



iMapInvasives: A New Tool for Geotracking Invasive Species



What it is

- **Online and interactive**
- **GIS-Based map and database**

How it Works

- **Partnerships and administration structure**
- **Basic and advanced database capabilities**

Why iMapInvasives?

- **Data sharing and collaboration**
- **Comparison with other mapping programs**

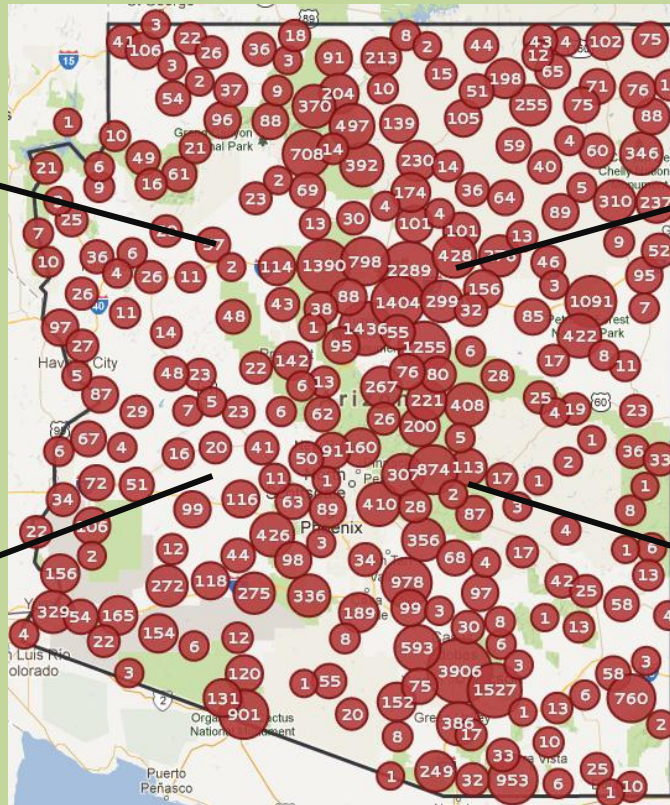
What's next?

- **Future technology**
- **Increase state participation**

The *iMapInvasives* Project: What is it?

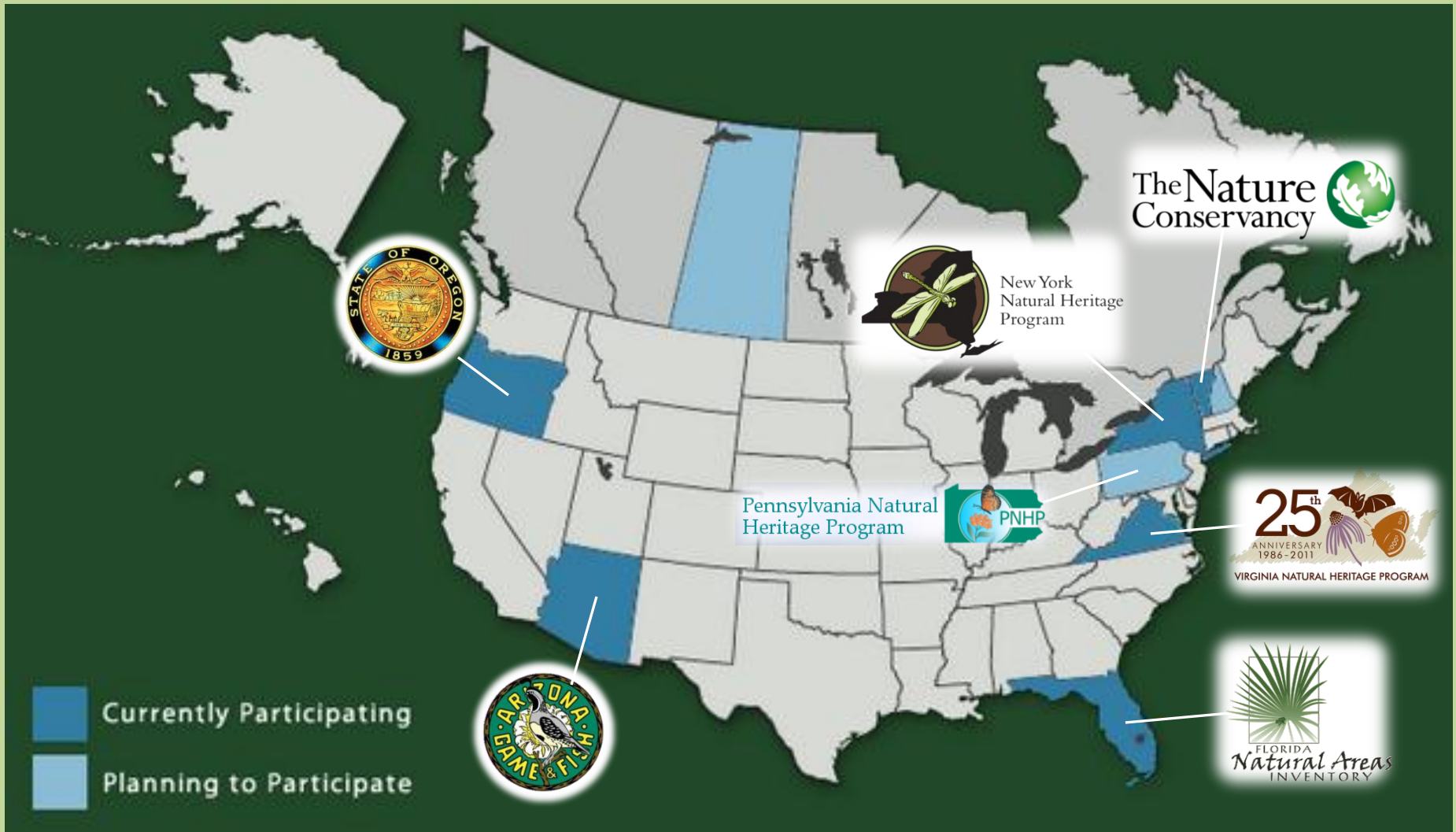
iMapInvasives is an online mapping tool that aggregates and displays invasive species location data from multiple sources.

