

DIMA Quick Start

*Using the Database for
Inventory, Monitoring
and Assessment for the
BLM AIM Strategy*

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Quick Reference of Common DIMA Tasks

Task	Best done...	Frequency	Dependencies	Page Number
Basic DIMA Concepts				4
<u>Initial Setup</u>				
Import state species list	In the office	Once	Download state list from USDA Plants website	10
Import ecological site names	In the office	Once	Download ecological site names from NRCS	15
Add names/roles of people	In the office	Once initially, then as necessary	None	18
Import county names	In the office	Once	County name files included with DIMA download	13
Hide unused method forms	In the office	Once	None	9
Create community species lists	In the office	For new database, then as necessary	None, but can help to have existing plant inventory or other info for sites	20
Setting up a GPS unit	In the office	Once	GPS unit, GPS Tools .dll file	23
<u>Data Collection</u>				
Create Site	In the office	When first going to new site	None	26
Create Plot	In the office, or field	When establishing a new plot	Must have a site for plot to belong to	27
Plot-level species list	In the office, or field	Whenever new plot is created (copy existing or create new)	Plot must be created first	20
Add data (either at plot or transect level)	In the field	Whenever measurements are taken at an established plot	Plot must be created first	30
<u>AIM Strategy Methods</u>				
Line-point Intercept with Height	In the field	Multiple times per plot	Plot and transects must be created first	31
Species Richness	In the field	Once per plot	Plot and transects must be created first	34
Canopy Gap Intercept	In the field	Multiple times per plot	Plot and transects must be created first	36
Soil Stability	In the field	Once per plot	Plot must be created first	38
Rangeland Health Indicators	In the field	One per plot	Plot must be created first	40

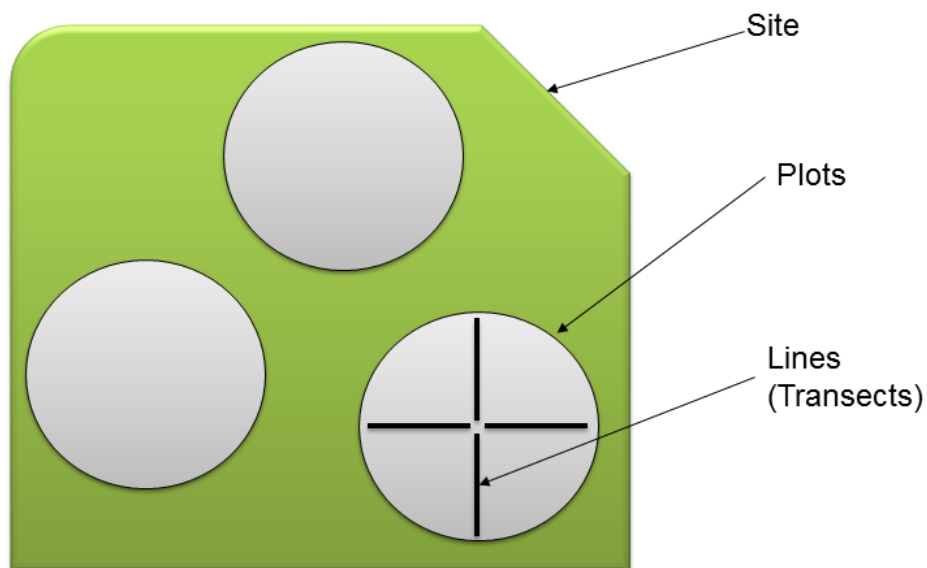
Basic DIMA Concepts

The Database for Inventory, Monitoring and Assessment (DIMA) is a highly-customized Microsoft Access database for collecting data electronically in the field and for organizing, storing, and reporting those data for monitoring and assessment. While DIMA can be used for any number of different monitoring data collection needs, it is particularly well suited to collecting data for the BLM's Assessment, Inventory and Monitoring (AIM) Strategy following the BLM Core Indicators and Methods. It is much easier to use DIMA if you have a basic understanding of what data are being stored in it and how they are organized.

Sites, Plots, and Lines

There are three basic objects within DIMA: sites, plots, and lines (i.e., transects).

DIMA – Hierarchy of Database Objects



A **Site** is a large geographic unit that defines a management area of interest, and you must create at least one site before you can enter data. Sites can be whatever makes sense for management or monitoring. For example, if monitoring for grazing permits, an allotment might be a logical choice for a site. If the interest is in evaluating effectiveness of a restoration project, then the project area might be a site. In DIMA, sites have only a minimal set of information associated with them and do not have any explicit geographic information – they are just used as a way to organize the data. If you have data that could belong to more than one site (e.g., a restoration area within an allotment), you can use tags to track them (see Tags below).

A **Plot** is an area within a site where measurements are made. There are usually several or many plots per site. Plots contain specific information such as directions for how to get there, ecological site, a species list, and precise geographic coordinates. Certain methods such as species richness and soil sampling pertain to the plot itself.

A **Line or Transect** is a sub-measurement of a plot, and there can be multiple transects per plot. For many indicators (e.g., vegetation cover or composition), it is not possible to reliably measure or estimate the indicator for the entire plot at once. In this case it is common to sample smaller areas within a plot and use those measurements to estimate the indicator's value for the entire plot. One way of sub-sampling the plot is with measurements along transects or sub-plots along transects.

Methods

A method is a specific technique used to estimate the value of an indicator. For the AIM strategy, the methods are: Line-point intercept with vegetation height, plot-level species inventory, canopy gap intercept, soil stability, and soil sampling for toxins. Of these methods, line-point intercept with height and canopy-gap intercept are performed along transects. The other methods are performed at the plot level.

Geographic Information

In DIMA, precise geographic coordinates can be recorded for plot centers and for the start and stop locations of transects. When collecting data following the AIM protocol, it is sufficient to record only the plot center location.

DIMA can be set up to interface directly with a GPS unit for automated capture of coordinate values. Alternatively, the coordinate values can be typed in. While DIMA will allow you to record locations using any coordinate system, it is highly recommended that you 1) use the same coordinate system for all your locations, and 2) use the geographic (decimal degrees) coordinate system with the WGS84 datum. This will ensure that locations are consistently recorded and make it easier to merge datasets from different areas.

Species Lists

Part of what makes DIMA fast and easy to use in the field for collecting data is the use of lists of expected species for plots and transects. You can use DIMA without setting up a species list for a plot or transect, but it can be cumbersome and slow. As part of your initial DIMA setup, you should take some time and create some species lists for different plant communities in which you'll be working. Plant inventories or existing field data are a good place to look for species to include in the lists. When you create a plot, you can then copy one of your community species lists or copy the species list from another plot. Don't worry about having an exhaustive species list for your plot before you start – you can always add plants while you're recording data without too much of an interruption. The more plots you visit, the better your species lists will get and the faster DIMA will be to use in the field.

Tags

A **Tag** is a label assigned to a plot for your own sorting or querying purposes. Sometimes you need to organize your plots by more than just the one site that they belong to. For example, you have plots within an allotment that are inside a burn and plots outside the burn. This allotment is part of a field office and the data could be useful for field-office level planning too. DIMA only lets you define one site per plot. To associate your plots with all the different levels or uses you want, you would assign tags to the plots. Any plot can have an unlimited number of tags.

Tips for Successfully using DIMA

Close vs. Cancel buttons

On many of the DIMA forms, you will notice buttons that say “Close” or “Cancel” but rarely buttons that say “OK” or “Apply.” This can be confusing to some users.

A screenshot of a software form titled "Site Description". The form has a header bar with the title. Below the header, there is a section titled "Site Description" in bold. Underneath, there are two text input fields: "Site ID:" and "Site Name:". To the right of the "Site ID:" field, there are two buttons: "Cancel" and "Close".

Close will save the data on the current form and close it, returning you to the previous form.

Cancel will close the current form *without* saving any data on the form

Running DIMA with different versions of Access

DIMA was developed for Access 2003. It will run without problem on Access 2007, but there are some compatibility issues with Access 2010. We are currently working through these problems and releasing incremental updates to DIMA as problems are fixed. For all of the Access 2010 problems, however, Access may crash if certain buttons are clicked, but this DOES NOT CAUSE DATA LOSS OR CORRUPTION.

Using a GPS with DIMA and Windows 7

The GPSTools.dll file that creates a connection between DIMA and an attached GPS unit was written for Windows XP. In order to use the GPS tools with DIMA on a computer with a Windows 7 operating system, you will need to run Access in “XP Compatibility mode.” For more information, see <http://windows.microsoft.com/en-US/windows-vista/Make-older-programs-run-in-this-version-of-Windows>

The DIMA Home Page

Functions and options for DIMA Initial Setup.

