

# **TNC's Weed Information Management System (WIMS):**

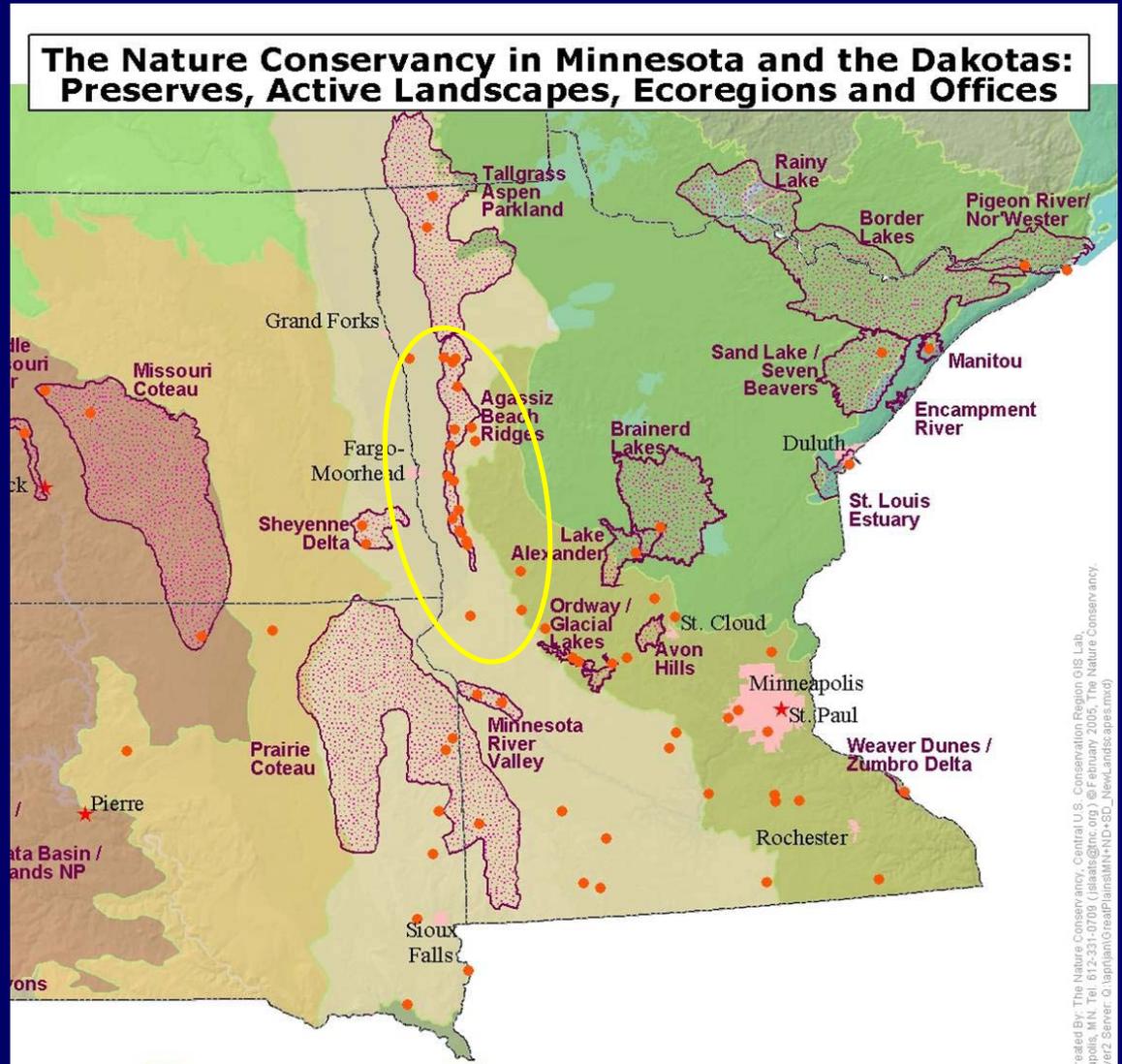
*An Application Tool for Invasive Species Management*

**Erik Anthonisen  
Land Steward  
The Nature Conservancy**

- Introduction
- Why WIMS
- WIMS Basics
- In the Field
- For More Information
- Questions



- Erik Anthonisen
  - 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...