EnviroSystems Management, Inc.
Environmental Planning • Regulatory Compliance



Participating States

Arizona, Florida, New York, Maine, Oregon, Pennsylvania, Saskatchewan, Vermont, Virginia, West Virginia (10)



Built on Partnerships







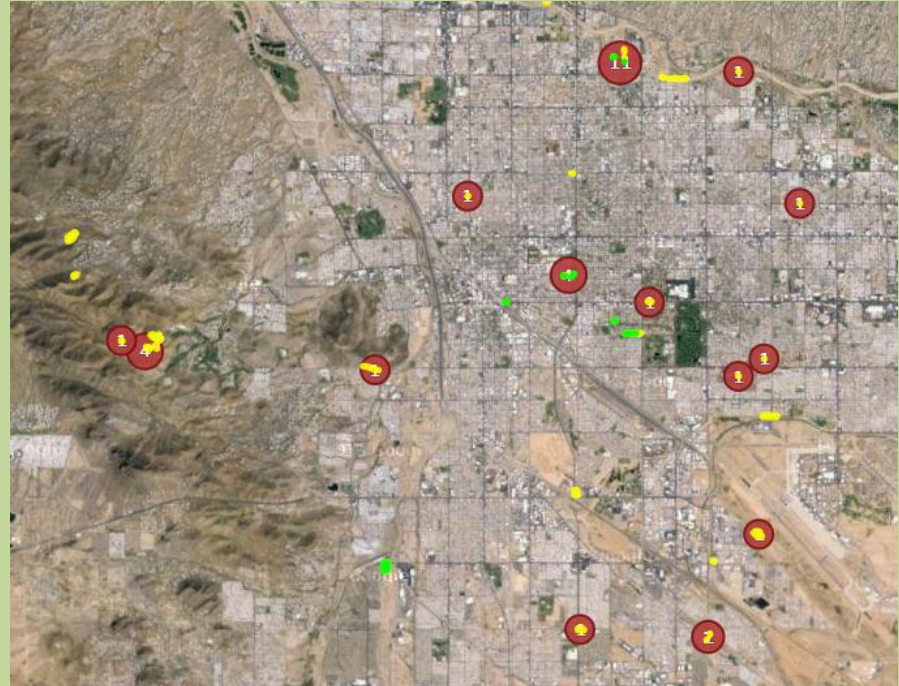
New York
Natural Heritage
Program



FREAC
FLORIDA RESOURCES AND ENVIRONMENTAL ANALYSIS CENTER

How is *iMapInvasives* Useful?

-  Visualize the geography of infestations
-  Early detection potential
-  Track infestation status over time
-  Collaborate data across the state



How are AGFD and others Using iMap?



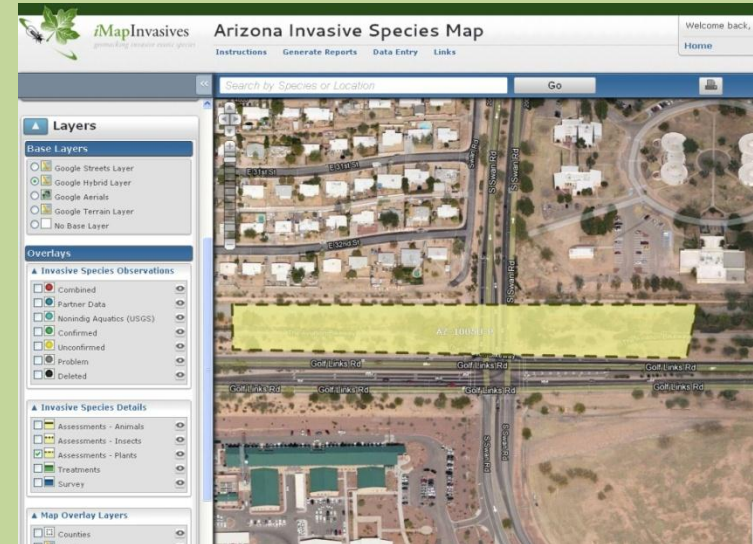
Providing bulk sets of data to be stored in the database.



Viewing data to help write EAs, HACCP Plans, and to fill other data requests as they are received by HDMS.

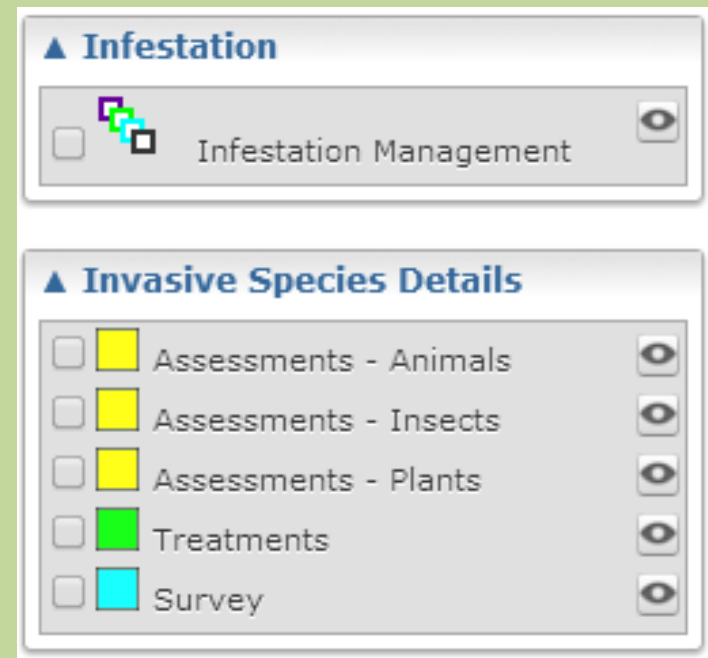


Using the advanced functions as their main database.