Toggle touch-screen functions on or off.

Main Menu

Help Database for Inventory, Monitoring and Assessment Comments/Feedback? Version 2.0a - 02/28/2011 Exit Access

System Setup

Support Tables

Site/Plot Description

Data

Reports

Enter/View Photos

View Documents

Administrator

Administrative Functions

Data Quick View

Grav-NoRoad (Gravelly No Road)

Grav-Road (Gravelly with Road)

1

2

3

2

3

4

5

Tree-view of Sites, Plots and transects (lines) in the DIMA database

New Site

New Plot

Edit Plot / Lines

Enter/Edit Data

Data Status

Show hierarchy...

By Site

By Plot Tags

Manage Tags

Data-Entry Method

Keyboard/Mouse

Touch-Screen

das NRCS USGS

C:\Users\Jason\Documents\DIMA\DB Release 2-28-11\DIMA 2.0a demo_database.mdb

Functions for creating and editing sites and plots.

Functions for entering and editing data for plots and transects (lines)

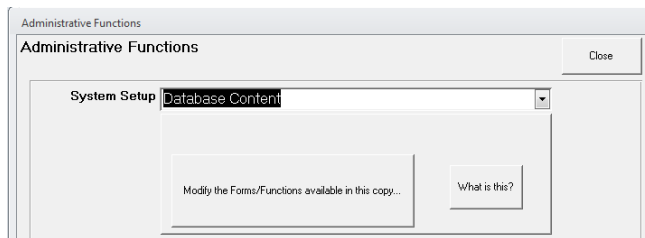
Initial DIMA Setup

The steps below should be followed to set up a new DIMA database for use. An internet connection is needed for some of these steps, so they are best done while in the office before going out to the field.

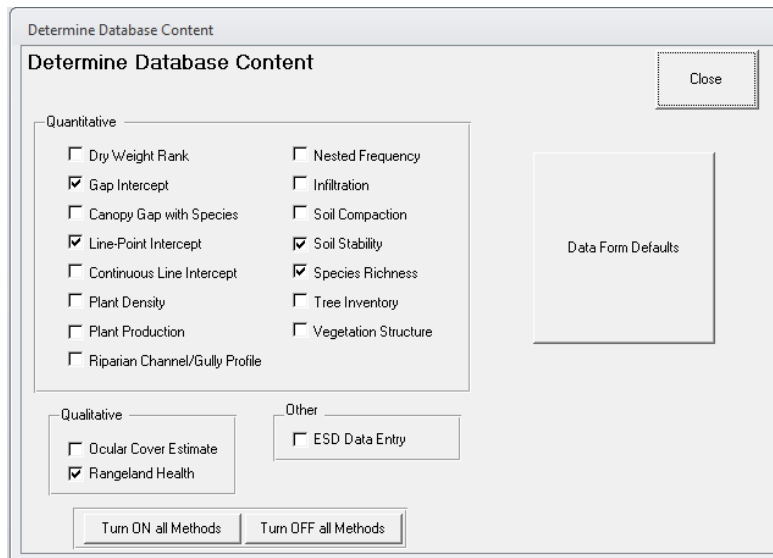
Hide methods not used in AIM strategy

DIMA contains data forms for 18 different monitoring and assessment methods. In most cases, though, you will only be using a small number of these methods. Hiding the unneeded data forms can not only simplify the DIMA interface, but can reduce confusion for field crews. To hide unneeded DIMA forms:

1. Click on the **Administrative Functions** button from the DIMA Home Page.
2. Choose **“Database Content”** from the System Setup drop-down list, and click the **Modify the Forms/Functions available in this copy** button.



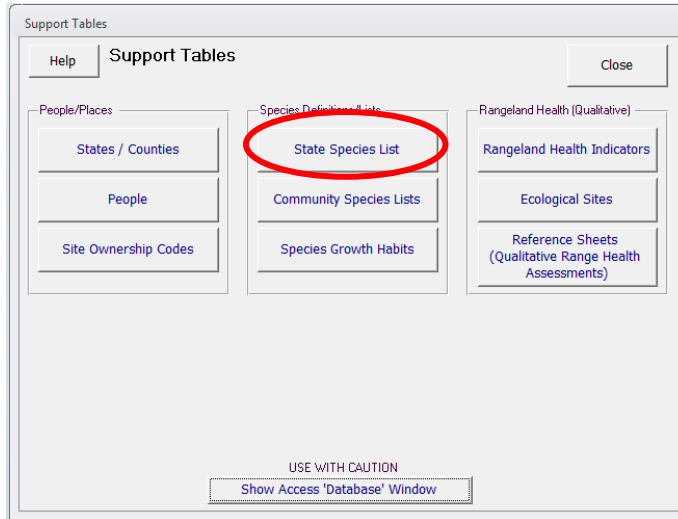
3. Enter the database administrator password (usually 9999 unless another password was set) and login.
4. Uncheck methods that will not be used, and then click **Close**. Click **Close** on the Administrative Functions page to return to the DIMA Home Page.



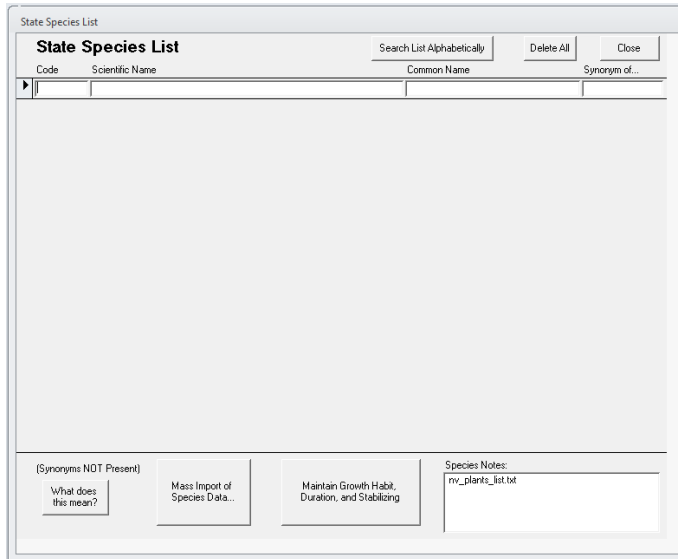
Import state plant species list from USDA PLANTS database

In order to quickly create species lists and to maintain consistency and accuracy of plant codes, DIMA uses the list of plants and codes for each state maintained by the USDA PLANTS database (<http://plants.usda.gov>). Because these lists are large (thousands of plant species for each state) and updated regularly, DIMA does not come pre-loaded with a master plant species list. You will need to download the species list for your state and load it into DIMA.

1. Click the **Support Tables** button from the DIMA Home Page
2. Click on the **State Species List** button in the center column of the Support Tables page.

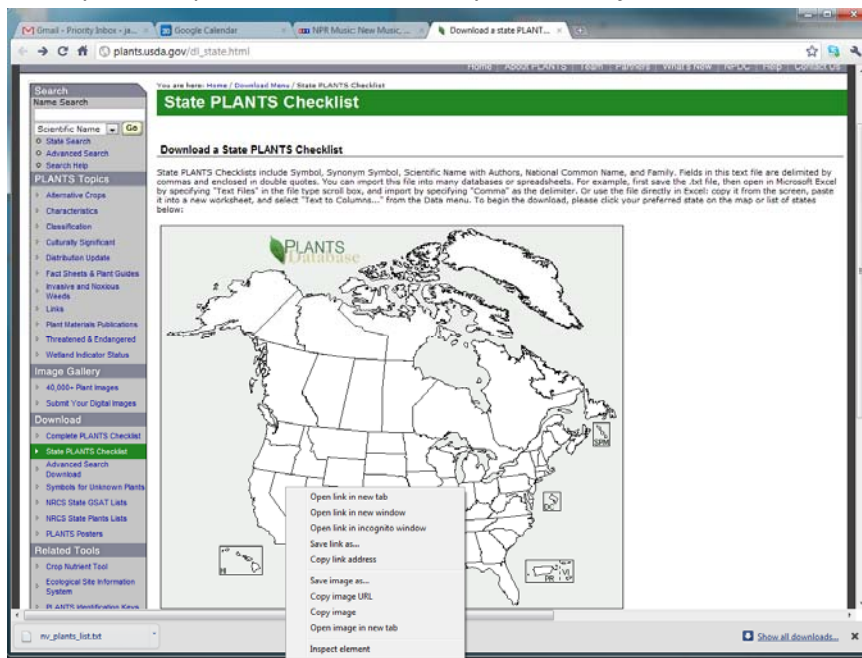


3. Click on the **Mass Import of Species Data...** button at the bottom of the State Species List page.



- Open a web browser and go to the USDA PLANTS database state plant list page. Either click on the **“this site”** link or enter in the URL shown in the Mass Import of Species Data page.

