



# INVASIVE PLANTS



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Nevada Department of Agriculture

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Noxious Weeds Grants Program Coordinator  
Nevada Department of Agriculture

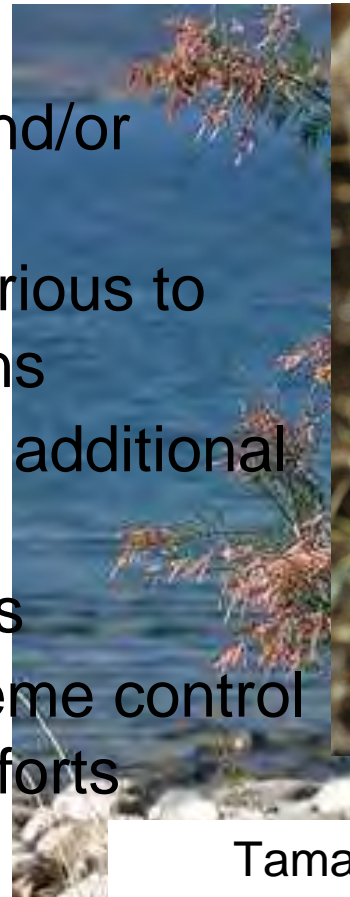
Sagebrush Ecosystem Council Meeting September 12, 2013

# **WHAT WE WILL COVER...**

- Impacts of invasive plants on sage-grouse and the sagebrush ecosystem
- Why cheatgrass is a primary threat
- Cheatgrass and similar invasive plants
- NDA regulatory authority
- NDA sage-grouse related actions
- NDA mapping projects
- SETT proposed actions

# IMPACTS OF INVASIVE PLANTS ON SAGEBRUSH ECOSYSTEMS

- Out-compete native vegetation; decrease biodiversity
- Decrease desirable and palatable forage
- Alter soil water availability
- May alter soil characteristics and/or increase erosion
- Many contain toxins or are injurious to wildlife, livestock and/or humans
- May increase the probability of additional disturbance and/or invasion
- Changes in historic fire regimes
- May require expensive or extreme control measures and re-vegetation efforts



Tamarisk/Salt Cedar



Cheatgrass

# CHEATGRASS

*Bromus tectorum*

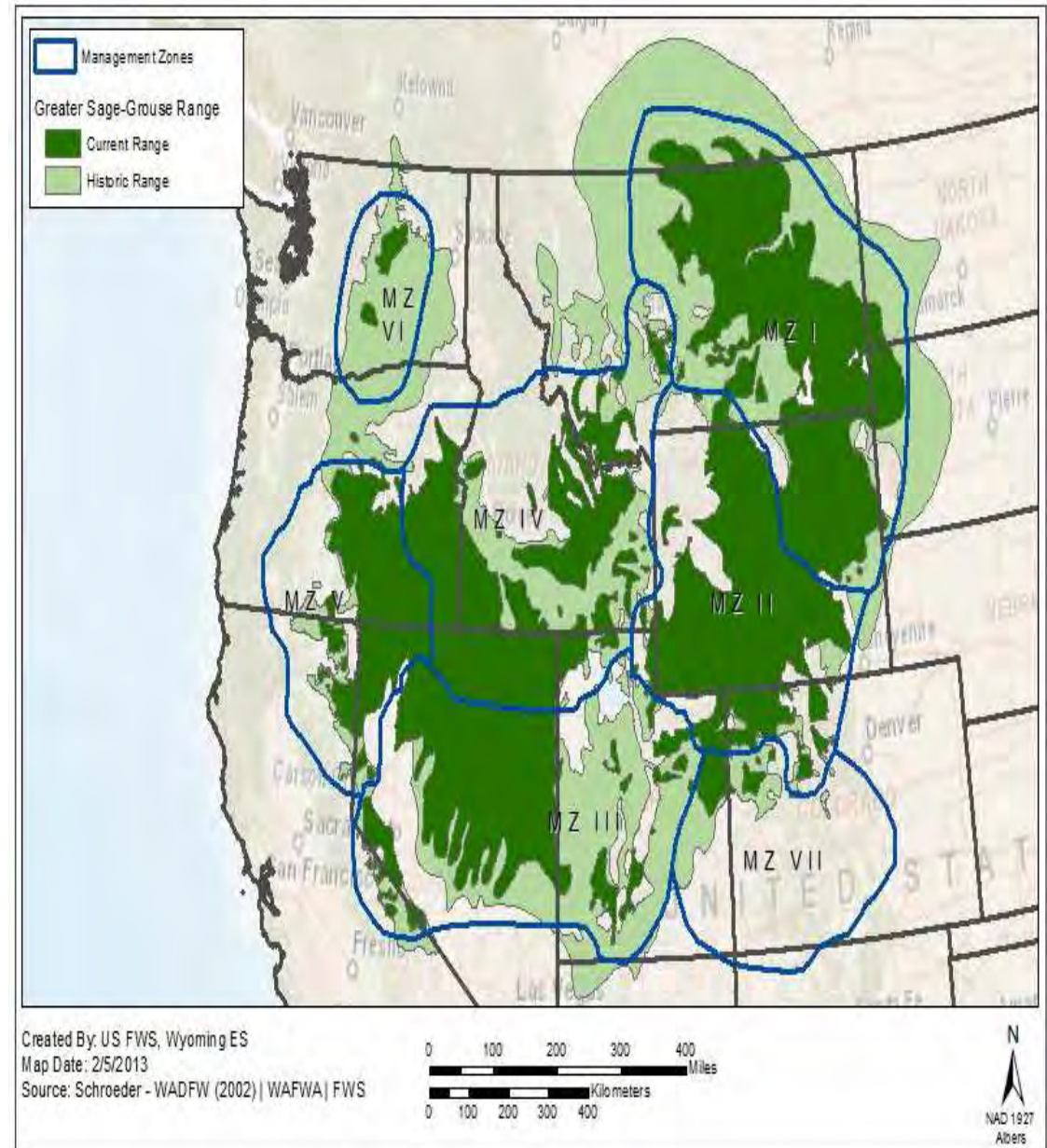
- Fall and/or Spring germination.
- Utilizes shallow soil moisture rapidly and underutilizes deeper soil water profiles.
- Can increase soil temperatures by 10°
- Prolific seed producer 5,000-15,000 seeds per square meter.
- Highly adaptable to various soil types, precipitation, and elevation zones.
- Usually dry and highly flammable by mid-July.
- Significantly alters fire regimes on native ecosystems.





# PRIMARY THREAT

- Annual grasses (primarily cheatgrass) are listed in the Conservation Objectives Team (COT) report as one of the most significant threats in each of the three regions (Southern Great Basin, Western Great Basin, and Northern Great Basin).



“Post fire rehabilitation efforts often don’t result in long-term success in re-establishing sagebrush and native grasses and forbs where there is competition with cheatgrass in fire-disturbed areas. In the worst cases, burned sites cross a threshold to a new state dominated by annual grasslands. Repeated fires in subsequent years result in expansion of annual grasslands into adjacent sagebrush ecosystems. Over time, this self-perpetuating cheatgrass-wildfire cycle results in large-scale loss of sagebrush landscapes that previously provided many ecosystem functions, such as habitat for sage-grouse and other sagebrush-dependent species.” (Society for Rangeland Management – “Trial by Fire”)

# MEDUSAHEAD

## *Taeniatherum caput-medusae*

- Winter annual with a similar germination pattern as cheatgrass
- Grows 6" – 2' tall
- Seedhead has barbed awns that are up to 3" long and twist
- Prolific seed producer with an average of 98% germination rate
- High silica levels slow decomposition and deter grazing
- Grows in thick stands with 1,500 – 2,000 plants per square foot





# MEDUSAHEAD THREAT

- Behaves similar to cheatgrass and even shows potential to out-compete cheatgrass
- Adaptable to soil type, precipitation and elevation
- Creates thick mats of dry thatch that suppress other plant growth and raise soil temperatures.
- Thatch layers drastically increase fire fuel load