Advanced Uses of *iMapInvasives*

- Observations
- Assessment
- Survey
- Treatment
- Projects
- Infestation Management
- Early Detection Alerts
 - Suspicious distance reports
 - Approaching region reports



The iMapInvasives Home Page

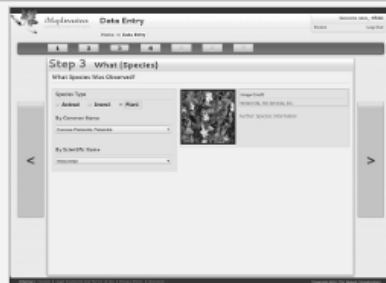
My iMapInvasives

Resources

Invasives Management

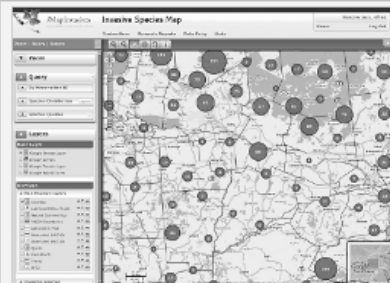
System Management

Enter Data



- Observation
- Survey
- Treatment

View the Map



- View the Map

View Table

- All Observations
- Surveys
- Treatments
- Assessments
 - Animals
 - Insects
 - Plants

Query Observations

- Custom Observation Query
- View Report for All Data
- View Admin Summary Report
- View Infested Lake Report

My Personal Information

My Profile



- Edit My Profile
- Change my Password

E-Mail Alerts



- Manage my Alerts

My iMapInvasives Data

View My Data in a Table



- Select Data to View

Download My Observation Data



- Select Data to Download

Download Related Data (ESRI gdb)

- Assessment Data

- Select Assessment Data to Download





Layers

Base Layers

- ☐ Google Streets Layer
- ☐ Google Hybrid Layer
- ☐ Google Aerials
- ☐ Google Terrain Layer
- ☐ No Base Layer

Overlays

▲ Invasive Species Observations

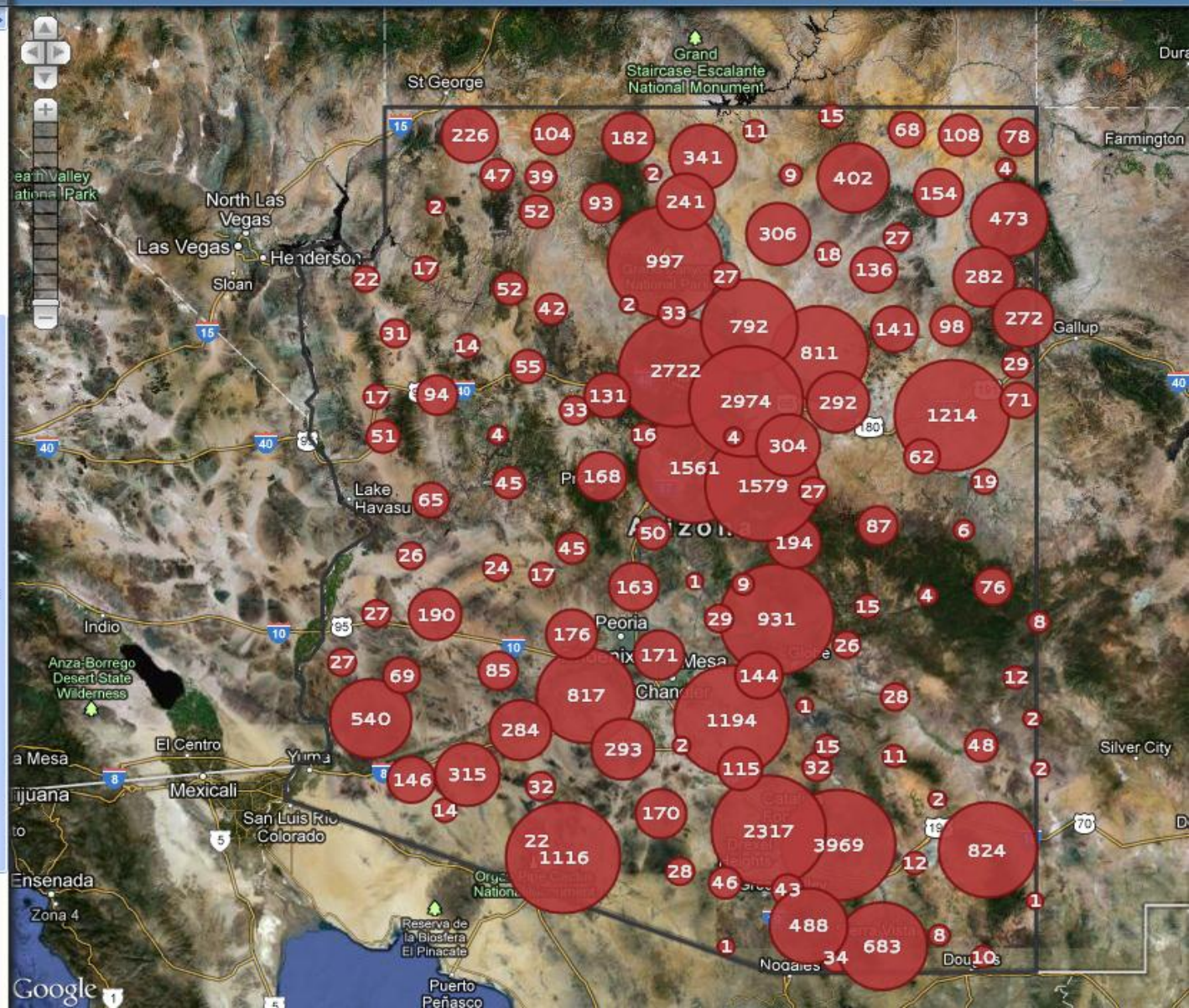
- ☒ Combined
- ☐ Partner Data
- ☐ Nonindig Aquatics (USGS)
- ☐ Confirmed
- ☐ Unconfirmed
- ☐ Problem
- ☐ Deleted

▲ Invasive Species Details

- ☐ Assessments - Animals
- ☐ Assessments - Insects
- ☐ Assessments - Plants
- ☐ Treatments
- ☐ Survey

▲ Map Overlay Layers

- ☐ Counties
- ☐ HUC 8
- ☐ Indian Reservations
- ☐ Lakes



Simple Point Observation Data

Observation Data: a point on the map representing the report of a specific species, at a specific place, on a specific date. As observation can represent an infestation or an individual sighting.