- Right-click in your web browser on the state you want a species list for and choose **“Save target as...”** (Internet Explorer) or **“Save link as...”** (Firefox, Chrome) to save the state species list to your computer. *Note the directory where the file was saved.*



- Back in DIMA, click the **Browse...** button in the Mass Import of Species Data page and select the state species list file you just downloaded. Click **Open**.
- Click the **Validate Plant list and import into this database...** button.
- Click **Close** on all the pages to return to the DIMA Home Page.

State Species List

State Species List

Search List Alphabetically Delete All Close

Code	Scientific Name	Common Name	Synonym of...
▶ ABCO	<i>Abies concolor</i> (Gord. & Glend.) Lindl. ex Hildebr.	white fir	
ABCO	<i>Abies concolor</i> (Gord. & Glend.) Lindl. ex Hildebr. var. <i>concolor</i>	white fir	
ABCOL	<i>Abies concolor</i> (Gord. & Glend.) Lindl. ex Hildebr. var. <i>lowiana</i> (Gord. & Glend.)	white fir	
ABEL	<i>Abronia elliptica</i> A. Nelson	fragrant white sand verbena	
ABIES	<i>Abies</i> Mill.	fir	
ABLA	<i>Abies lasiocarpa</i> (Hook.) Nutt.	subalpine fir	
ABLAL	<i>Abies lasiocarpa</i> (Hook.) Nutt. var. <i>lasiocarpa</i>	subalpine fir	
ABMA	<i>Abies magnifica</i> A. Murray	California red fir	
ABNA	<i>Abronia nana</i> S. Watson	dwarf sand verbena	
ABNAC	<i>Abronia nana</i> S. Watson var. <i>covillei</i> (Heimerl) Munz	Coville's dwarf sand verbena	
ABNAN	<i>Abronia nana</i> S. Watson var. <i>nana</i>	dwarf sand verbena	
ABPA3	<i>Abutilon parvulum</i> A. Gray	dwarf Indian mallow	
ABPO	<i>Abronia pogonantha</i> Heimerl	Mojave sand verbena	
ABRON	<i>Abronia</i> Juss.	sand verbena	
ABTH	<i>Abutilon theophrasti</i> Medik.	velvetleaf	
ABTU	<i>Abronia turbinata</i> Torr. ex S. Watson	transmontane sand verbena	
ABUTI	<i>Abutilon</i> Mill.	Indian mallow	
ABVI	<i>Abronia villosa</i> S. Watson	desert sand verbena	

(Synonyms NOT Present)

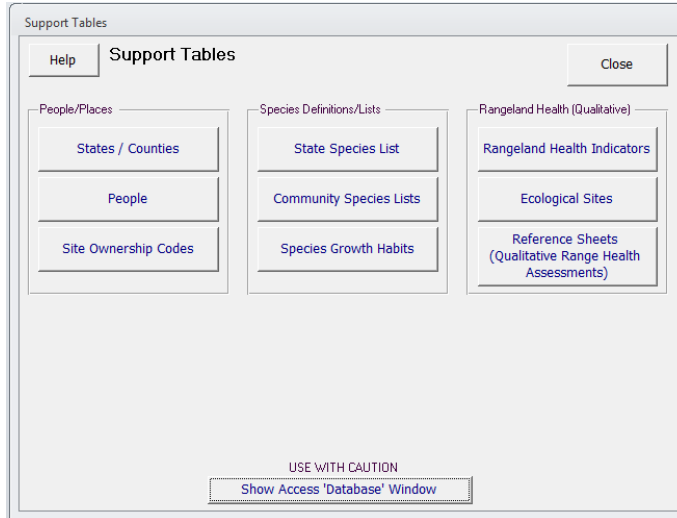
What does this mean? Mass Import of Species Data... Maintain Growth Habit, Duration, and Stabilizing

Species Notes:
rv_plants_list.txt rv_plants_list.txt

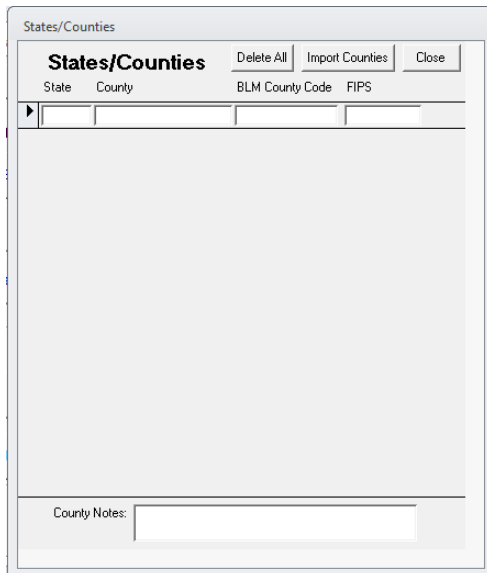
Import county names

DIMA comes with a set of Excel files that contain the county names for each state, but these must be loaded into DIMA before going out into the field.

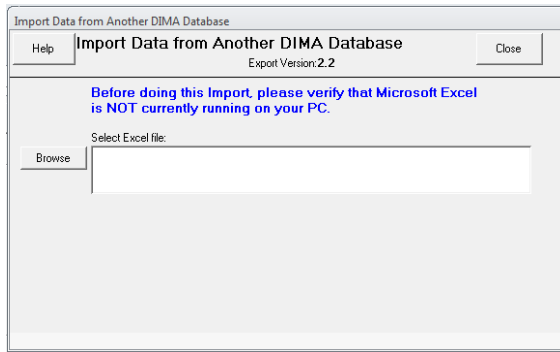
1. Click on the **Support Tables** button on the DIMA Home Page
2. Click on the **States/Counties** button on the Support Tables page



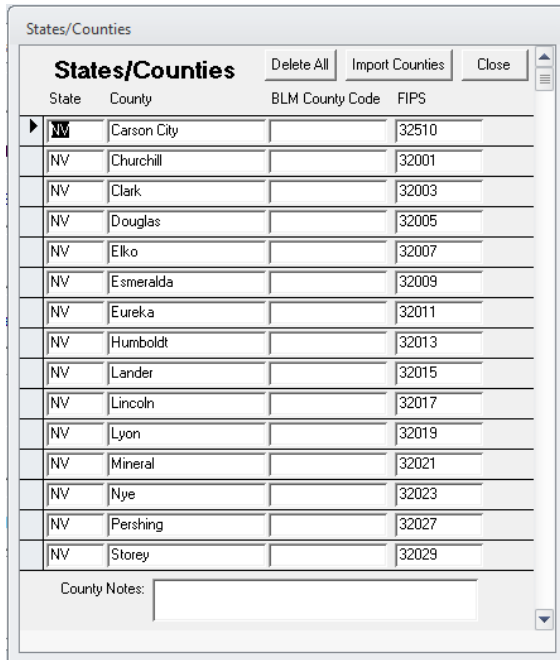
3. Click on the Import Counties button on the States/Counties page



4. Click the Browse button. Navigate to the directory where DIMA is located and open the Counties folder. Select the Excel file for the state you want and click Open.



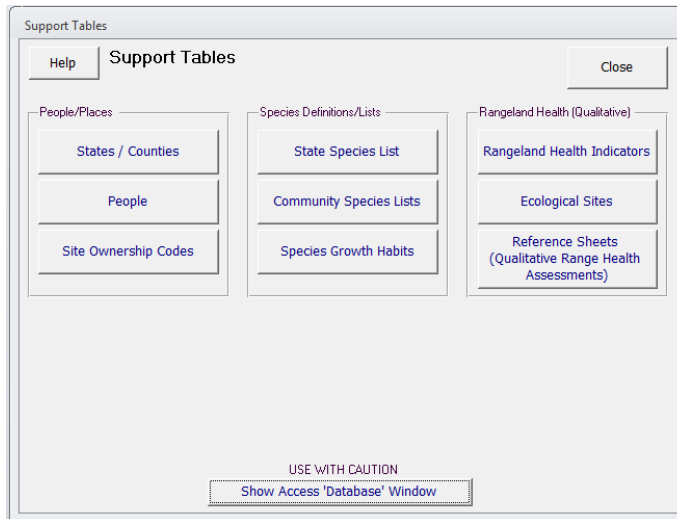
5. Click the **Do Import...** button to import the counties
6. Click **Close** on all the pages to return to the DIMA Home Page.