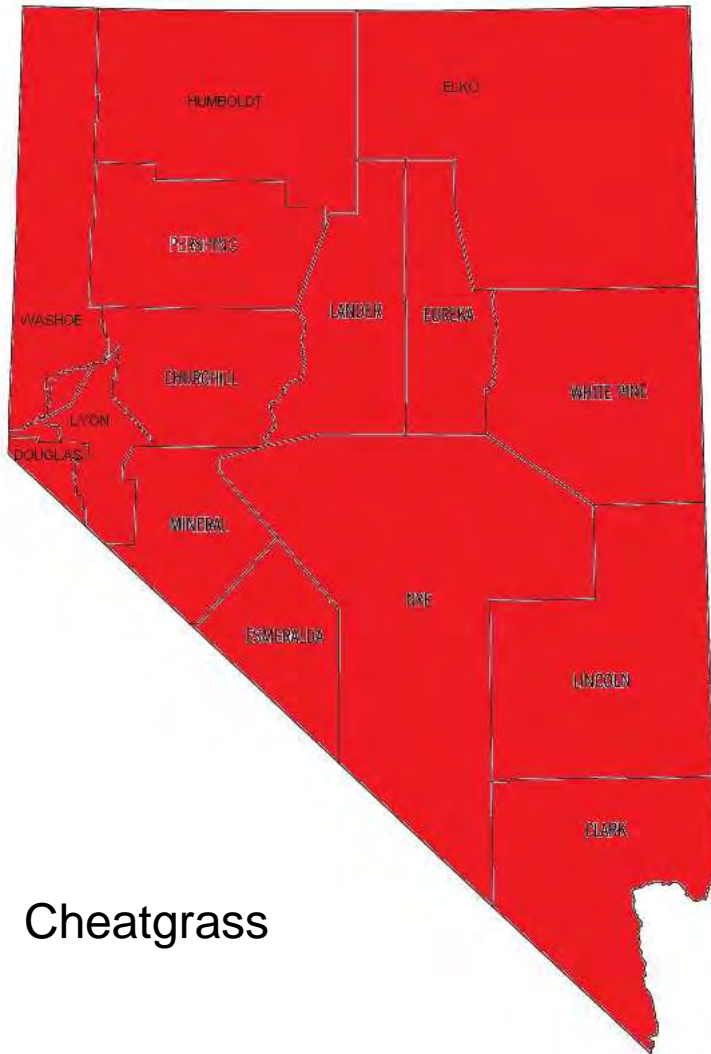


Medusahead

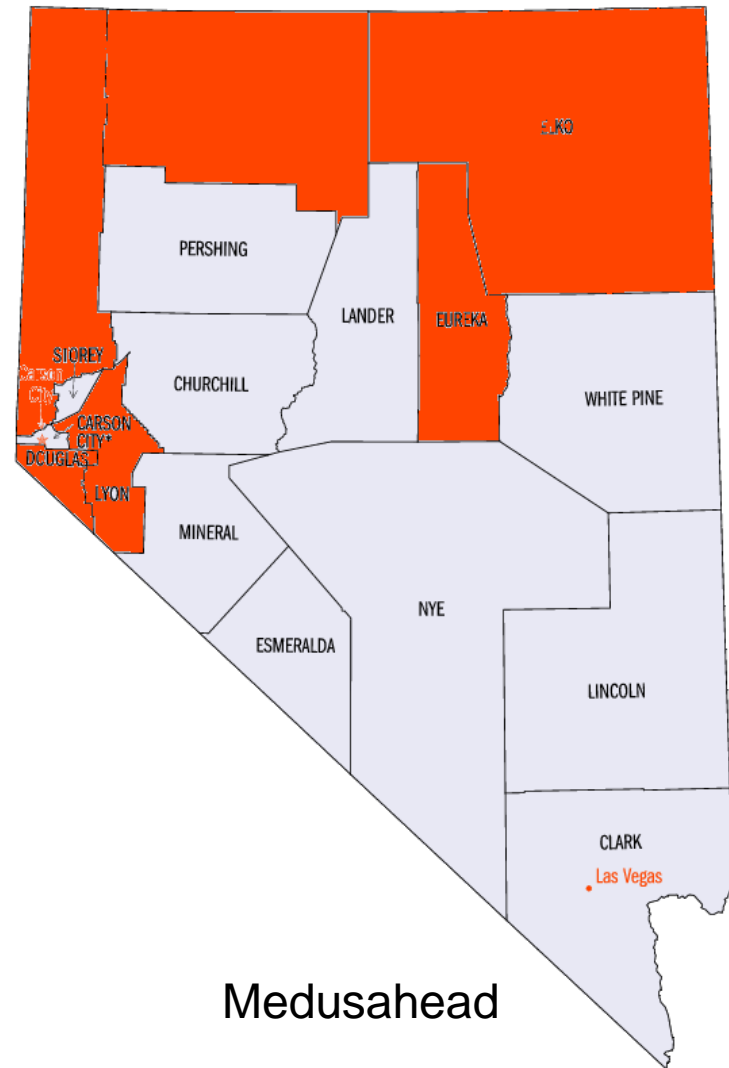
Cheatgrass



# CHEATGRASS VS. MEDUSAHEAD DISTRIBUTION



Cheatgrass



Medusahead

# CHEATGRASS VS. MEDUSAHEAD CLASSIFICATIONS

## Cheatgrass

### Nuisance Weed



## Medusahead

### Noxious Weed



Invasive  
nonnative plant  
that causes  
negative impacts  
on ecosystem;  
Can rapidly  
multiply and be  
difficult to control

# **NEVADA NOXIOUS WEED LAWS**

Found in Nevada Revised Statute (NRS) chapter 555

## **NRS 555.130**

### **Designation of noxious weeds**

“The State Quarantine Officer declares the weeds of the state that are noxious weeds, but a weed must not be designated as noxious which is already introduced and established in the State to such an extent as to make its control or eradication impracticable”



# NEVADA NOXIOUS WEED LAWS

## Outline of NDA Regulatory Process

[NRS 555.150](#) - Every landowner or occupier, whether private, city, county, or federal shall cut, destroy, or eradicate all noxious weeds as required by the State Quarantine Officer.

[NRS 555.160](#) - The State Quarantine Officer may serve notice in writing upon the owner or occupant to cut, destroy or eradicate the weeds within such a time and in such a manner as described in the notice.

[NRS 555.170](#) - Should the owner/occupant fail, neglect, or refuse to comply, the State Quarantine Officer may notify the board of county commissioners for the county in which the property is situated. The county board of commissioners shall proceed to have weeds controlled in accordance with the initial notice.

[NRS 555.180](#) - Control costs not paid by the owner shall be a lien against the property and shall be collected as provided by the law for the collection of other liens.

# **NDA NOXIOUS WEED PROGRAM**

## **SAGE-GROUSE RELATED ACTIONS**

- ✓ Increase funding available to support sage-grouse related efforts
- ✓ Participate in collaborative planning and information collection efforts
- ✓ Identify noxious weed control grant projects in sage-grouse sensitive areas
- ✓ Use noxious weed regulatory authority when necessary to benefit sage-grouse habitat

- ✓ Collect noxious weed data within sage-grouse habitat
- ✓ Develop/Improve statewide noxious weed maps
- ✓ Identify priority areas for on-the-ground treatment
- ✓ Identify sage-grouse areas most threatened by noxious weed/invasive plant infestation

# STATEWIDE WEED MAPPING

- 2008 – 2009: Natural Heritage Program compiled data for statewide weed maps
- 2010: NDA assumes role for statewide weed mapping
- 2011: EDDMaps created to include western states
- 2012-2013: NDA turns to use EDDMaps for statewide level mapping





# EDDMAPS = EARLY DETECTION & DISTRIBUTION MAPPING SYSTEM

## What is it?

- Web-based mapping of invasive species distribution open to everyone to use and view
- Early Detection and Rapid Response tool with network of expert verifiers

## Useful Capabilities:

- Look up current distribution of invasive plants
- Download data in a variety of formats
- Research information on a species
- Report a sighting online
- Map using smart phone APPs
- Create email alert when report is in an area of concern

[www.eddmaps.org](http://www.eddmaps.org)

# EDDMaps

Early Detection & Distribution Mapping System

Username:

Password:

[Join Now \(Free\)](#) [Lost your password?](#)

Report Sightings

Distribution Maps

Species Information

Tools & Training

My EDDMaps

## Invasive Species Mapping Made Easy!



EDDMaps, started in 2005, is now providing a picture of the distribution of invasive species across the U.S. and Canada

- ✓ Fast and easy to use - no knowledge of GIS required
- ✓ Web-based mapping of invasive species distribution to help fill gaps and identify "leading edge" ranges
- ✓ Facilitates Early Detection and Rapid Response implementation with online data entry forms, e-mail alerts and network of expert verifiers
- ✓ One Database for both local and national data
- ✓ Data can be searched, queried and downloaded in a variety of formats
- ✓ Cooperates with and aggregates data from other invasive species mapping projects
- ✓ Custom/hosted applications can be quickly and inexpensively developed

## Who's Using It?

- ✓ Southeast Exotic Pest Plant Council
- ✓ Alaska Exotic Plant Information Clearinghouse
- ✓ Missouri River Watershed Coalition
- ✓ Biological Control Agents of Weeds
- ✓ Florida Invasive Species Partnership
- ✓ Invaders of Texas
- ✓ Mid-Atlantic Invasive Plant Council
- ✓ Appalachian Trail Conservancy
- ✓ EDDMaps Alberta - Alberta Invasive Plants Council
- ✓ National Wildlife Refuge Early Detection Network for New England
- ✓ Outsmart Invasive Species
- ✓ Invasive Plant Atlas of New England
- ✓ What's Invasive

## Statistics

2,199,234 County Reports  
1,276,356 Point Reports  
2,538 Species / 17,145 Users

## Educational Resources

- ✓ EDDMaps: Invasive Plant Mapping Handbook
- ✓ EDRR Training Workshop Handouts
- ✓ EDDMaps Florida Training Video