The screenshot shows a software window titled "Main Menu" with a blue title bar. The main content area has a dark blue background. At the top left, there are two yellow buttons: "Exit Access" and "Help". The title "Weeds Information Management System" is displayed in large white text. To the right is the logo for "The Nature Conservancy" with the tagline "Protecting nature. Preserving life." and the version information "ver 2.3 - 02/23/07". Below the title bar, the interface is organized into three columns of yellow buttons:

- Edit / Display Data:** Find/Create Occurrences, Find/Create Areas, Find Treatments, Reports
- Inputs / Outputs:** GIS Export, GIS Import, XML Export, GML Export, Excel Export, Excel Import, NAWMA Export
- Misc. Functions:** Support Tables, ArcPad Setup, Administrative Functions, Geodetic conversions, Upgrade to this Version

At the bottom of the window, a file path is displayed: "This file: C:\Documents and Settings\imtu\Desktop\WIMS2.3\_NEW\WIMS 2.3 dev as of 02-23-2007\_AccessXP.mdb"

# Too many spaces to fill in. This will take forever!

**Weed Treatment**

Cancel Save and Close Delete Me First Previous Next Last

Date: 3/10/2007 unaudited since Import

Treatment Type: Chemical

Crew: \_\_\_\_\_

Data Recorder: \_\_\_\_\_

Notes: \_\_\_\_\_

**Affected Area(s)**

Area	Acres Treated
Cosumnes River Preserve	3
Valensin Ranch	3
*	0

Show only:

(to delete an Area, click in left margin and press 'Del')

**Basic info** Lat/Lon

Total Acres Treated: 0 key either Times (HH:MM) or # of hours (N.N)

Treatment Cost: \$350

TimeStart: 10:00 TimeEnd: 13:00 Hours: 3.00

# Staff: 2 Person/Hours: 6.00

# Volunteers: 6 Person/Hours: 18.00

**Weeds affected by THIS Treatment**

Weed	Location	Phenology	% Treated
Arundo donax	at feeding trough	Mature	100 %
Centaurea solstitialis	in field cell 3; NE corner	Bolting	80 %
Phalaris arundinacea	patch 14; at trailhead	Flowering	100 %
Phragmites australis	near water pump H	Flowering	50 %

Add Weeds

Please supply Phenology and % Treated for each Weed

**Chemical Treatment**

WindSpeed: 3 WindDirection: N to S

Temperature (F): 68 Time of Temp: 10:00

Applicator1: \_\_\_\_\_ Applicator2: \_\_\_\_\_

Notes: \_\_\_\_\_

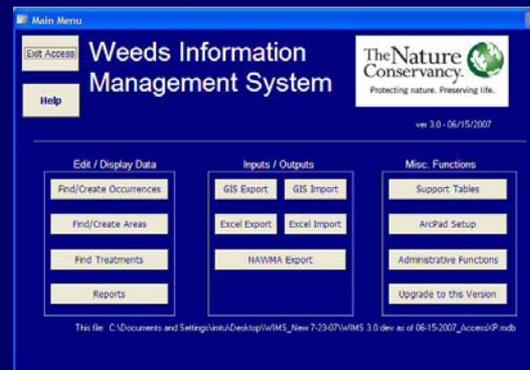
If you supply amount of Tank Mix used and % Solution, undiluted quantities will be computed (in oz).

Method Of Application	Herbicide Supplier	Herbicide Adjuvant	Undiluted Qty	UOM	OR	% Sol	Tank Mix Used/ UOM
backpack/spot sprayer	RODEO	R-11	3.2	oz	Herb:	5	2 qt
			0.3	oz	Adj:	0.5	
			0	oz	Herb:	0	0 oz
			0	oz	Adj:	0	0 oz