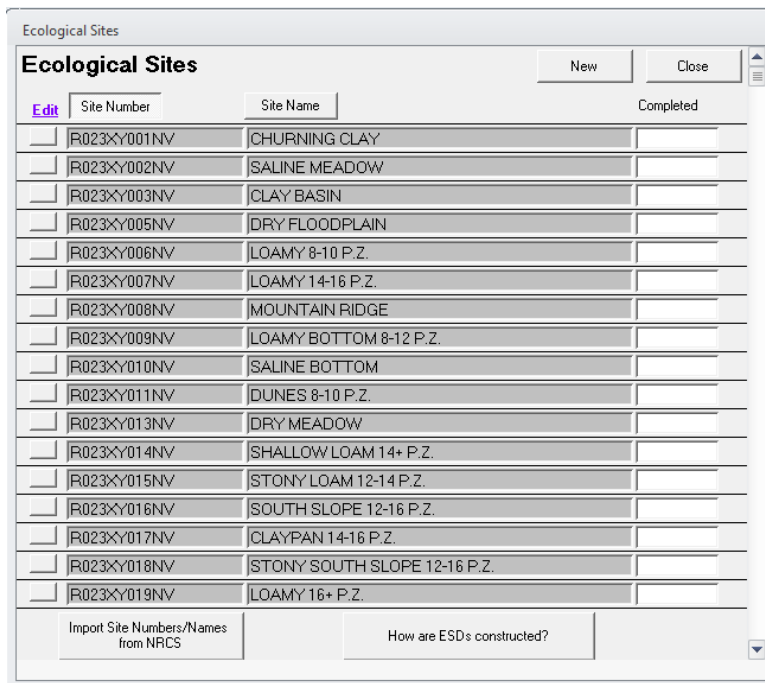
Import ecological site names

Similar to plant species names, there are just too many ecological sites to include them all in DIMA. You will need to identify which Major Land Resource Areas (MLRAs) you will be working in and download and load the appropriate ecological site names. This is important because interpretation of much of the monitoring and assessment data collected in DIMA is dependent on knowing what the ecological site is for each plot visited.

1. Click on **Support Tables** from the DIMA Home Page
2. Click on **Ecological Sites** from the Support Tables page



3. Click on the **Import Site Numbers/Names from NRCS** button at the bottom of the Ecological Sites page



4. Open a web browser and navigate to the NRCS ESIS website for downloading the ecological site names. Either click on the **“this site”** link or enter in the URL shown in the Mass Import

of Species Data page.

Mass Import of Ecological Sites

Close

What is the issue here?

1 Go to [this site](#) and follow the instructions to download and save the desired Ecological Site definitions. Note where you save the resulting text file. Here is the actual site URL:

If unsure of the MLRAs that you will need, go to [this site](#) for an online resource. We recommend verifying this information with your local NRCS office. Here is the URL:

2 Point to text file here:

Import Options

Import ALL Sites in file

Test: stop after importing

Import only ESDs for State code:

5. On the ESIS webpage, check **Rangeland**, select the MLRAs you need ecological sites for. Check **Ecological Site Number and Name** as the download type, and then click **Submit**

Welcome to the
**Ecological Site Description (ESD) System
for Rangeland and Forestland Data**

***Grazing Land and Spatial Analysis Tool Ecological
Site Number and Name Download***

Select Rangeland and/or Forestland.

Rangeland

Forestland

Select one or more MLRAs. Utilize shift-click or ctrl-click to select multiple MLRAs and press Submit.

MLRA

028A ▲
028B ▢
029X ▼
030X ▼

6. Scroll to the bottom of the ecological sites list page and click **Select All**. Then click **Download File**.

The screenshot shows a table with 9 rows of ecological site data. Each row has a checked checkbox in the first column. Below the table are three buttons: "Select All", "Download File", and "Clear All".

<input checked="" type="checkbox"/>	R030XC343AZ / Saline Bottom 10-13" p.z.
<input checked="" type="checkbox"/>	R030XC346AZ / Granite/Schist Upland 10-13" p.z.
<input checked="" type="checkbox"/>	R030XC352AZ / Sandy Loam Upland 10-13" p.z. Limy Subsurface
<input checked="" type="checkbox"/>	R030XC353AZ / Sandy Loam Slopes 10-13" p.z. Fine, Skeletal
<input checked="" type="checkbox"/>	R030XC355AZ / Granite/Schist Hills 10-13" p.z.
<input checked="" type="checkbox"/>	R030XC356AZ / Sandy Loam Slopes 10-13" p.z. Limy, Gravelly, Warm
<input checked="" type="checkbox"/>	R030XC379AZ / Loamy Slopes 13-17" p.z. Stony Surface
<input checked="" type="checkbox"/>	R030XC380AZ / Sandy Loam Upland 13-17" p.z. Cobble Surface
<input checked="" type="checkbox"/>	R030XC381AZ / Limestone/Sandstone Cliffs 13-17" p.z.

Select All Download File Clear All

7. Right-click on the **GSAT Download** link on the next page and save the file to your computer. Note where the file is saved.

The screenshot shows a page titled "Ecological Site Description (ESD) Download". Below the title is the text "Grazing Land and Spatial Analysis Tool Ecological Site Number and Name Download". A message states: "The data you requested to download are in a text, pipe (|) delimited file. Click on the link below to download the file." Below this is a large blue link labeled "GSAT Download" and a green text "67 KB". Further down, there is a "Return" button and a date "Updated April 16, 2010".

Ecological Site Description (ESD) Download

Grazing Land and Spatial Analysis Tool Ecological Site Number and Name Download

The data you requested to download are in a text, pipe (|) delimited file.
Click on the link below to download the file.

GSAT Download 67 KB

Click on above link to view data

Download the file as text by right clicking the above link then:
1) In IE, "Save Target As...",
or
2) In Netscape, "Save Link As..."

Return

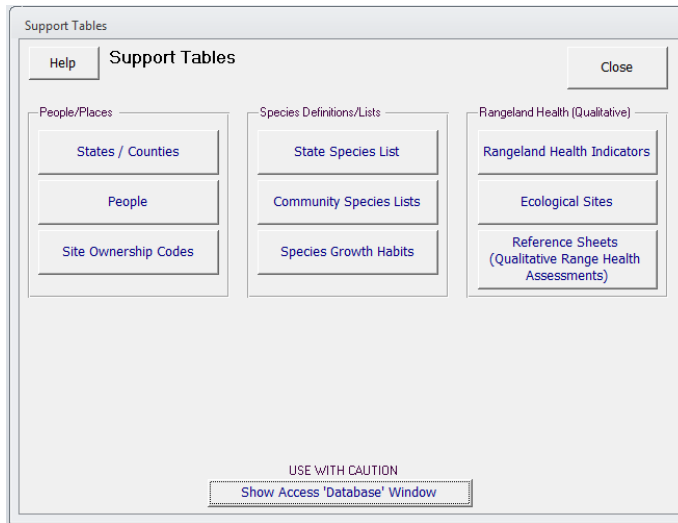
Updated April 16, 2010

8. Back in DIMA, click the **Browse** button and navigate to where the ecological site name file was saved. Select the file and click **Open**.
9. Click the **Validate Site list and import into this database...** button.
10. Click **Close** on all the forms to return to the DIMA Home Page.

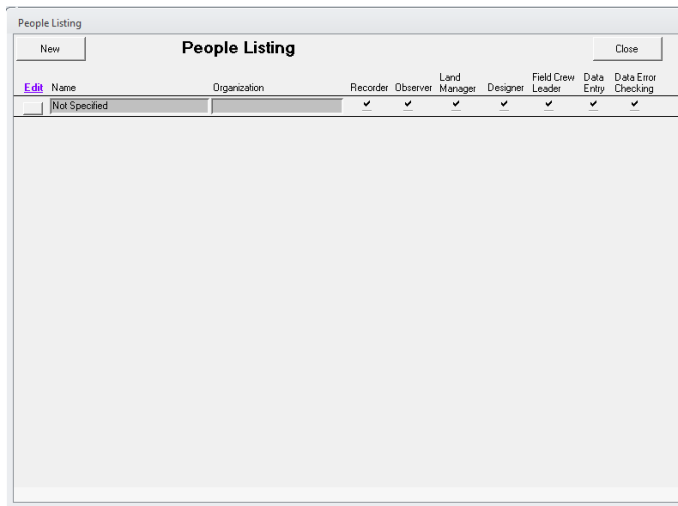
Add names to the people list

DIMA records the names of people who have participated in data collection, review, and editing. When using DIMA in the field, the data entry forms will be locked until the people who are observing and recording the data are specified. The names and contact information of people using DIMA should be entered before going out in the field.