## BRING THE POWER OF EDDMAPS TO YOUR SMARTPHONE

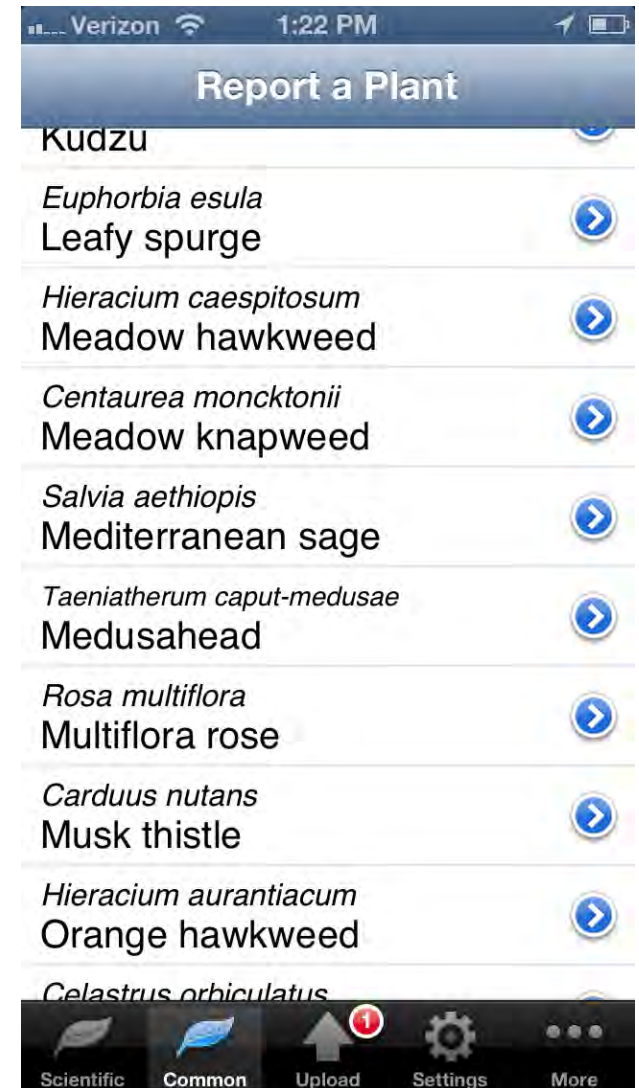
Introducing BugwoodApps - comprehensive mobile applications that engage users with invasive species, forest health, natural resource and agricultural management



iPhone iPad Android

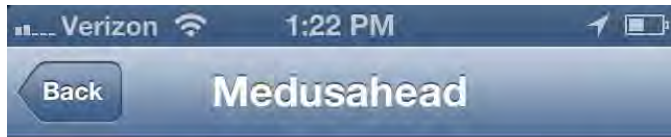
# SMART PHONE APPLICATION

- Search Apps for EddMapsWest
- FREE to download
- Fast & Easy!





# SMART PHONE APPLICATION



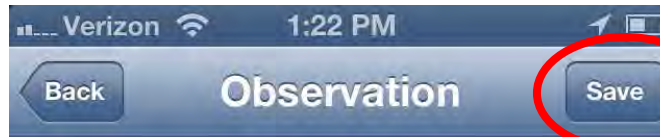
## Medusahead

*Taeniatherum caput-medusae*

Known As / Medusahead rye

General Description / Medusahead is a winter annual grass that can form dense stands on rangelands, displacing wildlife and increasing the risk of wildfires. Its spiky head and seeds can injure the eyes, nostrils, and mouths of grazing animals. Medusahead is native to Europe and the Mediterranean region, and can be distinguished from other annual grasses by its awns, which twist as they dry. It reproduces by seed.

Growth Habit / Medusahead has



## Medusahead

*Taeniatherum caput-medusae*

09/06/2013 1:22

Latitude 39.530801177692

Longitude -119.77277245551

Accuracy 165 meters

Infested Area

Acres

Sq Feet

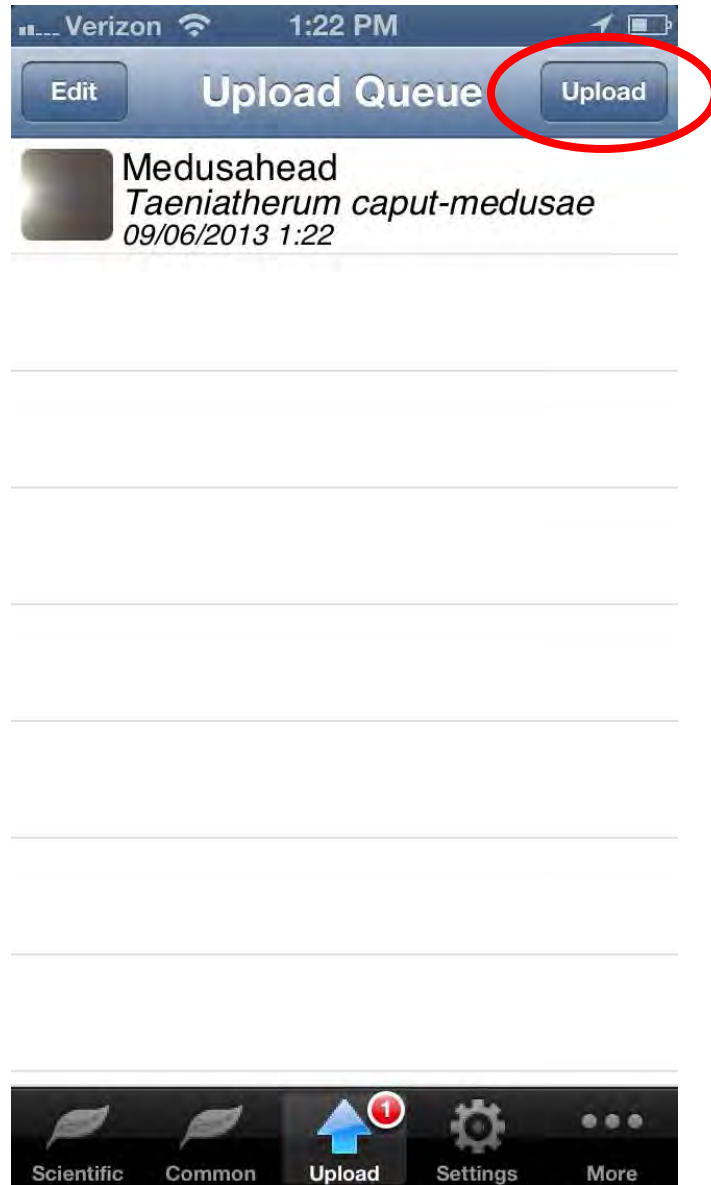
Notes



ATTACH A  
PICTURE  
WITH  
YOUR  
REPORT

GIVE  
ADDITIONAL  
DETAILS (i.e.  
near grouse,  
treated, ect.)

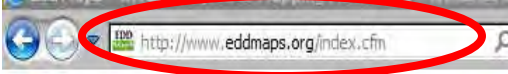
# SMART PHONE APPLICATION



Reports can be made and stored in queue whether you have service or not. Upload to actual EDDMaps requires that you have service.

ALL REPORTS  
ENTERED CREATE  
AN EMAIL  
NOTIFICATION TO  
NDA NOXIOUS  
WEED PROGRAM

# EDDMAPS ONLINE REPORTING




1. Go to eddmaps.org  
and log-in



**EDDM**  
Early Detection & Distribution Mapping System

[Report Sightings](#) | [Distribution Maps](#) | [Species Information](#) | [Tools & Training](#) | [My EDDMaps](#)

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Introducing BugwoodApps - comprehensive mobile applications that engage users with invasive species, forest health, natural resource and agricultural management

iPhone | iPad | Android

Windows taskbar showing Start button, application icons, and system clock: 1:04 PM 9/6/2013



# EDDMapS ONLINE REPORTING

2. Choose the state that you want to report a species in

The screenshot shows the EDDMapS website interface. At the top, the logo 'EDDMapS' is displayed with the tagline 'Early Detection & Distribution Mapping System'. To the right, a welcome message reads 'Welcome: Jamie Greer, Nevada Department of Agriculture' with a 'Logout' link. A green navigation bar contains the following links: 'Report Sightings', 'Distribution Maps', 'Species Information', 'Tools & Training', 'My EDDMapS', and 'About'.

The main content area is titled 'Select State/Area to Report Invasive Species Occurrence'. It lists various regions in four columns:

- U.S. States:** Alabama, Alaska, Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Florida, Georgia, Hawaii, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland.
- Massachusetts:** Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, Nevada (circled in red), New Hampshire, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota.
- Tennessee:** Texas, Utah, Vermont, Virginia, Washington, West Virginia, Wisconsin, Wyoming.
- U.S. Territories:** American Samoa, District of Columbia, Guam, Northern Marianas, Puerto Rico, U.S. Virgin Islands.
- Caribbean Countries:** Bahamas, Cuba, Dominican Republic, Jamaica, St. Lucia, Tobago.
- Canadian Provinces:** Alberta, Manitoba, Saskatchewan.
- European Countries:** Hungary - plants, Hungary - walnut husk fly, Hungary - box tree moth.