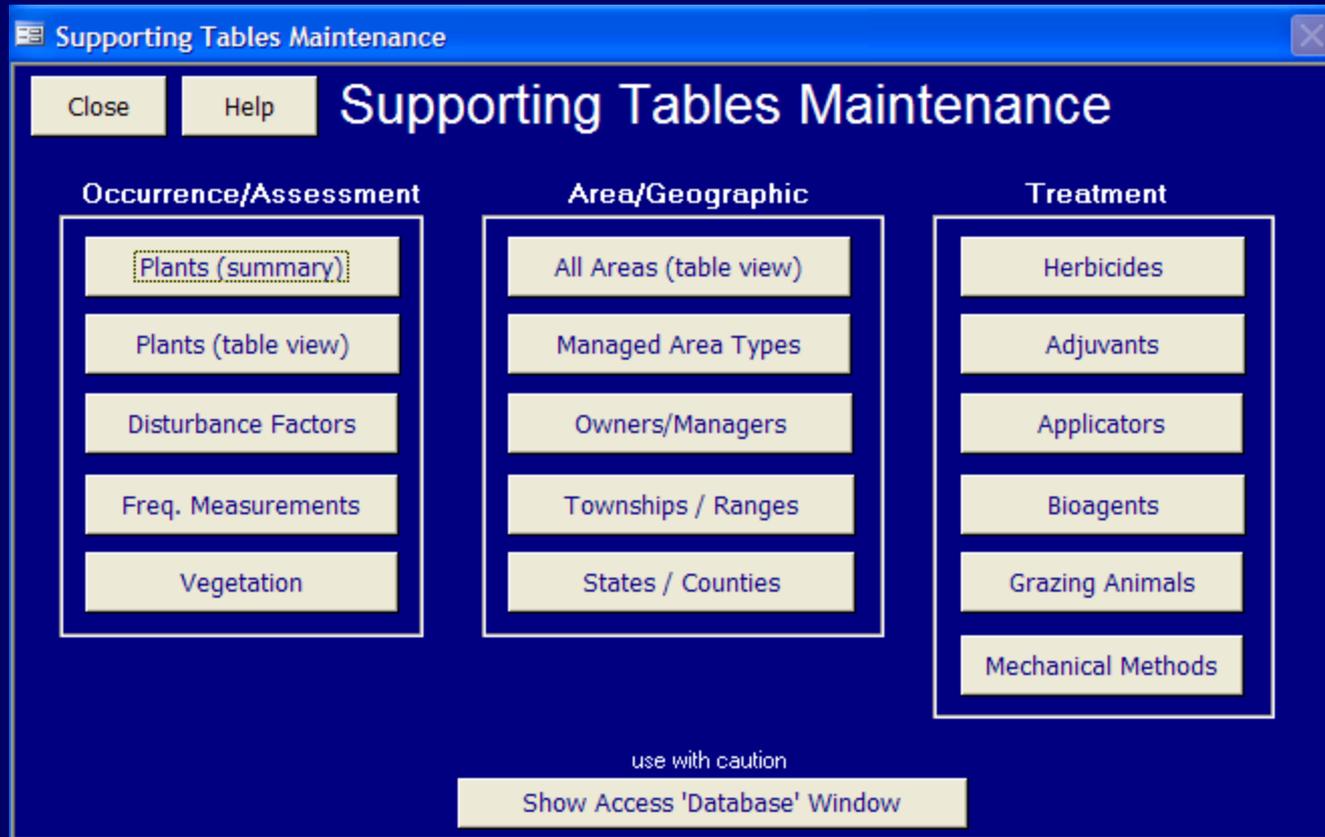
- **Do you struggle to keep track of all of your weeds and weed infestations?**
- **Do you know how much herbicide you used last year...so that you can plan for the upcoming year?**
- **What if you leave your position...will you be able to show your replacement where all of your weeds are, and what you've done with them?**