1. Click **Support Tables** from the DIMA Home Page
2. Click the **People** button from the Support Tables page

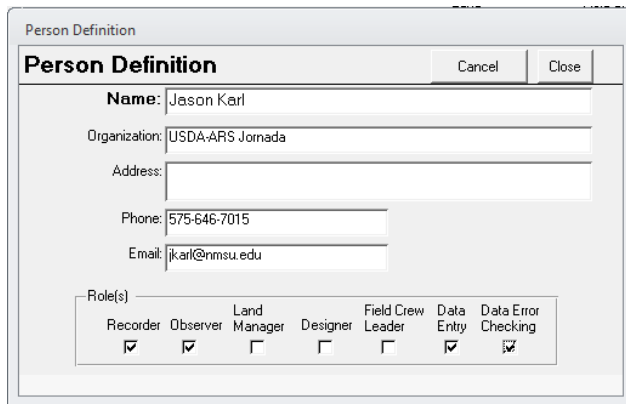


3. Click **New** to add a person to the database.



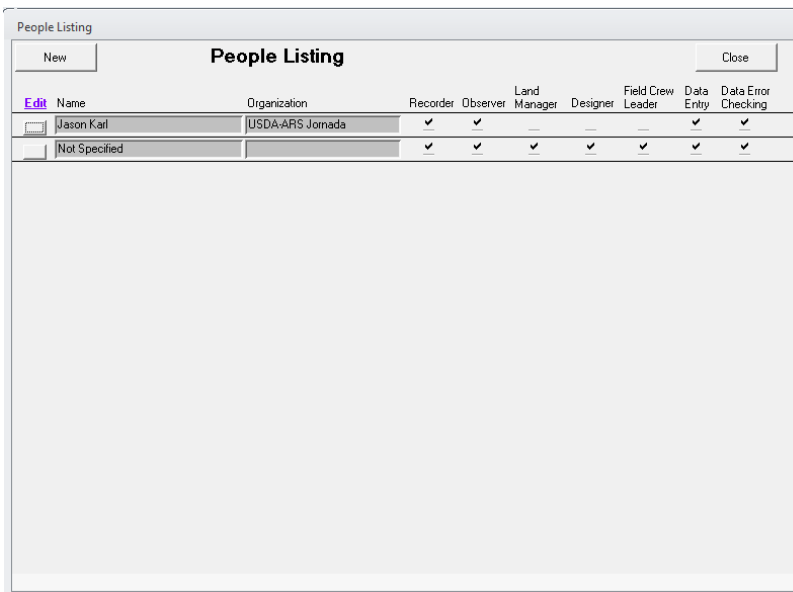
4. Fill in information about the person who will be using DIMA and their roles. *At a minimum, a name must be provided.* Click **Close** when finished to save the information and return to the

People Listing page.



A dialog box titled "Person Definition" with "Cancel" and "Close" buttons. It contains several text input fields: "Name" (Jason Karl), "Organization" (USDA-ARS Jornada), "Address" (empty), "Phone" (575-646-7015), and "Email" (jkarl@nmsu.edu). Below these is a "Role(s)" section with a grid of checkboxes for Recorder, Observer, Land Manager, Designer, Field Crew Leader, Data Entry, and Data Error Checking. The Recorder, Observer, Data Entry, and Data Error Checking checkboxes are checked.

5. To edit or delete an existing person listing, click on the **square button** to the left of the person's name.



A "People Listing" window with a "New" button and a "Close" button. It features a table with columns for Name, Organization, Recorder, Observer, Land Manager, Designer, Field Crew Leader, Data Entry, and Data Error Checking. The table contains two rows: "Jason Karl" and "Not Specified". The "Jason Karl" row has checkboxes for Recorder, Observer, Data Entry, and Data Error Checking checked, and dashes for Land Manager, Designer, and Field Crew Leader. The "Not Specified" row has all checkboxes checked.

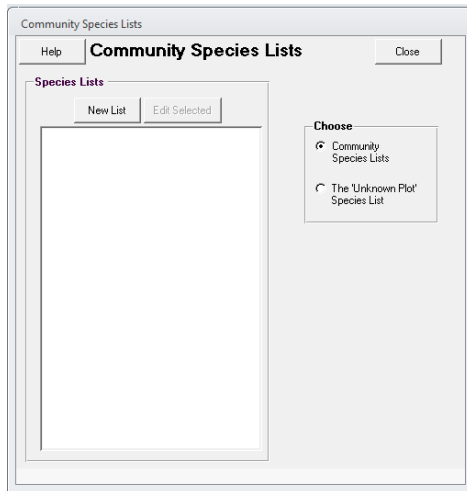
	Name	Organization	Recorder	Observer	Land Manager	Designer	Field Crew Leader	Data Entry	Data Error Checking
<input type="checkbox"/>	Jason Karl	USDA-ARS Jornada	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	—	—	—	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/>	Not Specified		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

6. Click **Close** on this page and the Support Tables page to return to the DIMA Home Page.

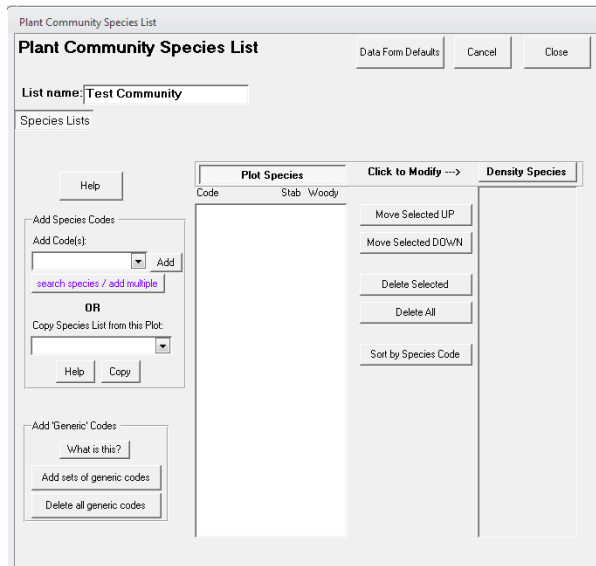
Creating Species Lists

List of species found at particular sites or for plant communities are a central part of the DIMA database. As you collect more and more data for plots in a site, the species lists for that site will become more complete and you can just copy lists between similar plots (this saves a lot of time). Initially, though, it pays to spend some time setting up a good species list to use for a plot. This section covers creating a community species list, but the technique is the same if you are creating a plot species list from scratch within the Plot Description page.

1. Click on **Support Tables** from the DIMA Home Page
2. Click on the **Community Species Lists** button.



3. Click on the **New List** button to create a new species list. In the Plant Community Species List page, give the list a name. You are now ready to start adding species to the list.



4. Enter the plant species code in the Add Code(s) text box. You can enter multiple plant codes at once by separating them with semicolons (DO NOT INCLUDE SPACES BETWEEN THE CODES). Click Add to add the plant species to the species list. *Note that you must use the*

official plant codes recognized in the USDA PLANTS Database.

- If you do not know the plant species codes or need to search for plant species, click the **search species/add multiple** button. This will open a window where you can search by plant code, scientific name, or common name.

