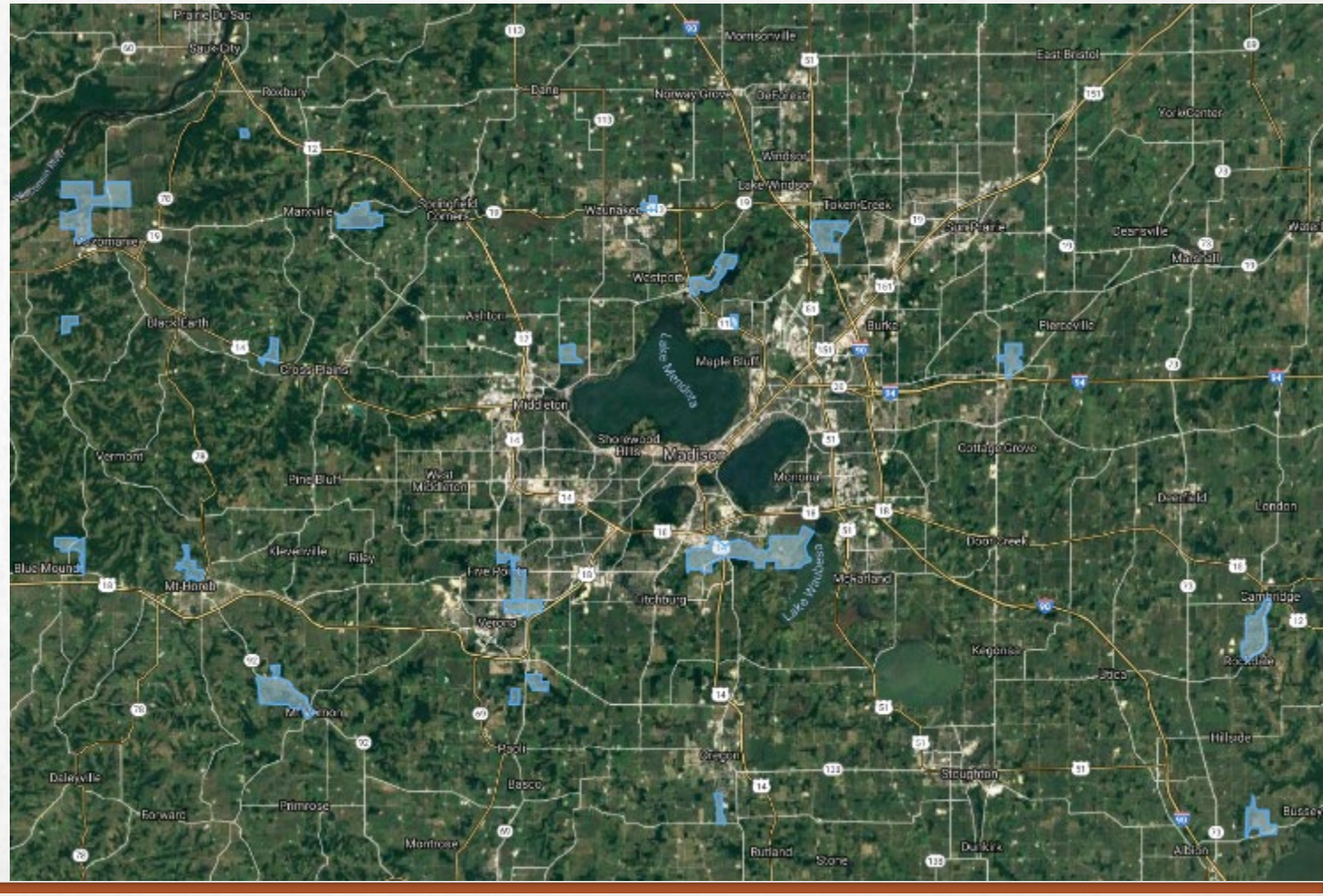
WHAT IS MISSING FROM THIS MAP?



DANE COUNTY PARKS EXAMPLE

- 22 sites/parks/natural areas
- Trained volunteers to
  - Map invasive species
  - Record volunteer activities
- GOAL: Justify the need for more resources

2017 - PRESENT



DANE COUNTY PARKS EXAMPLE

SUMMARY

- Mapping can improve your ability to manage invasive plants
- Make decisions on what/how to map based on goals of lands
  - Resources available, expertise of staff
- Lots of resources available to help
  - data providers (e.g. EddMaps)
  - Off the shelf options (e.g. ISMtrack)
  - Customizable options (e.g. ESRI)
  - Consultants

Extension
UNIVERSITY OF WISCONSIN–MADISON

- It gets complicated quickly so don't hesitate to ask for help

THANKS AND STAY WARM!!!!!!