The browser's address bar shows the URL: [http://www.eddmaps.org/prairieregion/report/plants.cfm?id=ca\\_mb](http://www.eddmaps.org/prairieregion/report/plants.cfm?id=ca_mb). The Windows taskbar at the bottom indicates the time is 1:25 PM on 9/6/2013.

# EDDMAPS ONLINE REPORTING

## 3. Fill out the form

Report an Invasive Species Occurrence - Windows Internet Explorer  
http://www.eddmaps.org/mrwc/report/plants.cfm?i

**Location:**  
Specify the location where you observed the pest, by first selecting the county from the dropdown. Then move the marker on the map to the correct location. If you move across county lines the new county will be displayed. You can also enter the lat/long in the fields below and then click the "Jump to Point" button.

State:

County:

Latitude:

Longitude:

Location Description:

Ownership:

(?)  
\* If reporting infestation on private land, be sure to have landowner's permission.

**Map:**  
A Google Map of Carson City, Nevada, showing a red location pin. The map includes labels for streets like Winnie Ln, N Carson St, N Mountain St, Lincoln Hwy, E 5th St, S 5th St, Fairview Dr, and landmarks like Mills Park and Governors Field. Map data is from 2013.

**Marker status:** Click and drag the marker.

**Lat/Long Conversion Tools:**

**Upload Images with Your Report:**  
For verification purposes, take at least two digital images, a close up of the species and one of the site.

Image:   (.jpg, < 4 mb)  
Caption:   
(provide as much detail as possible, include credit if image is not yours)

Image:   (.jpg, < 4 mb)  
Caption:   
(provide as much detail as possible, include credit if image is not yours)

Image:   (.jpg, < 4 mb)  
Caption:   
(provide as much detail as possible, include credit if image is not yours)

Windows taskbar: Start button, icons for Internet Explorer, Firefox, and other applications. System clock: 1:28 PM, 9/6/2013.

# EDDMapS DISTRIBUTION MAPS

Select State to Report Invasive Species Occurrence - Windows Internet Explorer

http://www.eddmaps.org/report/index2.cfm

Select State to Report Invasi...

## EDDMapS

Early Detection & Distribution Mapping System

Welcome:  
Jamie Greer, Nevada Department of Agriculture  
Logout

Report Sighting **Distribution Maps** Species Information Tools & Training My EDDMapS About

### Select State/Area to Report Invasive Species Occurrence

<b>U.S. States</b>	Massachusetts	Tennessee	<b>Caribbean Countries</b>
Alabama	Michigan	Texas	Bahamas
Alaska	Minnesota	Utah	Cuba
Arizona	Mississippi	Vermont	Dominican Republic
Arkansas	Missouri	Virginia	Jamaica
California	Montana	Washington	St. Lucia
Colorado	Nebraska	West Virginia	Tobago
Connecticut	Nevada	Wisconsin	
Delaware	New Hampshire	Wyoming	<b>Canadian Provinces</b>
Florida	New Jersey		Alberta
Georgia	New Mexico	<b>U.S. Territories</b>	Manitoba
Hawaii	New York	American Samoa	Saskatchewan
Idaho	North Carolina	District of Columbia	
Illinois	North Dakota	Guam	<b>European Countries</b>
Indiana	Ohio	Northern Marianas	Hungary - plants
Iowa	Oklahoma	Puerto Rico	Hungary - walnut husk fly
Kansas	Oregon	U.S. Virgin Islands	Hungary - box tree moth
Kentucky	Pennsylvania		
Louisiana	Rhode Island		
Maine	South Carolina		
Maryland	South Dakota		

http://www.eddmaps.org/prairieregion/report/plants.cfm?id=ca\_mb

Start

1:25 PM  
9/6/2013



# EDDMapS DISTRIBUTION MAPS

EDDMapS  
Early Detection & Distribution Mapping System

Welcome:  
Jamie Greer, Nevada Department of Agriculture  
[Logout](#)

[Report Sightings](#) [Distribution Maps](#) [Species Information](#) [Tools & Training](#) [My EDDMapS](#) [About](#)

## Distribution Maps

  
**View Distribution by State**

  
**View Distribution by County**

  
**Animal Distribution**  
(Currently Florida Only)

## Plants

Browse by Growth Habit:

  
**AQUATICS**

  
**HERBS/FORBS**

  
**GRASSES**

  
**SHRUBS**

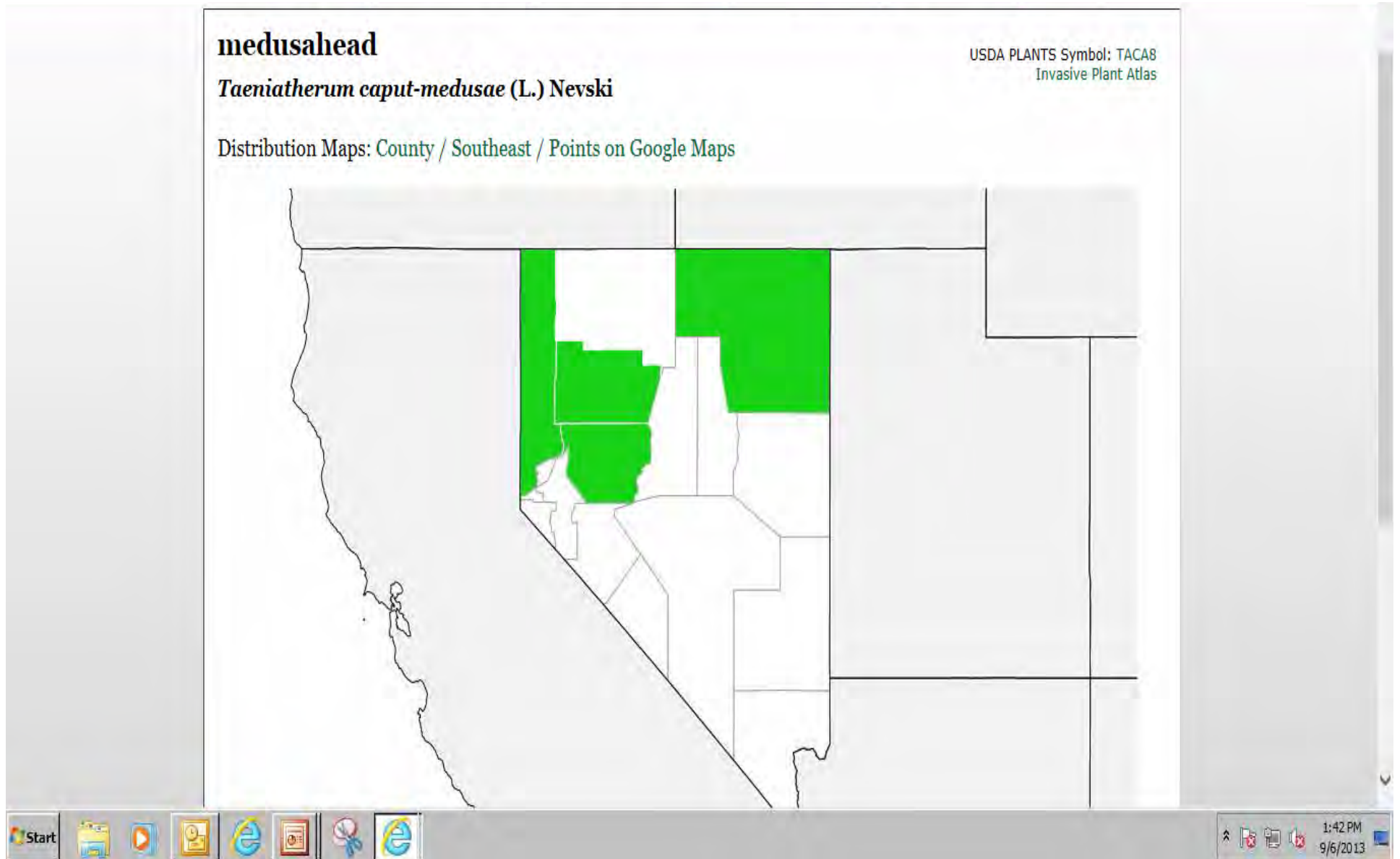
  
**TREES**

  
**VINES**

[Species](#)