1234567

Step 4 What (Species)

What Species Was Observed?

Species Type


☒ Animal ☐ Insect ☐ Plant

By Common Name

Wild Boar

By Scientific Name

Sus scrofa



Show Full Image

1234567

Step 6 Where Zoom-in FIRST

Tip: hold shift + click and drag to zoom to a specific area

Search by Coordinate

Lat / Lon Decimal


Enter Coordinate

Longitude -112.52826 Latitude 34.0607

Place point at coordinates

Search by Location

Go to location



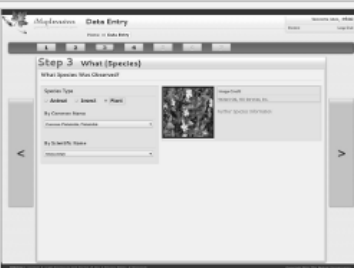
Lon:-117.44052/Lat:36.53151

Online Data Entry



Smart Phone

Enter Data



The screenshot shows the 'Data Entry' page of the iMAGeS web application. The page has a header with the 'iMAGeS' logo and the title 'Data Entry'. Below the header is a navigation bar with tabs for 'Home', 'Data Entry', 'Reports', and 'Help'. The main content area is titled 'Step 3: What (Species)' and contains a form for entering species information. The form includes a 'Species Type' dropdown menu with options 'Arthropod', 'Insect', and 'Plant'. Below this is a 'By Common Name' search field and a 'By Scientific Name' search field. To the right of the search fields is a thumbnail image of a group of insects. Below the image is a 'Species Name' field and a 'Number of Specimens' field. The page is flanked by vertical navigation bars on the left and right sides.

- Observation
- Survey
- Treatment
- Infestation Management

- Observation
- Survey
- Treatment
- Infestation Management

| OBJECTID | Shape | object_1 | object_12 | obid | statespaceid | observer | obsorg | obsdate | obstate | obcountyname | obnationalownership | obastoredirection |
|----------|-------|----------|-----------|-----------|--------------|---------------|---------|------------|---------|--------------|---------------------|-------------------|
| 1 | Point | obid | obid | AZ-156741 | AZ-156741 | Marlyn Hanson | AZ-1999 | 2011-12-21 | AZ | obid | obid | obid |
| 2 | Point | obid | obid | AZ-156746 | AZ-156746 | Marlyn Hanson | AZ-1999 | 2011-12-21 | AZ | obid | obid | obid |
| 3 | Point | obid | obid | AZ-156747 | AZ-156747 | Marlyn Hanson | AZ-1999 | 2011-12-28 | AZ | obid | obid | obid |
| 4 | Point | obid | obid | AZ-156748 | AZ-156748 | Marlyn Hanson | AZ-1999 | 2011-12-14 | AZ | obid | obid | obid |
| 5 | Point | obid | obid | AZ-156749 | AZ-156749 | Marlyn Hanson | AZ-1999 | 2011-12-14 | AZ | obid | obid | obid |
| 6 | Point | obid | obid | AZ-156750 | AZ-156750 | Marlyn Hanson | AZ-1999 | 2011-12-14 | AZ | obid | obid | obid |
| 7 | Point | obid | obid | AZ-156751 | AZ-156751 | Marlyn Hanson | AZ-1999 | 2011-12-14 | AZ | obid | obid | obid |
| 8 | Point | obid | obid | AZ-156752 | AZ-156752 | Marlyn Hanson | AZ-1999 | 2011-12-22 | AZ | obid | obid | obid |
| 9 | Point | obid | obid | AZ-156753 | AZ-156753 | Marlyn Hanson | AZ-1999 | 2011-12-21 | AZ | obid | obid | obid |
| 10 | Point | obid | obid | AZ-156754 | AZ-156754 | Marlyn Hanson | AZ-1999 | 2011-12-31 | AZ | obid | obid | obid |
| 11 | Point | obid | obid | AZ-156755 | AZ-156755 | Marlyn Hanson | AZ-1999 | 2011-12-31 | AZ | obid | obid | obid |
| 12 | Point | obid | obid | AZ-156756 | AZ-156756 | Marlyn Hanson | AZ-1999 | 2011-12-31 | AZ | obid | obid | obid |
| 13 | Point | obid | obid | AZ-156757 | AZ-156757 | Marlyn Hanson | AZ-1999 | 2011-12-31 | AZ | obid | obid | obid |
| 14 | Point | obid | obid | AZ-156758 | AZ-156758 | Marlyn Hanson | AZ-1999 | 2011-12-31 | AZ | obid | obid | obid |
| 15 | Point | obid | obid | AZ-156759 | AZ-156759 | Marlyn Hanson | AZ-1999 | 2020-09-17 | AZ | obid | obid | obid |
| 16 | Point | obid | obid | AZ-156760 | AZ-156760 | Marlyn Hanson | AZ-1999 | 2020-11-01 | AZ | obid | obid | obid |
| 17 | Point | obid | obid | AZ-156761 | AZ-156761 | Marlyn Hanson | AZ-1999 | 2011-12-17 | AZ | obid | obid | obid |

Advanced Data Entry: Assessment

Assessment Data: polygons showing localized distribution of a species rather than just simple observation data.