Code	Scientific Name	Common Name	Synonym of...	Growth Habit
<input type="checkbox"/> PSSP6	Pseudoroegneria spicata (Pursh) A. Löve	bluebunch wheatgrass		
<input type="checkbox"/> PSSP1	Pseudoroegneria spicata (Pursh) A. Löve ssp. inermis (Scribn. &	beardless wheatgrass		
<input type="checkbox"/> PSSP5	Pseudoroegneria spicata (Pursh) A. Löve ssp. spicata	bluebunch wheatgrass		
<input type="checkbox"/> PSS17	Pseudognaphalium stramineum (Kunth) Anderb.	cottonbatting plant		
<input type="checkbox"/> PTAN2	Pterospora andromedea Nutt.	woodland pinedrops		
<input type="checkbox"/> PTAQ	Pteridium aquilinum (L.) Kuhn	western brackenfern		
<input type="checkbox"/> PTAQP2	Pteridium aquilinum (L.) Kuhn var. pubescens Underw.	hairy brackenfern		
<input type="checkbox"/> PTDR	Pterostegia dryarioides Fisch. & C.A. Mey.	woodland pterostegia		
<input type="checkbox"/> PTER1	Pteridium Gleditsch ex Scop.	brackenfern		
<input type="checkbox"/> PTER03	Pterospora Nutt.	pinedrops		
<input type="checkbox"/> PTER04	Pterostegia Fisch. & C.A. Mey.	pterostegia		
<input type="checkbox"/> PTERY	Pteryxia (Nutt. ex Torr. & A. Gray) Nutt. ex J.M. Coult. & Rose	wavewing		
<input type="checkbox"/> PTHE	Pteryxia hendersonii (J.M. Coult. & Rose) Mathias & Constance	Henderson's wavewing		
<input type="checkbox"/> PTPE	Pteryxia petraea (M.E. Jones) J.M. Coult. & Rose	rockloving wavewing		
<input type="checkbox"/> PTTE	Pteryxia terebinthina (Hook.) J.M. Coult. & Rose	turpentine wavewing		
<input type="checkbox"/> PTTEA	Pteryxia terebinthina (Hook.) J.M. Coult. & Rose var. albiflora (T	turpentine wavewing		
<input type="checkbox"/> PTTEC2	Pteryxia terebinthina (Hook.) J.M. Coult. & Rose var. californica	California wavewing		

- Type the first letters of a name or plant code in the **Beginning with:** text box and click **Go**. This will return a list of matching plants.

- Find the species you're looking for and click the **square button** to the left of its name to add it to the **Selected codes:** list at the top.

Code	Scientific Name	Common Name
<input checked="" type="checkbox"/> BRTE	Bromus tectorum L.	cheatgrass
<input type="checkbox"/> BRTO	Brassica tournefortii Gouan	Asian mustard

- Search for additional plants and click on their **square buttons** to add them to the selected codes list.

- When you are finished adding codes, click **OK** to add these species to your species list.

Plant Community Species List

Plant Community Species List Data Form Defaults Cancel Close

List name:

Species Lists

Help

Add Species Codes

Add Code(s):
 Add
[search species / add multiple](#)

OR

Copy Species List from this Plot:

Help Copy

Add 'Generic' Codes

[What is this?](#)

Add sets of generic codes

Delete all generic codes

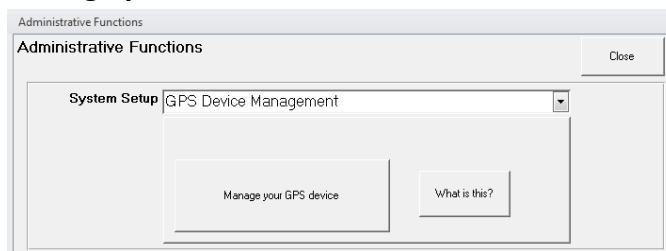
Plot Species			Click to Modify --->	Density Species
Code	Stab	Woody		
ARTRW8	N	N	Move Selected UP	
PSSP6	N	N	Move Selected DOWN	
BRTE	N	N	Delete Selected	
			Delete All	
			Sort by Species Code	
Maintain Species 'Stabilizing' and/or 'Woody'				

- From the Plant Community Species List, you can do additional operations like copying a list from an existing plot, sorting the species in the list to put common species at the top, or delete species from the list.
- Click **Close** when you are finished to save the list and return to the Support Tables page.

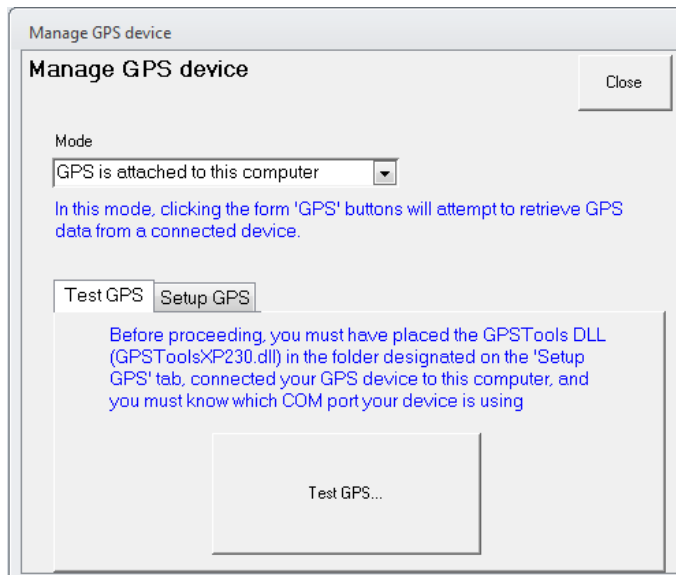
Setting up a GPS Unit

One powerful feature of DIMA is that it can interface directly with a GPS unit that is either built-into a computer (i.e, tablet PC) or linked to the computer via a cable or wireless (e.g., Bluetooth) connection. The link between DIMA and a GPS unit is done by way of a third-party piece of software. This software does not require Windows installation, but it does need to be registered to work with Access. The following steps will register the interface software and set up the GPS unit in DIMA.

1. Click **Administrative Functions** from the DIMA Home Page.
2. Select **GPS Device Management** from the System Setup dropdown box and click the **Manage your GPS device** button.

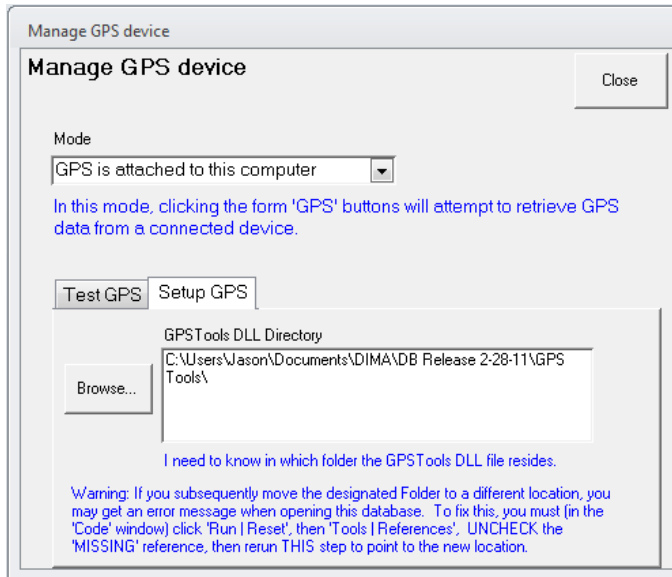


3. Select **GPS is attached to this computer** from the Mode dropdown box and then click the **Setup GPS** tab.

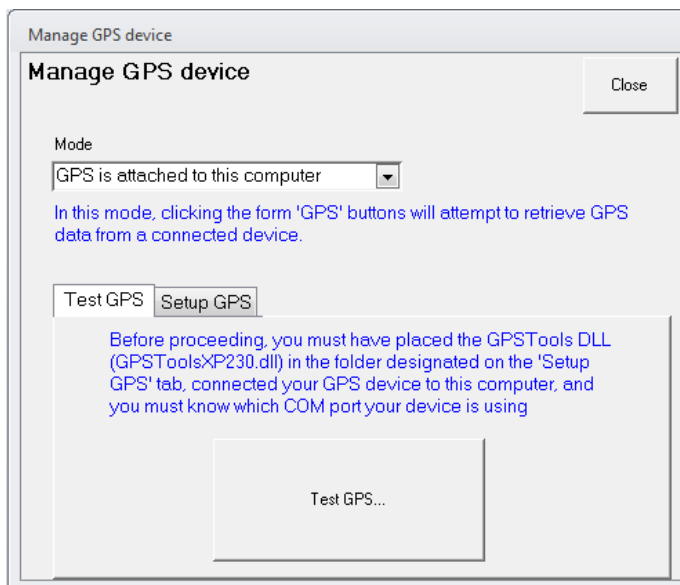


4. Click the **Browse** button on this page and navigate to the Directory where DIMA is stored. In that location you should find a directory called GPS Tools. Select this

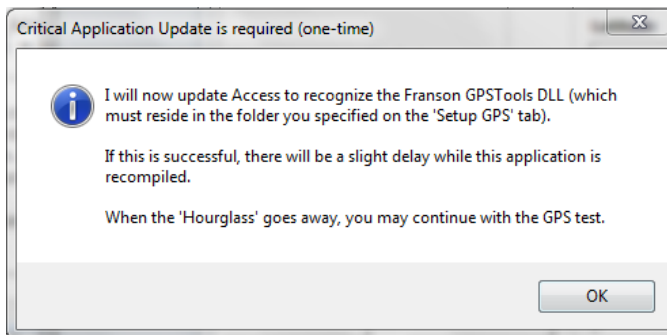
directory and click **Open**.