# EDDMAPS DISTRIBUTION MAPS

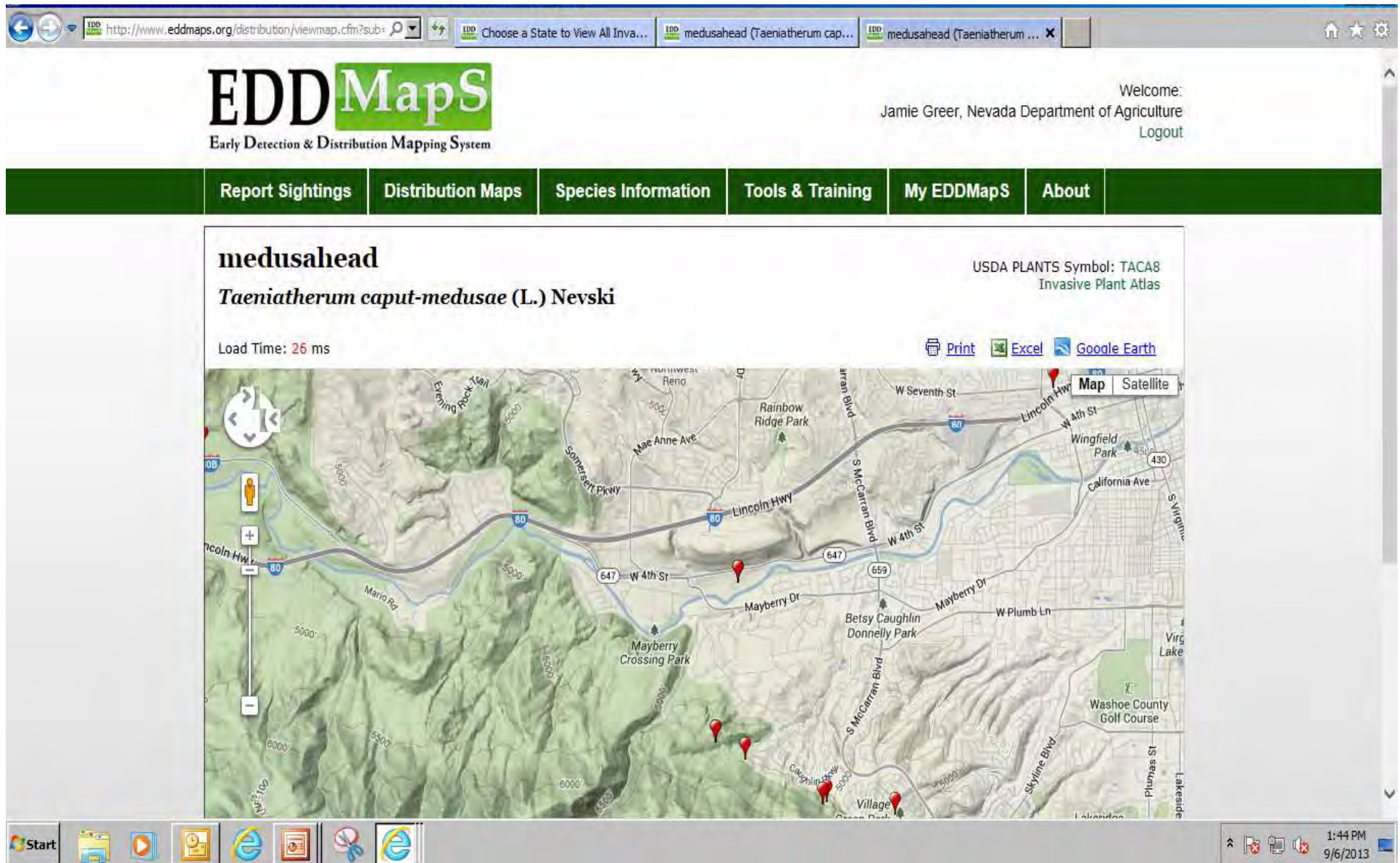
## Presence/Absence by County





# EDDMaps DISTRIBUTION MAPS

## Google Earth Points Map





# EDDMapS ADDITIONAL TOOLS

- Manage and update your own reports
- Create Email Alerts
- Upload bulk data sets
- Download data from others
- Access other training and mapping tools

Welcome:  
Jamie Greer, Nevada Department of Agriculture  
Logout

EDDMapS  
Early Detection & Distribution Mapping System

Report Sightings Distribution Maps Species Information **Tools & Training** My EDDMapS About

### Tools and Training Materials



#### Database Tools

- ✓ Statistics
- ✓ Access/Download Point Data
- ✓ Recently Added Records
- ✓ View Plants by County
- ✓ View Plants by State
- ✓ Invasive Plant Status Report By State
- ✓ Advanced Query Tools

#### Mapping Tools

- ✓ Find a Location
- ✓ Latitude/Longitude Converter
- ✓ Geocode a Physical Address



#### Training Materials

- ✓ EDDMapS Florida Training PowerPoint
- ✓ EDDMapS Florida Animals Training PowerPoint
- ✓ EDDMapS Florida Training Video
- ✓ EDDMapS Florida Animals Training Video
- ✓ EDDMapS Missouri River Watershed Coalition Training Video
- ✓ Mid-Atlantic Early Detection Network Training Video
- ✓ REDDy: Reptile Early Detection and Documentation Observer Training Course
- ✓ EDDMapS: Invasive Plant Mapping Handbook - **NEW**
- ✓ How to Verify a Record in EDDMapS
- ✓ Florida EDDMapS miniflyer
- ✓ Herbarium Collecting Guidelines

Start 1:43 PM 9/6/2013

# NEVADA EDDMAPS: BACK END IMPLEMENTATION *(CURRENTLY IN DEVELOPMENT)*

## What is it?

- An online GIS database that is in sync with current public EDDMaps without needing GIS license/expertise
- Open to only those given access with specific log in
- Specific to Nevada needs and desires

# NEVADA EDDMAPS: BACK END IMPLEMENTATION *(CURRENTLY IN DEVELOPMENT)*

The screenshot displays the Nevada EDDMAPS web application. On the left, a 'Map Contents' sidebar lists various layers with checkboxes. The main map area shows a map of Nevada and surrounding regions with red boundary lines. A toolbar at the top right contains icons for map manipulation, with one icon circled in red. A scale bar at the bottom left indicates 100 miles and 200 kilometers. A status bar at the bottom shows 'Done', 'Internet', and '100%' zoom.

**Customized map manipulation tools**

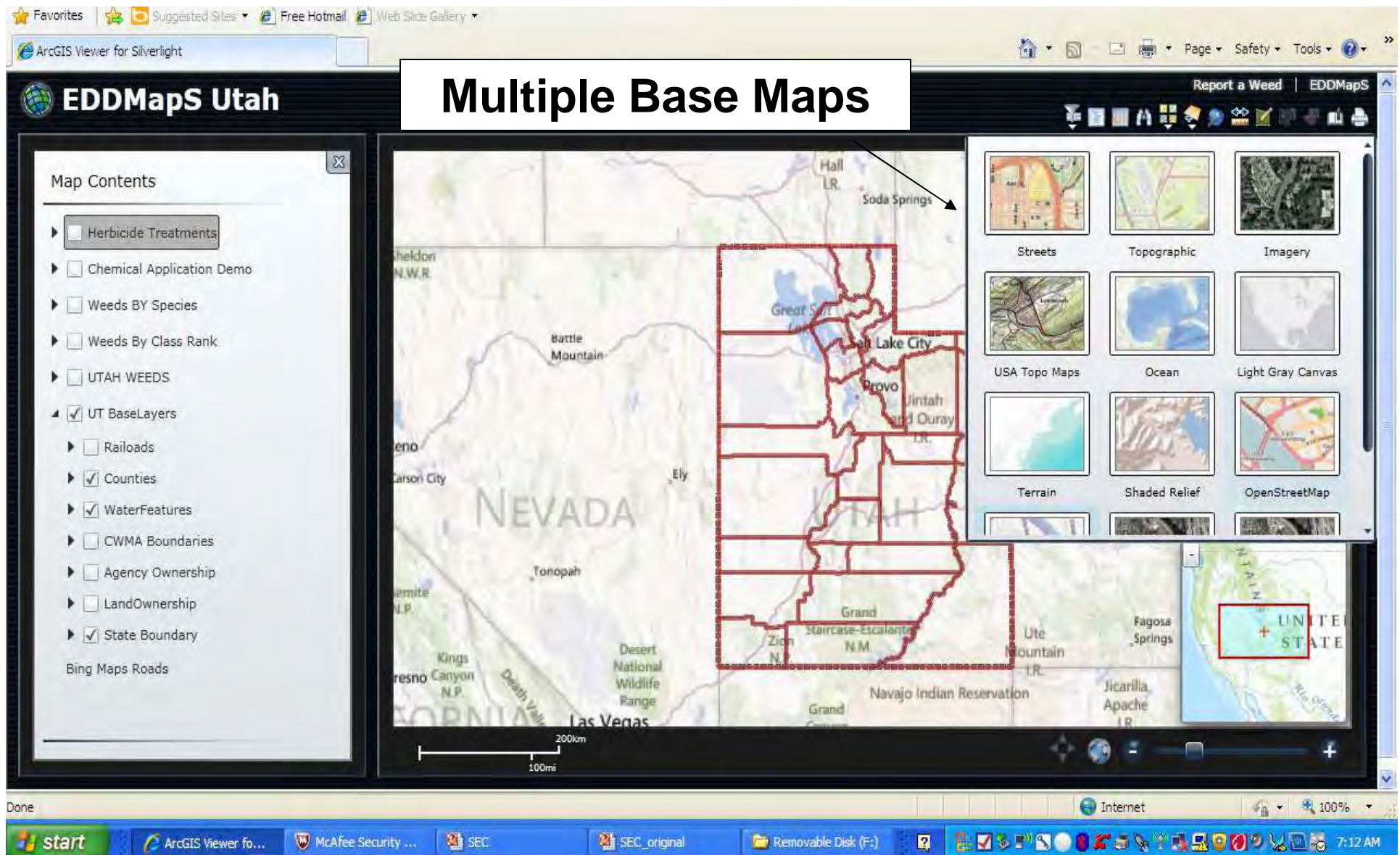
**Customized layers included in database** (can include: treatments, noxious weeds, other invasive plants, CWMAs, fires, sensitive areas, riparian zones, ect.)