- Capturing the scope and intensity of an infestation for further follow-up

Plant Assessment

ID: AZ-1004U-P

Search

*** Assessment Area**
Use the buttons on the top right side of the map to add a feature.

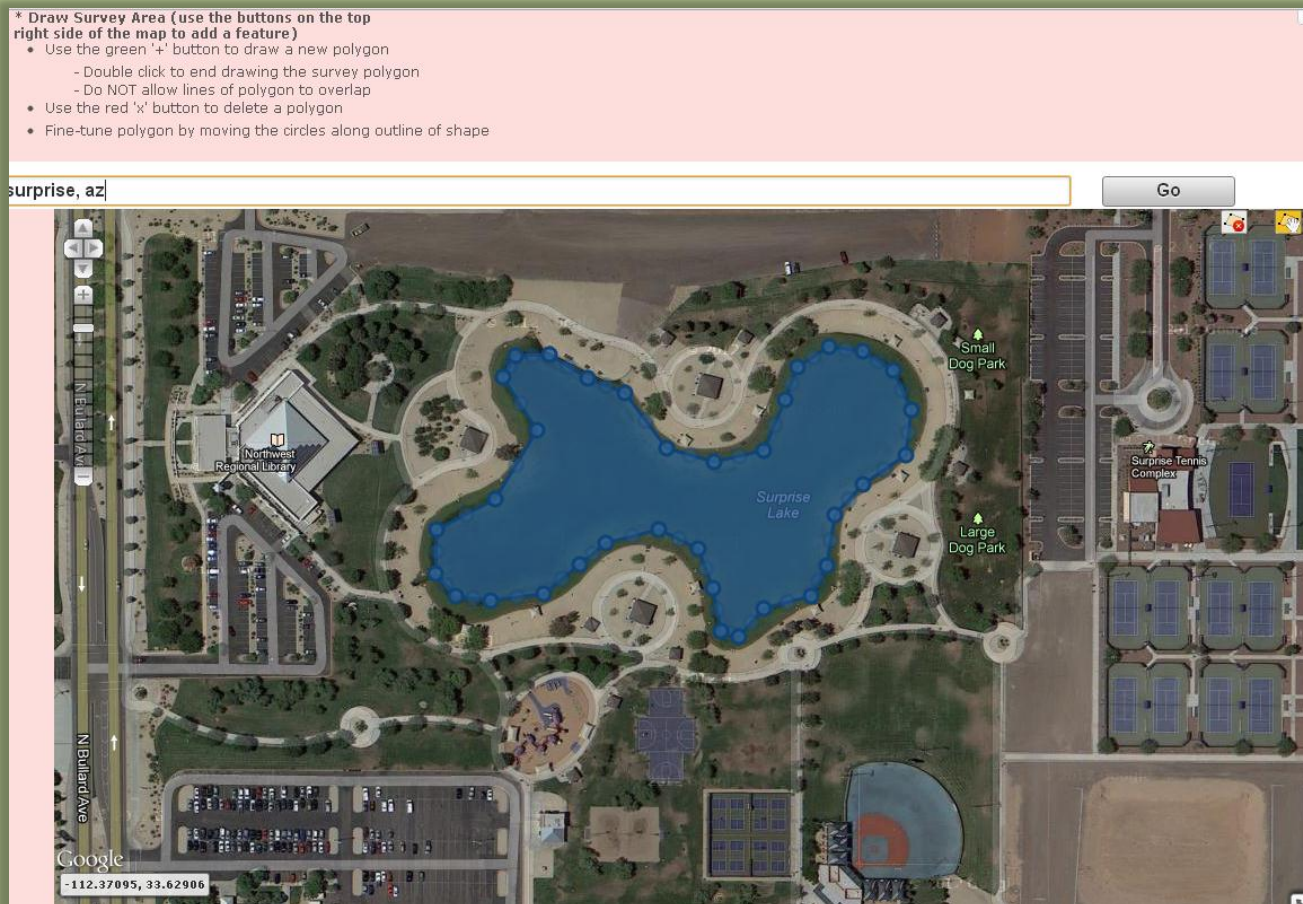
- Use the red 'x' button to delete a polygon
- Use the green '+' button to draw a new polygon (Double click to end drawing the assessment polygon.)
- Use the pan button to move the map or edit the polygon

Polygon Area (in square meters)

289,45812426763587

Advanced Data Entry: Survey

Survey Data: The planned search of an area to determine presence or absence of specific species.



Advanced Data Entry: Treatment



Barrier



Bioagent



Chemical



Fire



Flame Weeding



Grazing



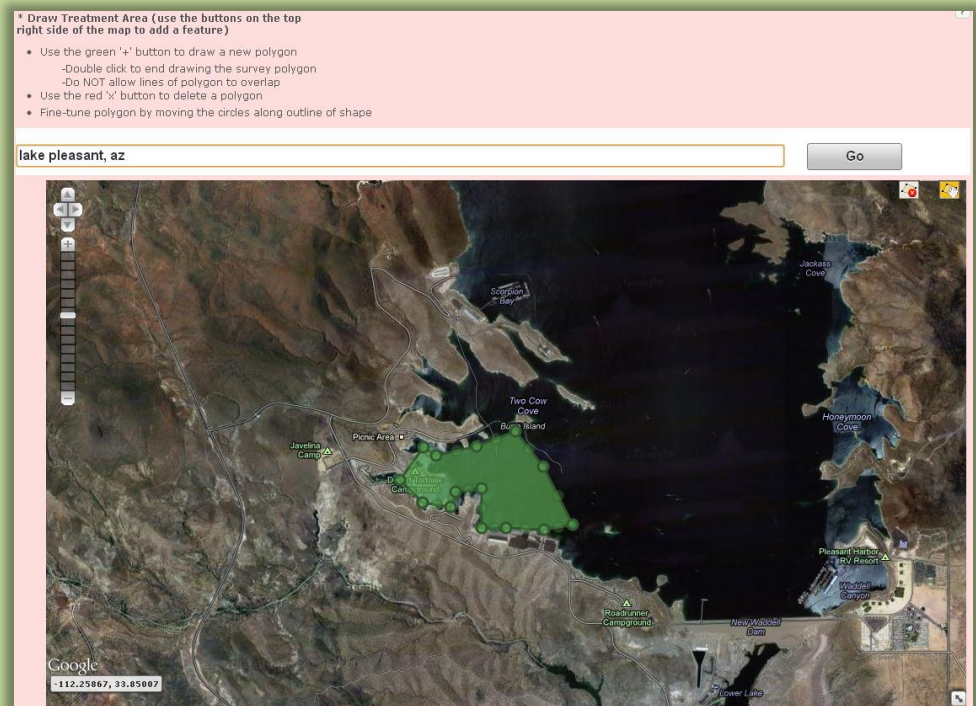
Mechanical/Manual



Shooting



Trapping



Advanced Uses: Creating Projects

Serves two basic functions:

1. A way to organize data into a group that can be easily searched or downloaded
2. A way for multiple agencies to submit and share data for the same project

Examples:

- Tracking data collected for a specific season of field work
- Tracking data collected for a specific grant

1 2 3 4

Step 3 Project

Are you entering data for a project?

