TNC’s Weed Information Management System (WIMS): An Application Tool for Invasive Species Management

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• WIMS Basics
• In the Field
• For More Information
• Questions
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• Land Steward
• The Nature Conservancy
• Minnesota

• 20 nature preserves
• 15,000 acres
• Lots of invasive plants
Started with these:
Wow...Look at all the buttons...
Too many spaces to fill in. This will take forever!
• Do you struggle to keep track of all of your weeds and weed infestations?

• Do you know how much herbicide you used last year...so that you can plan for the upcoming year?

• What if you leave your position...will you be able to show your replacement where all of your weeds are, and what you’ve done with them?
TNC Weed Information Management System (WIMS)

- MS Access relational database for the desktop computer
- Keeps track of weed occurrences (locations), assessments (monitoring data), and treatments (any management action)
- Data can be easily imported & exported (for easy data sharing by multiple users)
  a. Excel spreadsheets
  b. N. Amer Weed Mgmt Assoc (NAWMA) standards
  c. Automatically produce reports & GIS shapefiles
Make WIMS Specific to Your Project:

Supporting Tables Maintenance

Occurrence/Assessment
- Plants (summary)
- Plants (table view)
- Disturbance Factors
- Freq. Measurements
- Vegetation

Area/Geographic
- All Areas (table view)
- Managed Area Types
- Owners/Managers
- Townships / Ranges
- States / Counties

Treatment
- Herbicides
- Adjuvants
- Applicators
- Bioagents
- Grazing Animals
- Mechanical Methods

Use with caution
Show Access 'Database' Window
Create/Define Area(s):

Refuge X Pasture A

Weed Occurrence

Area Definition

Area Name: Refuge X
Area Type: USFWS
Country: US
State/Prov: WA
County: Adams
Restrictions:
Ownership: USFWS
Primary Owner: John Happy guy
**Weed Occurrence** – The first basic data that must be collected. It is always a “point” regardless of if you are only mapping one weed or a large population of weeds.
Weed Occurrence – WIMS Desktop Interface

Required Information:
- Plant Name: Maclura pomifera
- Latitude: 38.21300000
- Longitude: 121.22300000
- Area(s): Cosumnes River Preserve, Valensin Ranch
- Location/Landmarks info: Near main picnic area, where hay bales are stored.
- State/Prov: CA
- County: Sacramento
- HUC:
- Surf. Mgt Map:
- Quad: Galt
- Data Recorder: B. Waegell
- 0 Assessments
- 0 Treatments

Optional Information:
- Meridian
- Township
- Range
- Section
- QSec
- QQ
- QQQ
- QQQQ
- Accuracy: GPS2
- Show only:
- Show All
- Owners
Weed Occurrence

ArcPad application displaying weed occurrence data with plant name, location information, and GPS coordinates.
Weed Occurrence – WIMS Handheld Interface

Weed Occurrence

- Basic
- Areas
- Descriptive

Weed: Centaurea maculosa
- Spotted Knapweed

Location Info:
- patch 12; upslope salt lick

You: mt
Accuracy: GPS2

Lat: 2984595.29874372
Lon: 589709.68856337

Area 1:
- Boardman Conservation Area
  - Primary Area

Area 2:
- Bitterbrush pasture
  - Primary Area

Area 3:
- 
  - Primary Area
**Weed Assessment** – The spatial extent (polygon or line) and a measure of abundance of your weed population (monitoring over time).
**Weed Treatment** - All management interventions can be recorded within WIMS, including: manual & mechanical, fire, chemical, grazing, and biological control.
How WIMS is Used

View & Edit data on desktop, then
A. Produce reports
B. Produce GIS maps
C. Export/share data with others!

Outputs from WIMS?
Reports Available in WIMS:

About 20 different reports currently available, including:

- Weed Inventory, by Area
- Weed Inventory, by County
- Assessments/Treatments, by Area
- Infested Area, by County
- Infested Area, by Weed
- Treatment Acres/Hours, by Type
- Assessment/Treatment, Person/Hours
- Acres Treated, by Herbicide
- Pesticide Use by Active Ingredient
Reports that can be automatically produced:

### Infested Acres, by Weed

<table>
<thead>
<tr>
<th>State/County</th>
<th>Weed</th>
<th># Occurrences</th>
<th>Total Acres</th>
<th>Avg Acres</th>
<th>Min Acres</th>
<th>Max Acres</th>
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<tbody>
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<td></td>
<td>Cardaria draba</td>
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<tr>
<td></td>
<td>ID Canyon</td>
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<td><strong>25.00</strong></td>
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<tr>
<td></td>
<td>OR Crook</td>
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<td><strong>0.01</strong></td>
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</tr>
<tr>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
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<tr>
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<td><strong>0.11</strong></td>
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<td>Convolvulus arvensis</td>
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<tr>
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</tbody>
</table>
Transfer of information from handhelds
Transferred to desktop and imported into ArcMap
What Do You Need For WIMS?

Should have:
• Desktop/laptop Computer
• PDA and GPS unit (Can use paper data sheets)
• Memory card
• ArcPad

Nice to have:
• Carrying case for PDA
• GIS Program (ArcMap)

Mapping Chinese tallow (*Triadica sebiferum*) saplings in Texas
How Do I Use WIMS? Day-to-Day

- Upload data to PDAs
- PDAs go out to field
- Collect Occurrences
- Back in office—Download data
- Create shapefile
- Upload data to PDAs…
What Do I Like About WIMS

- Fairly Easy to Use
- Easily Compiles the Data
- Easily Transfer Info into GIS
- Love Having the Aerial Photo in the Field
- Ability to Use Other Shapefiles with WIMS
What I don’t like about WIMS

• Technical Probs—GPS talking with PDA, battery issues, must fill in all necessary boxes or error
• Reports—If want something different, can’t do it
WIMS Use at the Project Scale…

**Pros:**
- Available now!
- Available for free (download the MS Access files)
- Detailed support documents available (installation guide, tutorial guide, user’s manual, etc.), and online tutorials are currently in development
- Field-tested and used for several years by land managers across the U.S.
- Has cheap-to-expensive equipment options for users
- Can output data in a variety of formats, so can easily share data with others

**Cons:**
- Steep learning curve for new users – Access database, GPS, GIS interface, etc.; may be too complex for occasional users or sporadic volunteers
- Limited user support outside of TNC staff
- A technology-savvy data manager is recommended to oversee data collection and troubleshoot technical issues
- Technology is always changing too fast! – MS Windows Mobile, ArcPad, Excel output, new handheld units, etc etc.
Parting Words:

Takes some time to get used to, have patience.

WIMS can definitely help streamline data collection in field

Can help make better-informed management decisions, benefiting your conservation goals.
Additional Information:

Main WIMS Page:
http://tncweeds.ucdavis.edu/wims.html

Main Troubleshooting Page:
http://tncweeds.ucdavis.edu/products/wims/troubleshooting.html

WIMS Message Board:
http://rachel.des.ucdavis.edu/wims/

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