5. Click back on the **Test GPS** tab.



6. Click the **Test GPS** button. This will register the GPS Tools software component with Access and display the following message. Click **OK**.



- Click the **Read GPS** button to link to the GPS and acquire a coordinate reading. When you are finished, click **Accept**.

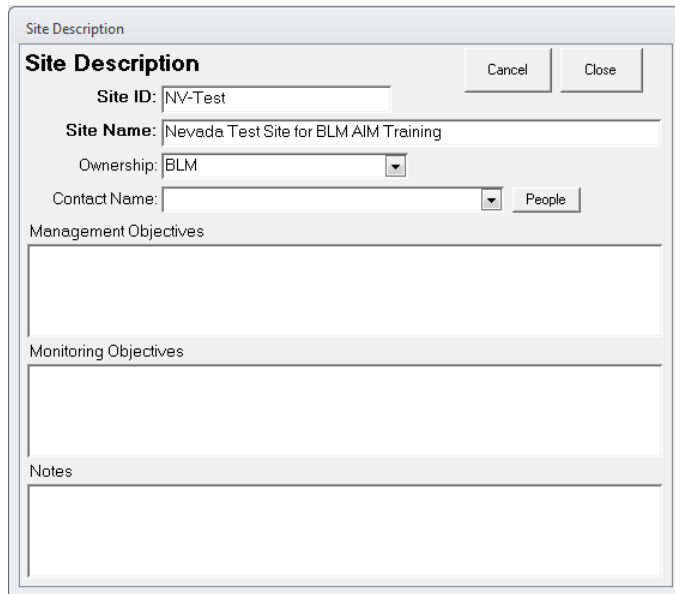
With the GPS unit activated in DIMA, data forms that have fields for geographic information (i.e., plots and lines/transects) will now display a GPS button that allows you to acquire coordinate values directly from the GPS unit.

Clicking on the **GPS** button will open the Get GPS Info page. Click on **Read GPS...** to get the current coordinate information, and click **Accept** to transfer the coordinate values back to the data form.

Creating a Site

In order to collect data on a plot or transect in DIMA, a site must first be created. This is a simple process that can either be done in the office or in the field. A plot can only be associated with a single site. Tags can be used in addition to the site if you need to categorize a plot multiple ways. *All the existing sites in a DIMA database are listed in the Quick Data View window of the DIMA Home Page.*

1. Click the New Site button from the DIMA Home Page.
2. Provide at least a Site ID and a Site Name.



The screenshot shows a 'Site Description' dialog box with the following fields and options:

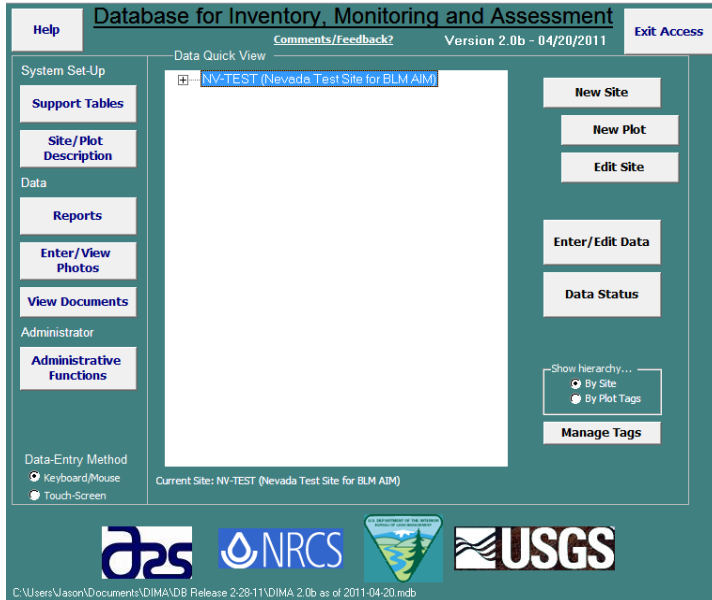
- Site ID:** NV-Test
- Site Name:** Nevada Test Site for BLM AIM Training
- Ownership:** BLM (dropdown menu)
- Contact Name:** (dropdown menu) People
- Management Objectives:** (text area)
- Monitoring Objectives:** (text area)
- Notes:** (text area)

Buttons for 'Cancel' and 'Close' are located in the top right corner of the dialog box.

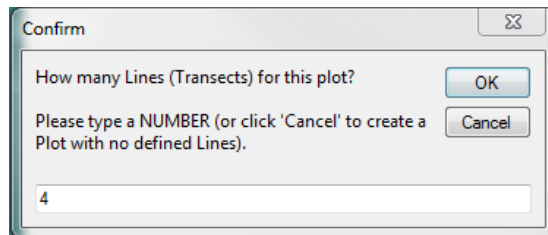
3. Click Close when you are finished to save and close the form and return to the DIMA Home Page.

Creating Plots within a Site

Once sites have been created, you can then create plots and begin recording data in the field. The New Plot button on the DIMA Home Page will only become active when you have selected a site in the Data Quick View window.



1. Click the **New Plot** button in the DIMA Home Page
2. Specify the number of transects that will be associated with this plot (typically 3 or 4) and click **OK**. This will automatically create transects and associate them with the plot you are creating.



3. Give the plot an ID number in the Plot Description Page and fill in any other attributes in the General fields (e.g., county, state, ecological site). It is important to verify in the field and

select the Ecological Site for the plot. Provide text directions to the plot also.

Plot Description

Site: NV-Test
 Plot ID: abcd1234
 Plot Established on: 4/20/2011 Today

General | Tags | **GPS/Lines** | Soil Verification

Disturbances/Mgt History | Species Lists | Additional Plot Info | Notes

State: County:
 Directions to Plot:
 Turn right at the fork in the road

Avg. Precip: 0.0 in Ecological Site: R023XY020NV LOAMY 10-12 P.Z.

Map Unit Symbol: Soil Series: Parent Material:

Slope %: 0.0 Aspect: Slope Shape:

Landscape Unit: Profile/Component (optional):

Management Unit:

4. Click on the **GPS/Lines** button and record the GPS coordinates for the center of the plot.

Plot Description

Site: NV-Test
 Plot ID: abcd1234
 Plot Established on: 4/20/2011 Today

General | Tags | **GPS/Lines** | Soil Verification

Disturbances/Mgt History | Species Lists | Additional Plot Info | Notes

GPS Coord. System: Decimal Degrees Datum: Zone:

(WGS84 Decimal Degrees recommended)

Easting: Plot: -123.4500 Northing: 45.6700 Elevation: 0.0 m

Add Lines...

Line ID	Azimuth	Easting	Northing	Elevation
1	0 Magnetic	Start 0.0000 End 0.0000	Start 0.0000 End 0.0000	0.0 m
2	0 Magnetic	Start 0.0000 End 0.0000	Start 0.0000 End 0.0000	0.0 m
3	0 Magnetic	Start 0.0000 End 0.0000	Start 0.0000 End 0.0000	0.0 m
4	0 Magnetic	Start 0.0000 End 0.0000	Start 0.0000 End 0.0000	0.0 m
*	0 Magnetic	Start 0.0000 End 0.0000	Start 0.0000 End 0.0000	0.0 m

a. Click on the **Species Lists** button to create a species list to use for data collection at this site. You can either create a new list by selecting species from the state species list or copy an existing list from another plot or one of the DIMA community species lists you created previously. See the section above on creating species lists for more

information.

Plot Description

Plot Description Data Form Defaults Delete Plot Close

Site: **NV-TEST**

Plot ID: **abcd1234** Plot Established on: 4/21/2011 Today

General Tags GPS/Lines Soil Verification

Disturbances/Mgt History Species Lists Additional Plot Info Notes

Help

Plot Species **Click to Modify -->** **Density Species**

Code Stab Woody

Move Selected UP

Move Selected DOWN

Delete Selected

Delete All

Sort by Species Code

Add Species Codes

Add Code(s):

Add

[search species / add multiple](#)

OR

Copy Species List from this Plot:

Help Copy

Add 'Generic' Codes

What is this?

Add sets of generic codes

Delete all generic codes

- b. Click **Close** to save the plot information and return to the DIMA Home Page.

Entering Field Data

The process for entering data for any of the methods starts the same way, by selecting a plot and specifying the method for entering the data.