☐ No, I am not.

☒ Yes, I am entering it for Select Project ▼

If you do not see your project listed, please contact the project leader

Advanced Uses: Infestation Management

IMR: A polygon grouping together all of the associated data records for a population of a particular species.

Basic Functions:

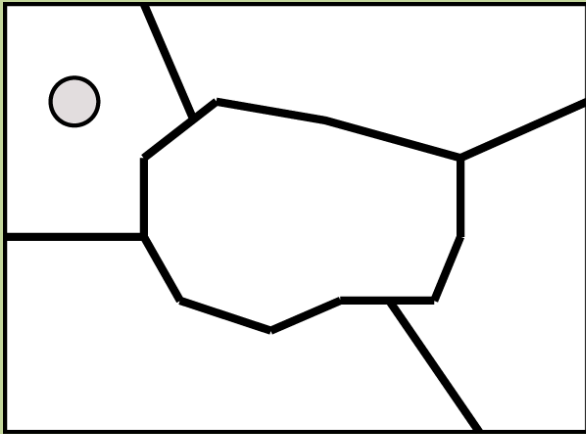
1. A way to track the status of a population of a particular species over time
2. A way to easily view all work that has been done over time to manage an infestation

Example:

- The management of one species populated at a defined geographic location of interest

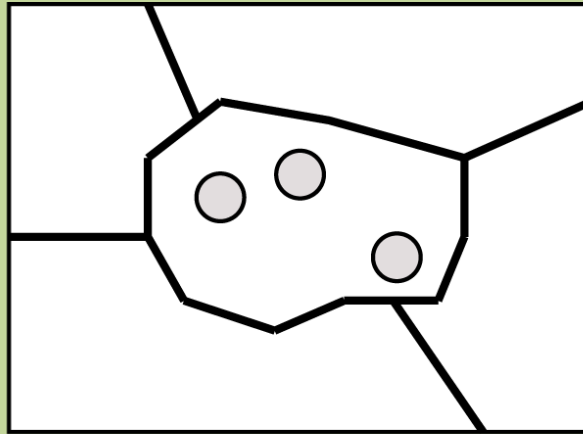


Approaching Region and Early Detection Reports



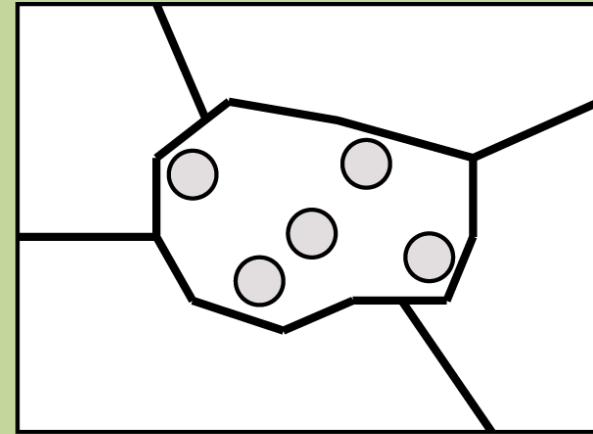
Approaching Region

Reported next door but not in the area of interest.



Early Detection

Reported in the area 1 to 3 times.



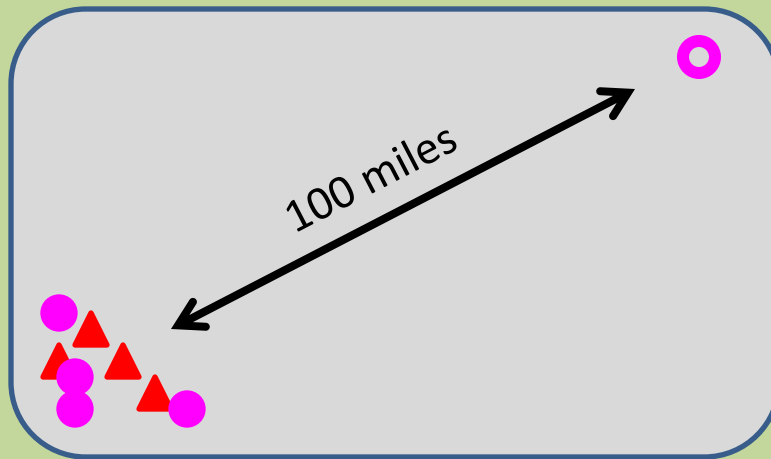
Presence Established

Reported four or more times.
Has probably established presence in the area.