- ☐ Herbicide Treatments
- ☐ Chemical Application Demo
- ☐ Weeds BY Species
- ☐ Weeds By Class Rank
- ☐ UTAH WEEDS
- ☒ UT BaseLayers
  - ☐ Railroads
  - ☒ Counties
  - ☒ WaterFeatures
  - ☒ CWMA Boundaries
  - ☐ Agency Ownership
  - ☐ LandOwnership
  - ☒ State Boundary

**Ability to manipulate map view/scale**



# NEVADA EDDMAPS: BACK END IMPLEMENTATION *(CURRENTLY IN DEVELOPMENT)*



# NEVADA EDDMAPS: BACK END IMPLEMENTATION *(CURRENTLY IN DEVELOPMENT)*

ArcGIS Viewer for Silverlight - Windows Internet Explorer

http://gis.eddmaps.org/Apps/Eddmapsutah/

File Edit View Favorites Tools Help

Favorites Suggested Sites Free Hotmail Web Site Gallery

ArcGIS Viewer for Silverlight

Report a Weed | EDDMapS

## EDDMapS Utah

Map Contents

- ☐ Herbi
- ☐ Chem
- ☒ Weed
  - Fremont cottonwood
  - Japanese knotweed
  - Kentucky bluegrass
  - London rocket
  - Malcolm stock
  - Malta starthistle
  - Menzies' fiddleneck

**To see specific points/area you can zoom in and click on certain point to get information associated with that point**

**musk thistle**

Observation Date	8/17/2006 12:00:00 AM
Infested Area	0.08
Area Units	acres
Canopy Cover	
Site Name	
Subject Name	musk thistle
Last Name:	Ririe
County Name	Sanpete County
Habitat Name	
National Ownership	United States Forest Service
Background Map	EDDMapS Web

Spanish Fork

WASATCH

UTAH

89

6

JUAB

Nephi

877 ft

10km

5mi

93%

SANPETE

EMERY

Scofield

CARBON

bing

Done

Internet

100%

start

ArcGIS Viewer fo...

McAfee Security ...

SEC

SEC\_original

Removable Disk (F:)

7:15 AM



# NEVADA EDDMAPS: BACK END IMPLEMENTATION – QUERY CAPABILITIES

The screenshot displays the EDDMapS Utah web application interface. The top navigation bar includes links for Favorites, Suggested Sites, Free Hotmail, and Web Site Gallery. The main header features the EDDMapS Utah logo and a 'Report a Weed' link. A toolbar on the right contains various icons, with a red circle highlighting the 'Query' icon. A dropdown menu is open, listing the following query capabilities:

- Advanced Query Tool
- Query CWMA
- Query By Species and County
- Query BY Name (type in)
- Query By Weed Name
- Query By Weed Class

The left sidebar, titled 'Map Contents', shows a list of weed species with checkboxes for selection. The 'Weeds BY Species' checkbox is checked. The main map area displays a map of Utah with various weed species plotted as colored dots. The map includes labels for locations such as Spanish Fork, Payson, Salem, Elk Ridge, Santaquin, Mount Nebo, Nephi, and Scofield. The map also shows county boundaries for UTAH, SANPETE, CARBON, and EMERY. A scale bar at the bottom indicates distances in kilometers (10km) and miles (5mi). The bottom status bar shows the Windows taskbar with the start button, open applications (ArcGIS Viewer for Silverlight, McAfee Security, SEC, SEC\_original, Removable Disk (F:)), and the system clock (7:17 AM).



# NEVADA EDDMAPS: BACK END IMPLEMENTATION – QUERY CAPABILITIES

The screenshot displays the EDDMaps Utah web application. On the left, the 'Map Contents' panel shows a list of weeds with checkboxes. The 'Weeds BY Species' checkbox is checked. A list of species is shown below it, including African mustard, American plum, Athel tamarisk, Canada thistle, Canada thistle stem mining weevil, Dalmatian toadflax, Dyer's woad, Eurasian watermilfoil, European privet, Fremont cottonwood, Japanese knotweed, Kentucky bluegrass, London rocket, Malcolm stock, Malta starthistle, and Menzies' fiddleneck. In the center, a dropdown menu is open for 'SPECIES = cheatgrass', showing a list of species including asparagus, black henbane, brown-legged spurge flea beetle, bull thistle, Canada thistle, cheatgrass (highlighted), chicory, common burdock, common mullein, curlycup gumweed, cutleaf teasel, dalmatian toadflax, and Dyer's woad. The background map shows Nevada with various locations labeled, including WAATCH, PETE, Scofield State Park, CARBON, Scofield, EMERY, and Nephi. A scale bar indicates 10km and 5mi. The bottom of the screen shows the Windows taskbar with the start button and several open applications.

**Map Contents**

- ☐ Herbicide Treatments
- ☐ Chemical Application Demo
- ☒ Weeds BY Species
  - African mustard
  - American plum
  - Athel tamarisk
  - Canada thistle
  - Canada thistle stem mining weevil
  - Dalmatian toadflax
  - Dyer's woad
  - Eurasian watermilfoil
  - European privet
  - Fremont cottonwood
  - Japanese knotweed
  - Kentucky bluegrass
  - London rocket
  - Malcolm stock
  - Malta starthistle
  - Menzies' fiddleneck

**Species Dropdown Menu:**

SPECIES = cheatgrass

- asparagus
- black henbane
- brown-legged spurge flea beetle
- bull thistle
- Canada thistle
- cheatgrass**
- chicory
- common burdock
- common mullein
- curlycup gumweed
- cutleaf teasel
- dalmatian toadflax
- Dyer's woad

**Map Labels:** WAATCH, PETE, Scofield State Park, CARBON, Scofield, EMERY, Nephi

**Scale:** 10km, 5mi

**Windows Taskbar:** start, ArcGIS Viewer fo..., McAfee Security ..., SEC, SEC\_original, Removable Disk (F:), 7:19 AM

# NEVADA EDDMAPS: BACK END IMPLEMENTATION – QUERY CAPABILITIES

Automatically includes an attribute table detailing information about every point within queried dataset

The screenshot displays the EDDMAPS web application interface. On the left, the 'Map Contents' panel lists various layers, including 'EDDMAPS SPECIES AND COUNTY' (checked), 'Herbicide Treatments', 'Chemical Application Demo', 'Weeds BY Species', 'Weeds By Class Rank', 'UTAH WEEDS' (with sub-options for CLASS RANK:A, B, C, D, OTHER, and EDDMAPS UTAH), and 'UT BaseLayers' (with sub-options for Railroads and Counties). The main map area shows a map of Nevada with numerous yellow points representing weed locations. A red box highlights the 'Attributes of EDDMAPS SPECIES AND COUNTY' table, which contains the following data:

Infested Area	Area Units	Canopy Cover	Site Name	Subject Name	Reported by:	Last Name:	State Name	Count
0.05	acres	2.99999999	UTGAP06_0512	cheatgrass	Southwest	Exotic Plant Mapping Program	Utah	Box El
0.05	acres	0.14999999	UTGAP06_0513	cheatgrass	Southwest	Exotic Plant Mapping Program	Utah	Box El

Below the table, the status bar indicates 'Record: << < > >> Records (0 out of 311 Selected)' and includes 'Options' and 'Commit' buttons. The bottom of the screen shows the Windows taskbar with the start button, ArcGIS Viewer for Flex, McAfee Security, SEC, SEC\_original, Removable Disk (F:), and various system icons, along with the time 7:22 AM.