# TNC Weed Information Management System (WIMS)

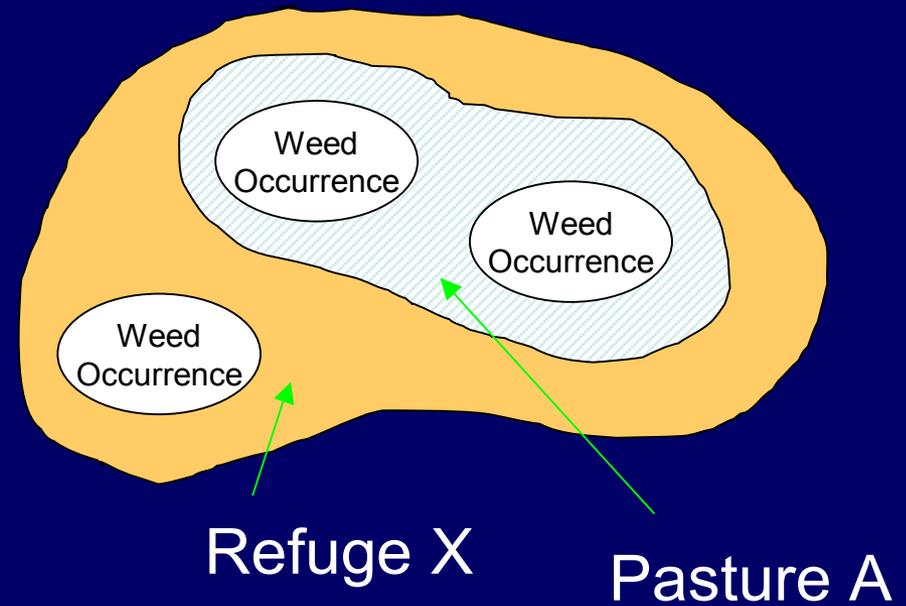
- MS Access relational database for the desktop computer
- Keeps track of weed *occurrences* (locations), *assessments* (monitoring data), and *treatments* (any management action)
- Data can be easily imported & exported (for easy data sharing by multiple users)
  - a. Excel spreadsheets
  - b. N. Amer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



# Make WIMS Specific to Your Project:



## Create/Define Area(s):



**Area Definition**

Cancel Save and Close Save and Continue Delete Me First Previous Next Last

Area Name:

Area Type:

Country:

State/Prov:

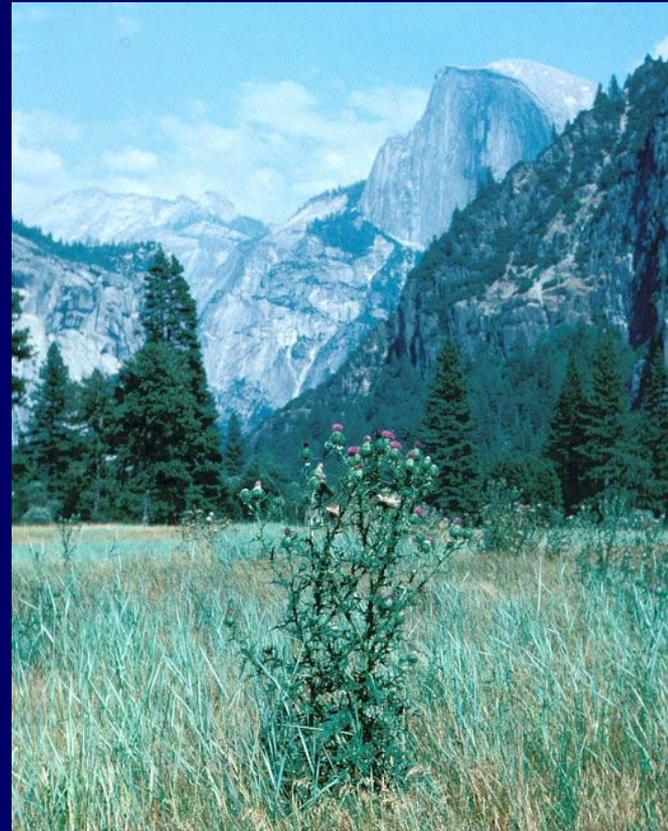
County:

Restrictions:

Ownership:

Primary Owner:

***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

The screenshot displays the 'Weed Occurrence' window with the following fields and controls:

- Buttons:** Cancel, Save and Close, Save and Continue, Delete Me, Add Area..., First, Previous, Next, Last.
- Required Section:**
  - Plant Name:
  - Latitude:
  - Longitude:
  - Area(s):
  - Accuracy:
  - Show only:
  - (to delete an Area, click in left margin and press 'Del')
- Location/Landmarks info:**
- Assessments:**
- Treatments:**
- Location Info:**
  - Meridian:
  - Township:
  - Range:
  - Section:
  - QSec:  QQ:  QQQ:  QQQQ:
- Characteristics:**
  - State/Prov:
  - County:
  - HUC:
  - Surf. Mgt Map:
  - Quad:

Required Information

Optional Information

# Weed Occurrence

**ArcPad** 4:19

**Weed Occurrence**

Weed: Phalaris arundinacea  
reed canarygrass

Location Info  
patch 14; at trailhead

You: Bob M Accuracy: GPS2

Lat: 5040370.22659714  
Lon: 527250.43851778

Basic Areas Description

ok X



**Weed Occurrence**

Cancel Save and Close Save and Continue Delete Me Add Area... First Previous Next Last

**Required**

Plant Name: Maclura pomifera  
Latitude: 38.21300000 wGS84 decimal input UTM  
Longitude: 121.22300000 degrees test conversions

Area(s) Accuracy: GPS2 primary

Cosumnes River Preserve [checked]  
Valensin Ranch [unchecked]

Show only: Show All Owners  
(to delete an Area, click in left margin and press 'Del')

Location/Landmarks info  
Near main picnic area, where hay bales are stored.

unaudited: [unchecked] DataRecorder: B. Waegell

0 Assessments 0 Treatments  
List Details New List Details New

**Location Info** Characteristics

Meridian: [dropdown]  
Township: 0060N [dropdown]  
Range: 0060E [dropdown]  
Section: 30 [dropdown]  
QSec: [dropdown] QQ: [dropdown] QQQ: [dropdown] QQQQ: [dropdown]

State/Prov: CA [dropdown]  
County: Sacramento [dropdown]  
HUC: [dropdown]  
Surf. Mgt Map: [dropdown]  
Quad: Galt [dropdown]

# Weed Occurrence – WIMS Handheld Interface

**Weed Occurrence** OK X

Basic Areas Descripti

Weed **Centaurea maculosa**  
Spotted Knapweed

Location Info  
patch 12; upslope salt lick

You Accuracy  
mt GPS2

Lat 2984595.29874372  
Lon 589709.68856337

- Abutilon theophrastii
- Acacia farnesiana
- Acacia mearnsii
- Acacia melanoxylon
- Acer negundo
- Acer platanoides
- Acer pseudoplatanus
- Acroptilon repens
- Aegilops cylindrica
- Aegilops triuncialis
- Agropyron cristatum

**Weed Occurrence** OK X

Basic Areas Descripti

Area 1:  
**Boardman Conservation Area**  
 Primary Area

Area 2:  
Bitterbrush pasture  
 Primary Area

Area 3:  
  
 Primary Area

- unknown
- ABBOTT CREEK RNA
- AGATE BEACH STATE RECRE
- AGATE DESERT PRESERVE
- AINSWORTH STATE PARK
- ALBERT H. POWERS MEMOR
- ALDERWOOD STATE WAYSID
- ALFRED A. LOEB STATE PAR
- ALSEA BAY NORTH BRIDGEH
- ALSEA RANGER DISTRICT

**Weed Assessment** – The spatial extent (polygon or line) and a measure of abundance of your weed population (monitoring over time).



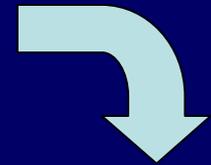
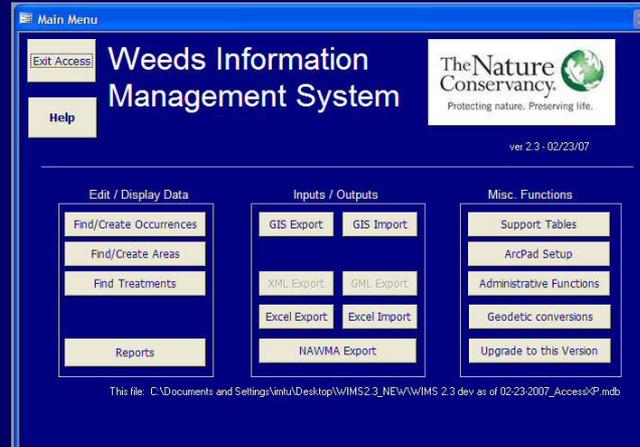
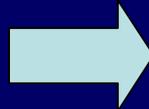
**Weed Treatment** - All management interventions can be recorded within WIMS, including: manual & mechanical, fire, chemical, grazing, and biological control.