Approaching Region and Early Detection Reports

Suspicious Distance alerts for state administrators

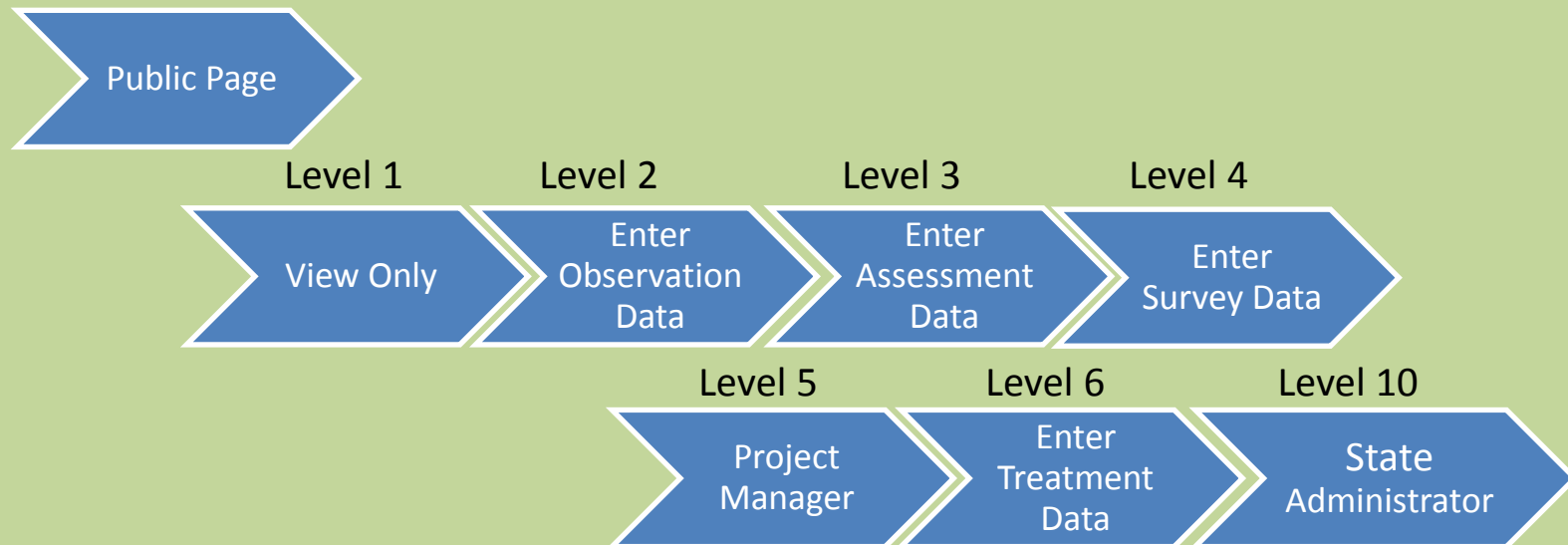
- A new report appears suspiciously far from other known occurrences
 - Could be a candidate for EDRR, or a misidentification