# NEVADA EDDMAPS: BACK END IMPLEMENTATION – MEASUREMENT CAPABILITIES

ArcGIS Viewer for Silverlight

EDDMapS Utah

Map Contents

- EDDMAPS SPECIES AND COUNTY
- Herbicide Treatments
- Chemical Application Demo
- Weeds BY Species
- Weeds By Class Rank
- UTAH WEEDS
  - CLASS RANK:A
  - CLASS RANK:B
  - CLASS RANK:C
  - CLASS RANK:D
  - CLASS RANK:OTHER
  - EDDMAPS UTAH
- UT BaseLayers
  - Railroads
  - Counties

EDDMAPS SPECIES AND COUNTY

Measure

Get measurements from existing features or by drawing on the map

Attributes of EDDMAPS SPECIES AND COUNTY

Infested Area	Area Units	Canopy Cover	Site Name	Subject Name	Reported by:	Last Name:	State Name	Count
0.05	acres	2.99999999	UTGAP06_0512	cheatgrass	Southwest	Exotic Plant Mapping Program	Utah	Box El
0.05	acres	0.14999999	UTGAP06_0513	cheatgrass	Southwest	Exotic Plant Mapping Program	Utah	Box El

Record: << < 0 > >> Records (0 out of 311 Selected) Options Commit

35km  
20mi

Internet 100%

start ArcGIS Viewer fo... McAfee Security ... SEC SEC\_original Removable Disk (F:) 7:23 AM



# NEVADA EDDMAPS: BACK END IMPLEMENTATION – MEASUREMENT CAPABILITIES

The screenshot displays the EDDMapS Utah web application. On the left is a 'Map Contents' sidebar with a tree view of layers. The main map area shows a map of Utah with numerous colored points (red, yellow, green, blue) representing weed locations. A red rectangle highlights a toolbar with various drawing and selection tools. A white text box with the text 'Ability to measure area in polygons' is overlaid on the toolbar. Below the toolbar is a table titled 'Attributes of' showing data for two records. The table has columns for Infested Area, Area Units, Canopy Cover, Site Name, Subject Name, Reported by, Last Name, State Name, and Count. The bottom of the interface includes a scale bar (0 to 35km/20mi), a record navigation bar, and a Windows taskbar at the very bottom.

**Map Contents**

- EDDMAPS SPECIES AND COUNTY
- Herbicide Treatments
- Chemical Application Demo
- Weeds BY Species
- Weeds By Class Rank
- ☒ UTAH WEEDS
  - CLASS RANK:A
  - CLASS RANK:B
  - CLASS RANK:C
  - CLASS RANK:D
  - CLASS RANK:OTHER
  - ☒ EDDMAPS UTAH
- ☒ UT BaseLayers
  - Railroads
  - ☒ Counties

**Ability to measure area in polygons**

Draw shapes to measure | Select features to measure

Select a shape to draw

Infested Area	Area Units	Canopy Cover	Site Name	Subject Name	Reported by:	Last Name:	State Name	Count
0.05	acres	2.99999999	UTGAP06_0512	cheatgrass	Southwest	Exotic Plant Mapping Program	Utah	Box El
0.05	acres	0.14999999	UTGAP06_0513	cheatgrass	Southwest	Exotic Plant Mapping Program	Utah	Box El

Record: << < 0 > >> Records (0 out of 311 Selected) Options Commit

Scale: 35km / 20mi

Windows Taskbar: start, ArcGIS Viewer fo..., McAfee Security ..., SEC, SEC\_original, Removable Disk (F:), 7:24 AM

# NEVADA EDDMAPS: BACK END IMPLEMENTATION – MEASUREMENT CAPABILITIES

**Polygon area calculation accomplished by clicking around area of interest**

The screenshot shows the EDDMaps application running in a web browser. The interface includes a sidebar with map contents, a main map area, and a data table at the bottom.

**Map Contents:**

- ☐ EDDMAPS SPECIES AND COUNTY
- ☐ Herbicide Treatments
- ☐ Chemical Application Demo
- ☐ Weeds BY Species
- ☐ Weeds By Class Rank
- ☒ UTAH WEEDS
  - ☐ CLASS RANK:A
  - ☐ CLASS RANK:B
  - ☐ CLASS RANK:C
  - ☐ CLASS RANK:D
  - ☐ CLASS RANK:OTHER
  - ☒ EDDMAPS UTAH
- ☒ UT BaseLayers
  - ☐ Railroads
  - ☒ Counties

**Map Area:** The map shows a region of Nevada with various geographical features labeled, including Dove Creek Mountains, Pinyon Valley, Hansel Mountains, and Willard Bay State Park. A red polygon is drawn around a specific area of interest. A tooltip displays the following information:

Click to place another point or double-click to finish  
Perimeter: 105,868.2010 Meters  
Area: 556,444,557.6992 Square Meters

**Attributes of EDDMAPS SPECIES AND COUNTY**

Infested Area	Area Units	Canopy Cover	Site Name	Subject Name	Reported by:	Last Name:	State Name	Count
512	cheatgrass	Southwest	Exotic Plant Mapping Program	Utah	Box El			
513	cheatgrass	Southwest	Exotic Plant Mapping Program	Utah	Box El			

**Measure**

Draw shapes to measure | Select features to measure

Options | Commit

The application is running on a Windows XP desktop environment, as indicated by the taskbar and system tray.



# NEVADA EDDMAPS: BACK END IMPLEMENTATION – MEASUREMENT CAPABILITIES

Polygon then can be saved as new additional layer and attribute data given for points within polygon

The screenshot displays the EDDMapS web application interface. On the left, the 'Map Contents' panel lists various layers, including 'UTAH WEEDS' and 'UT BaseLayers'. The main map area shows a map of Nevada with a red polygon highlighting a specific region. Below the map, a table titled 'Attributes of EDDMAPS SPECIES AND COUNTY' displays data for four records. The table columns include 'Infested Area', 'Area Units', 'Canopy Cover', 'Site Name', 'Subject Name', 'Reported by:', 'Last Name:', 'State Name', and 'Count'. The bottom of the interface shows a record count of 0 out of 311 selected, along with navigation controls and a scale bar.

Infested Area	Area Units	Canopy Cover	Site Name	Subject Name	Reported by:	Last Name:	State Name	Count
0.05	acres	2.99999999	UTGAP06_0512	cheatgrass	Southwest	Exotic Plant Mapping Program	Utah	Box El
0.05	acres	0.14999999	UTGAP06_0513	cheatgrass	Southwest	Exotic Plant Mapping Program	Utah	Box El
0.05	acres	2.99999999	UTGAP06_0917	cheatgrass	Southwest	Exotic Plant Mapping Program	Utah	Box El
0.05	acres	0.14999999	UTGAP06_0918	cheatgrass	Southwest	Exotic Plant Mapping Program	Utah	Box El



# NEVADA EDDMAPS: BACK END IMPLEMENTATION – MEASUREMENT CAPABILITIES

EDDMapS Utah

Map Contents

- EDDMAPS SPECIES AND COUNTY
- Herbicide Treatments
- Chemical Application Demo
- Weeds BY Species
- Weeds By Class Rank
- ☒ UTAH WEEDS
  - CLASS RANK:A
  - CLASS RANK:B
  - CLASS RANK:C
  - CLASS RANK:D
  - CLASS RANK:OTHER
  - ☒ EDDMAPS UTAH
- ☒ UT BaseLayers
  - Railroads
  - ☒ Counties

EDDMAPS SPECIES AND COUNTY

Ability to measure distance of line

Measure

Draw shapes to measure | Select features to measure

Select a shape to draw

Attributes of

Infested Area	Area Units	Canopy Cover	Site Name	Subject Name	Reported by:	Last Name:	State Name	Count
0.05	acres	2.99999999	UTGAP06_0512	cheatgrass	Southwest	Exotic Plant Mapping Program	Utah	Box El
0.05	acres	0.14999999	UTGAP06_0513	cheatgrass	Southwest	Exotic Plant Mapping Program	Utah	Box El

Record: << < 0 > >> Records (0 out of 311 Selected) Options Commit

35km  
20mi

Internet 100% 7:24 AM

# NEVADA EDDMAPS: BACK END IMPLEMENTATION – MEASUREMENT CAPABILITIES

**Gives you distance between one point to another on the map**

**Map Contents**

- ☐ EDDMAPS SPECIES AND COUNTY
- ☐ Herbicide Treatments
- ☐ Chemical Application Demo
- ☐ Weeds BY Species
- ☐ Weeds By Class Rank
- ☒ UTAH WEEDS
  - ☐ CLASS RANK:A
  - ☐ CLASS RANK:B
  - ☐ CLASS RANK:C
  - ☐ CLASS RANK:D
  - ☐ CLASS RANK:OTHER
- ☒ EDDMAPS UTAH
- ☒ UT BaseLayers
  - ☐ Railroads
  - ☒ Counties

**Measure**

Click to place another point or double-click to finish  
Segment: 10.4888 Miles  
Total: 10.4888 Miles

**Attributes of EDDMAPS SPECIES AND COUNTY**

Infested Area	Area Units	Canopy Cover	Site Name	Subject Name	Reported by:	Last Name:	State Name	Count
0.05	acres	2.99999999	UTGAP06_0512	cheatgrass	Southwest	Exotic Plant Mapping Program	Utah	Box El
0.05	acres	0.14999999	UTGAP06_0513	cheatgrass	Southwest	Exotic Plant Mapping Program	Utah	Box El
0.05	acres	2.99999999	UTGAP06_0917	cheatgrass	Southwest	Exotic Plant Mapping Program	Utah	Box El
0.05	acres	0.14999999	UTGAP06_0918	cheatgrass	Southwest	Exotic Plant Mapping Program	Utah	Box El

Record: << < 0 > >> Records (0 out of 311 Selected) Options Commit

35km  
20mi



# NEVADA EDDMAPS: BACK END IMPLEMENTATION – CREATE MAPS

**1. Zoom in on area that you want shown in map**

**2. Click print map tool button**

The screenshot displays the EDDMAPS web application. The 'Map Contents' panel on the left lists various layers, including 'EDDMAPS SPECIES AND COUNTY', 'Herbicide Treatments', 'Chemical Application Demo', 'Weeds BY Species', 'Weeds By Class Rank', 'UTAH WEEDS', 'CLASS RANK:A', 'CLASS RANK:B', 'CLASS RANK:C', 'CLASS RANK:D', 'CLASS RANK:OTHER', 'EDDMAPS UTAH', 'UT BaseLayers', 'Railroads', and 'Counties'. The main map area shows a map of Nevada with a red polygon highlighting a specific area. The 'Attributes of EDDMAPS SPECIES AND COUNTY' table at the bottom displays columns for 'Infested Area', 'Area Units', 'Canopy Cover', 'Site Name', 'Subject Name', 'Reported by:', 'Last Name:', 'State Name', and 'Count'. The table shows 'Record: 0' and 'Records (0 out of 15 Selected)'. The 'Print' button in the top right corner is circled in red.