# 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

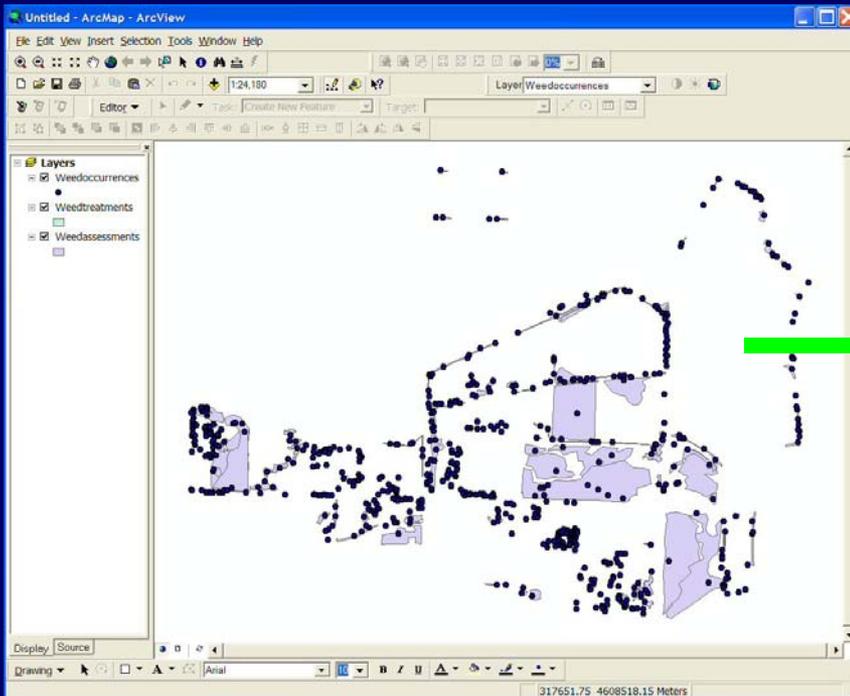
## Reports that can be automatically produced:

### Infested Acres, by Weed

State/County	Weed	# Occurrences	Total Acres	Avg Acres	Min Acres	Max Acres
<b>Cardaria draba</b>						
ID	Canyon	5	25.00	5.00	0.00	12.00
		<b>Totals:</b>	<b>5</b>	<b>25.00</b>		
OR	Crook	1	0.01	0.01	0.01	0.01
		<b>Totals:</b>	<b>1</b>	<b>0.01</b>		
<b>Centaureai maculosa</b>						
ID	Fremont	1	25.00	25.00	25.00	25.00
ID	Owyhee	1	4447.80	4447.80	4447.80	4447.80
		<b>Totals:</b>	<b>2</b>	<b>4472.80</b>		
<b>Cirsium arvense</b>						
ID	Fremont	2	0.11	0.06	0.01	0.10
		<b>Totals:</b>	<b>2</b>	<b>0.11</b>		
<b>Convolvulus arvensis</b>						
ID	Fremont	1	7.00	7.00	7.00	7.00
		<b>Totals:</b>	<b>1</b>	<b>7.00</b>		
<b>Dipsacus sylvestris</b>						
OR	Grant	1	0.62	0.62	0.62	0.62

# 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)



Weed Occurrence		OK	X
Basic	Areas	Descripti	◀ ▶
Weed	Centaurea maculosa		
	Spotted Knapweed		
Location Info			
patch 12; upslope salt lick			
◀ ▶			
You	Accuracy		
mt	GPS2		
Lat	2984595.29874372		
Lon	589709.68856337		

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/>

Erik Anthonisen-Land Steward-TNC

[eanthonisen@tnc.org](mailto:eanthonisen@tnc.org)