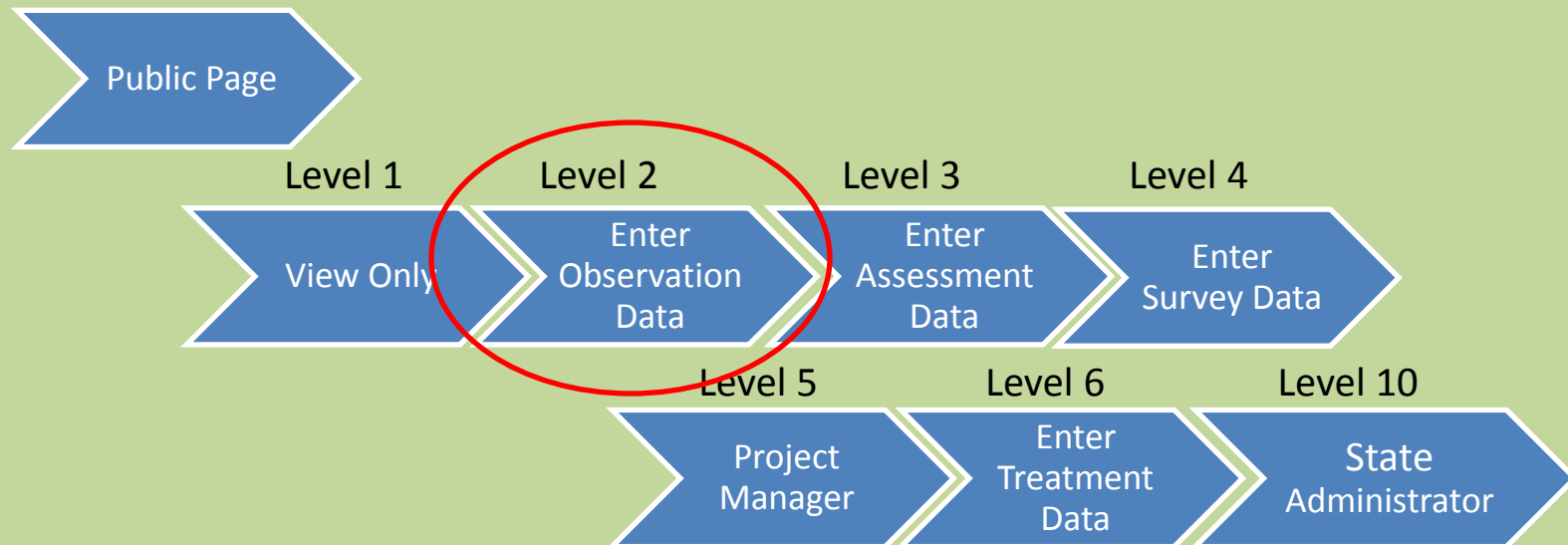
Distance set varies
by species

- The new report is forwarded to appropriate regional contact

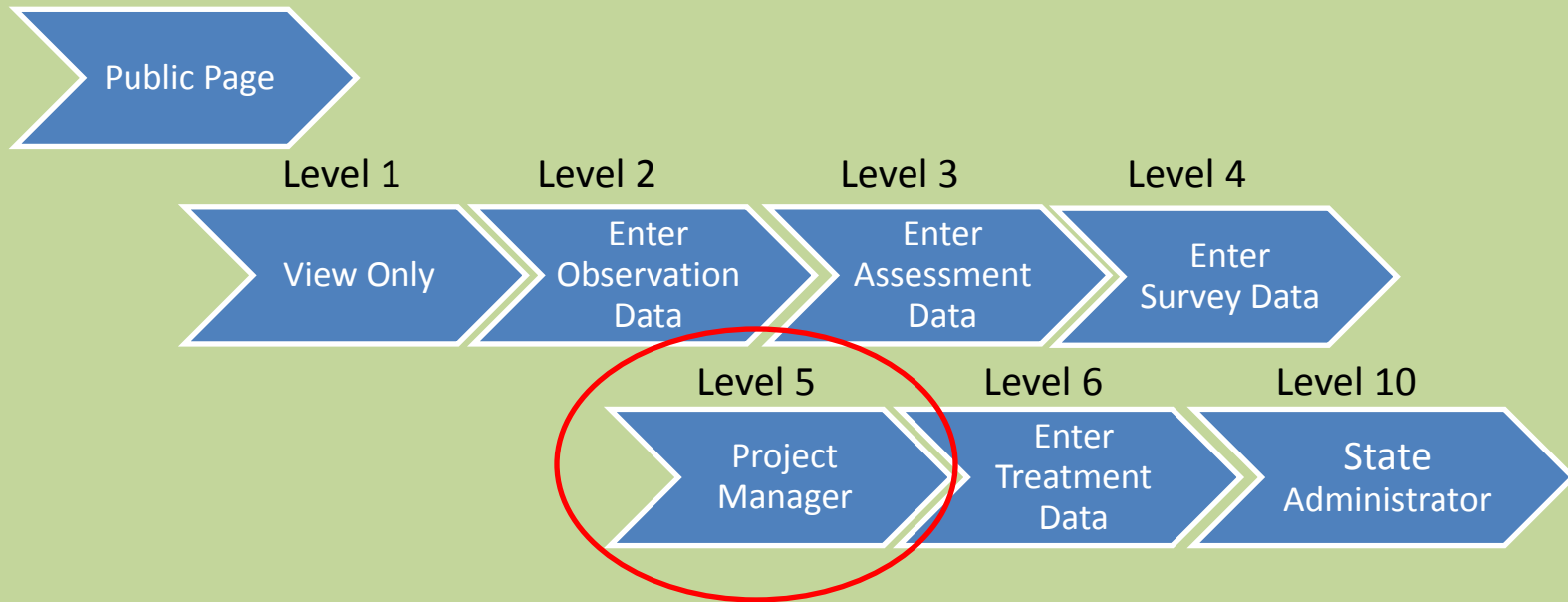
Different User Levels for Controlled Functionality



Different User Levels for Controlled Functionality



Different User Levels for Controlled Functionality



Other Invasive Species Databases

EDDMapS: Early Detection and Distribution Mapping System

Publicly available data to upload and download. Point observation unless you have a paid set-up and customized page.

GISIN: Global Invasive Species Information Network

Can view lists (and download) data with coordinates by species, country, kingdom, and provider. No maps displayed on the site. Only invasives. Data is downloadable.

NAISN: North American Invasive Species Network

Target to be a North American scale vision of invasive species information. Shows species list and you can click on the species to bring up info and photos and locations on a map. Uses GISIN and EDDMapS for locations. Data is viewable.

USGS NAS: Nonindigenous Aquatic Species

Collection of aquatic species information. We have a current data share agreement with them. They get all of our public data, and we get all of theirs.

Regional Databases:

Great Lakes Early Detection Network

Midwest Invasive Species Information Network

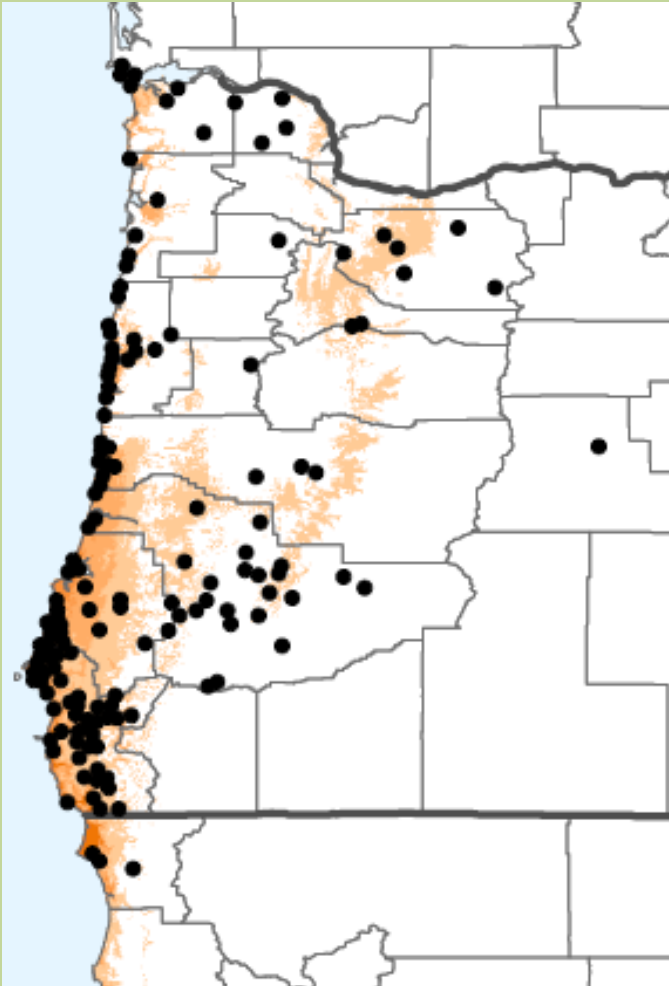
How Does iMap Compare?

- ❑ Online, Publicly Accessible
- ❑ Plants, Animals, Insects
- ❑ Points and Polygons
- ❑ Multiple User Levels
- ❑ Geared Towards Managers

How Does iMap Compare?

- Data is protected
 - ▣ Login needed to view points
 - ▣ General users cannot view lat/long
 - ▣ Higher level users gain access to polygon records
- Users can only download their own data by default
- Partners can allow iMap to share data with
 - ▣ Researchers and universities
 - ▣ Other agencies, weed managers
 - ▣ National datasets such as USGS NAS

Data sharing and collaboration with Cal-IPC



- Incorporated iMap data for pilot modeling project
- Current distribution
- Future predicted distribution under different climate scenarios
- Habitat suitability

Data sharing and collaboration between states



Why did we choose *iMapInvasives*?



Track Weed Information Mapping System (WIMS) Data



A place to maintain SouthWest Exotic Mapping Program (SWEMP) Data



Ability to use as main database or simply displaying data



Cost and maintenance

Ideas for the Future



Standalone app for Android/Apple



Field Collector App



Include tracking pathogens



iMapInvasives National View

Further Information

For general information visit

www.imapinvasives.org

Questions?

Contact

Jami Kuzek
jkuzek@azgfd.gov