# NEVADA EDDMAPS: BACK END IMPLEMENTATION – CREATE MAPS

Allows you to save in multiple formats

The screenshot displays the EDDMapS Utah web application interface. On the left, the 'Map Contents' panel lists various layers, including 'EDDMAPS SPECIES AND COUNTY' (checked), 'Herbicide Treatments', 'Chemical Application Demo', 'Weeds BY Species', 'Weeds By Class Rank', 'UTAH WEEDS', 'CLASS RANK:A' through 'CLASS RANK:OTHER', 'EDDMAPS UTAH' (checked), 'UT BaseLayers', 'Railroads', and 'Counties' (checked). The main map area shows a map of Nevada with a red polygon highlighting a specific region. A 'Print' dialog box is open, allowing users to save the map in multiple formats. The 'File Format' dropdown menu is expanded, showing options: PDF, PNG32, PNG8, JPG, GIF, EPS, SVG, and SVGZ. The 'Scale' dropdown is also expanded, showing 'PDF' as the selected option. The 'Print' dialog box includes fields for 'Title' (EDDMapS Utah), 'Author', 'Copyright' (Sources: USGS, FAO, NPS, EPA, ESRI, D), and 'Template' (MAP ONLY). The bottom of the interface shows a table with columns: 'Infested Area', 'Area Units', 'Canopy Cover', 'Site Name', 'Subject Name', 'Reported by:', 'Last Name:', 'State Name', and 'Count'. The table currently shows 0 records out of 15 selected. The Windows taskbar at the bottom shows the 'start' button, several open applications (ArcGIS Viewer for Silverlight, McAfee Security Scan, SEC, SEC\_original), and a removable disk (F:). The system clock shows 7:35 AM.

EDDMapS Utah

Map Contents

- ☒ EDDMAPS SPECIES AND COUNTY
- ☐ Herbicide Treatments
- ☐ Chemical Application Demo
- ☐ Weeds BY Species
- ☐ Weeds By Class Rank
- ☒ UTAH WEEDS
  - ☐ CLASS RANK:A
  - ☐ CLASS RANK:B
  - ☐ CLASS RANK:C
  - ☐ CLASS RANK:D
  - ☐ CLASS RANK:OTHER
- ☒ EDDMAPS UTAH
- ☒ UT BaseLayers
  - ☐ Railroads
  - ☒ Counties

EDDMAPS SPECIES AND COUNTY

Print

Title: EDDMapS Utah

Author:

Copyright: Sources: USGS, FAO, NPS, EPA, ESRI, D

Template: MAP ONLY

File Format: PDF

- PDF
- PNG32
- PNG8
- JPG
- GIF
- EPS
- SVG
- SVGZ

Scale: PDF

Attributes of EDD MAPS SPEC

Infested Area	Area Units	Canopy Cover	Site Name	Subject Name	Reported by:	Last Name:	State Name	Count
Record: << < 0 > >>								

Records (0 out of 15 Selected)

Options Commit

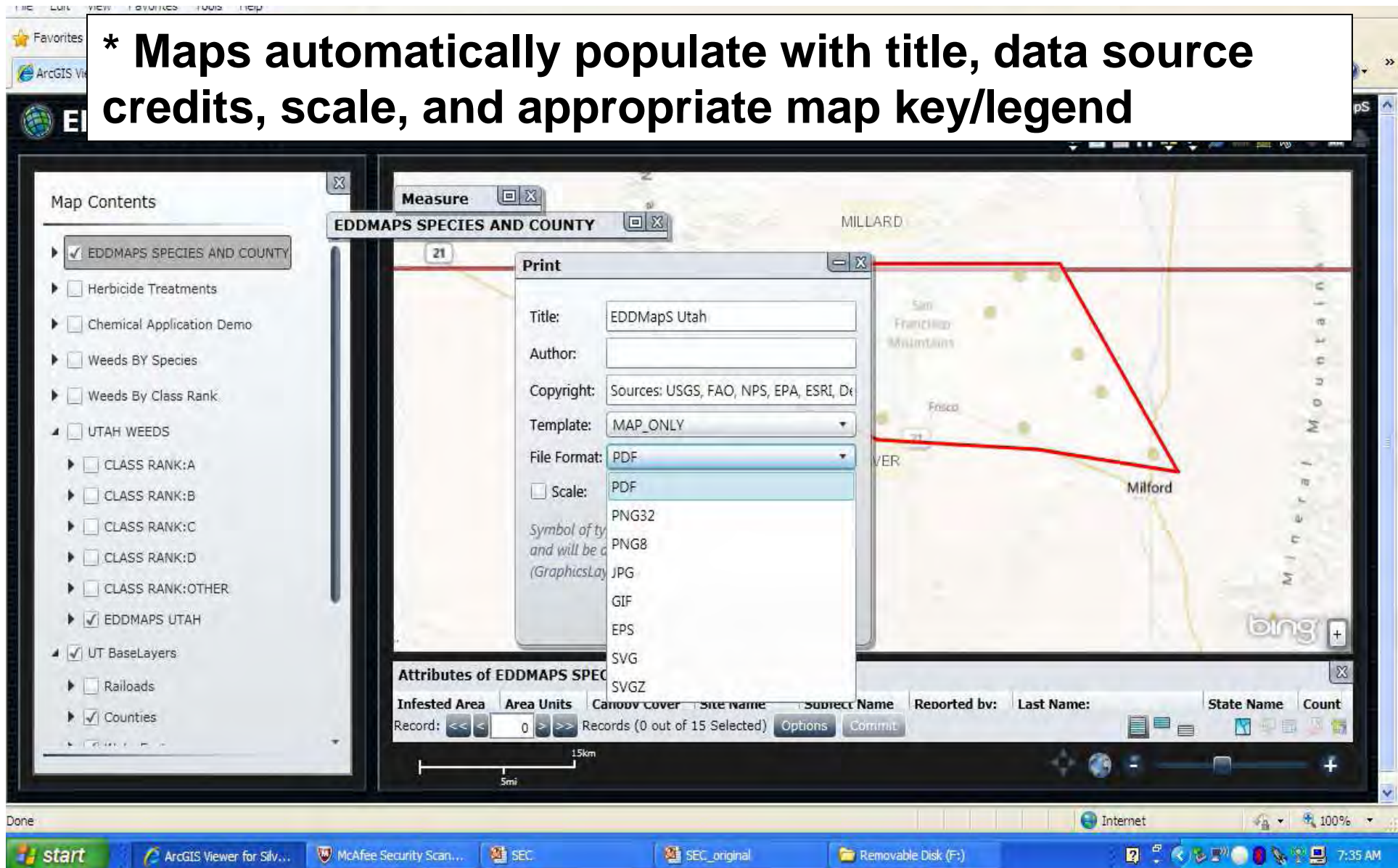
Done

Internet 100%

7:35 AM

# NEVADA EDDMAPS: BACK END IMPLEMENTATION – CREATE MAPS

\* Maps automatically populate with title, data source credits, scale, and appropriate map key/legend



# NEVADA EDDMAPS: BACK END IMPLEMENTATION

## OVERALL USEFUL CAPABILITIES:

- Data is constantly updated with EDDMaps reports
- Multiple base maps and layers accessible at once
- Query data with ease
- Overlay data with other important information
- Create polygons
- ***Make relevant maps to prioritize work and convey the important message of the threat of invasive plants to sage grouse and Nevada ecosystems as a whole***



# **SAGEBRUSH ECOSYSTEM TEAM ACTIONS**

- **Identify primary habitat for the greater sage-grouse.**
- **Create multi-layered maps.**
- **Identify functioning habitats at the greatest risk for fire and subsequent domination by annual grasses.**
- **Prioritize the sites and work in close coordination with pre-suppression efforts (fire and invasive species).**
- **Utilize the cheatgrass action technical team and the science workgroup to make informed decisions based upon the best available science.**
- **Support efforts to secure financial and other resources to address the threats.**

# QUESTIONS?

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# THANK YOU!