1. Click the **Enter/Edit Data** button to open the Enter/Edit Data page

The screenshot shows the 'Enter/Edit Data' dialog box. It has a title bar 'Enter/Edit Data' and a 'Close' button. Below the title bar are 'Help' and 'Close' buttons. The main area is divided into two sections: 'Select Method' and 'Select Site and Plot'. The 'Select Method' section contains a list box with the following items: 'Gap Intercept', 'Line-Point Intercept' (highlighted), 'Rangeland Health (Qual. Assess.)', 'Soil Stability', and 'Species Richness'. The 'Select Site and Plot' section contains three dropdown menus: 'Site:' with 'NV-TEST' selected, 'Plot:' with 'abcd1234' selected, and 'Line:' with '(optional)' selected. Below these dropdowns is a 'Reset' button. At the bottom of the dialog, there are three buttons: 'New...' (highlighted in red), 'Show Existing Data Forms (based on the above selections)', and 'Show All Data Forms (for All Sites)'. Below the buttons is a table with the following columns: 'View', 'Site', 'Plot', 'Line', 'Date', '% Canopy', '% Bare', and '% Basal'. The table is currently empty.

2. Select the **site** and **plot** you want to enter data for and select the **method** being used to collect the data. The list at the bottom of the page will be blank if there are no data already collected for the method you selected. Once data have been collected at a plot, summaries of the data will be displayed.

The screenshot shows the 'Enter/Edit Data' dialog box with the same settings as the previous screenshot. The table at the bottom now contains one row of data. The 'View' column has a checkbox. The 'Site' column contains 'NV-TEST', 'Plot' contains 'abcd1234', 'Line' contains '1', 'Date' contains '4/21/2011', '% Canopy' contains '71', '% Bare' contains '0', and '% Basal' contains '0'.

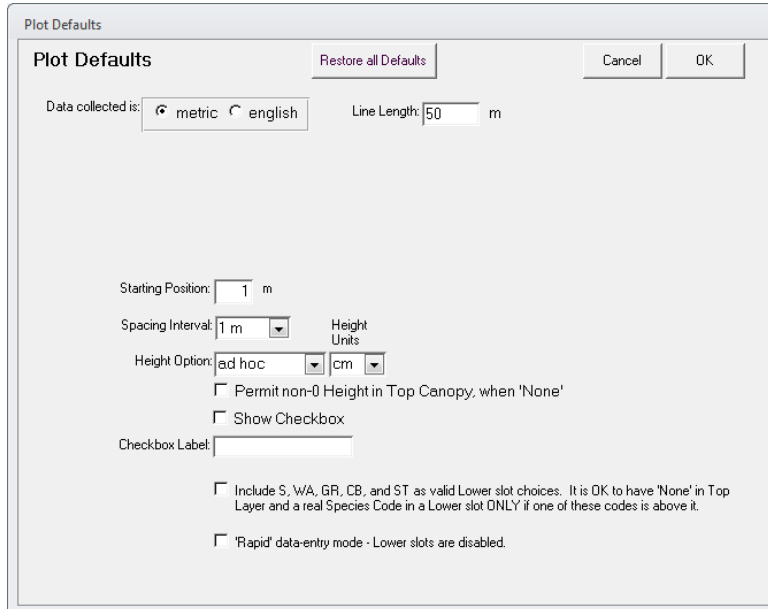
3. Click the **New** button to start collecting data for the selected method.

The following sections describe data entry for each method separately.

Line-point Intercept with Height

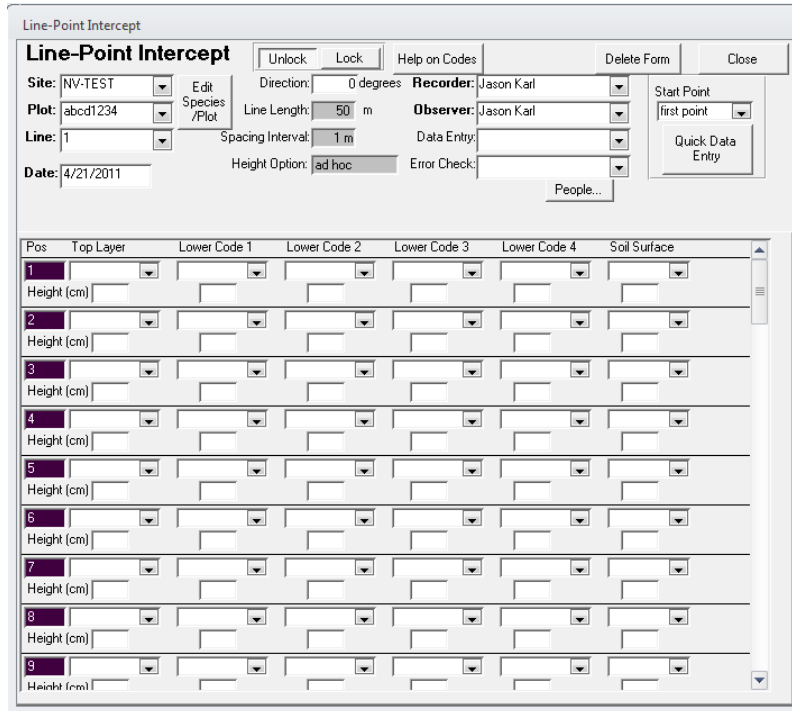
After clicking New on the Enter/Edit Data page, you must first specify the plot-default values for line-point intercept and then start entering the data.

1. Verify the correct values for the line-point intercept attributes (e.g., metric or English units, line length, point spacing interval).



The 'Plot Defaults' dialog box is used to configure the settings for a line-point intercept plot. It includes fields for 'Data collected is' (metric/english), 'Line Length' (50 m), 'Starting Position' (1 m), 'Spacing Interval' (1 m), and 'Height Option' (ad hoc/cm). There are also checkboxes for 'Permit non-0 Height in Top Canopy when 'None'', 'Show Checkbox', and 'Rapid' data-entry mode.

2. Set the **Height Option** to “ad hoc”. This will allow you to enter height information at whatever interval is appropriate for your sampling.
3. Click **OK** to proceed to the data entry screen.



The 'Line-Point Intercept' data entry screen displays a table for recording data at multiple points. The table has columns for 'Pos', 'Top Layer', 'Lower Code 1', 'Lower Code 2', 'Lower Code 3', 'Lower Code 4', and 'Soil Surface'. Each row represents a point, with a 'Height (cm)' field and a 'Top Layer' dropdown menu. The 'Recorder' and 'Observer' fields are set to 'Jason Karl'. The 'Date' is '4/21/2011'. The 'Line Length' is '50 m', 'Spacing Interval' is '1 m', and 'Height Option' is 'ad hoc'.

Pos	Top Layer	Lower Code 1	Lower Code 2	Lower Code 3	Lower Code 4	Soil Surface
1						
Height (cm)						
2						
Height (cm)						
3						
Height (cm)						
4						
Height (cm)						
5						
Height (cm)						
6						
Height (cm)						
7						
Height (cm)						
8						
Height (cm)						
9						
Height (cm)						

- Specify the **transect number, recorder, and observer**. The data entry controls on this form will be locked until these three attributes are filled in.
- You can enter LPI data directly in this screen by using the drop-down boxes that correspond to the point along the transect (Pos) and the canopy layer (e.g., Top, Lower Code 1, Soil Surface). Refer to the Monitoring Manual (Herrick et al. 2009) for details on how data should be collected and recorded. Heights for each canopy layer may be recorded as well. While this default form is convenient for viewing and quickly verifying LPI data, it is cumbersome for actually entering the data. The **Quick Data Entry** form works much better for entering LPI data in the field.
- Click on the **Quick Data Entry** button to open the quick data editor. The quick data editor is organized very differently from the standard LPI form. The page displayed on the Quick Data Editor corresponds to a single point along the transect. The point (position) number is displayed at the top-left of the page.

The screenshot shows the 'Line-point intercept Quick Data Entry Form' with the following details:

- Position Number:** 1
- Height option:** ad hoc
- Buttons:** Help on Codes, Help, Close
- Lookup Species:** Modify Plot's Species List
- Selected Codes Move to Top of Lists:**
- Current Data:**

Top Layer	Lower Code 1	Lower Code 2	Lower Code 3	Lower Code 4	Soil Surface
ARTRW8	PSSP6	L			S
Height (cm)	34	12			
- Species Lists:**

None	L	L	L	L	BR
ARTRW8	WL	WL	WL	WL	BY
PSSP6	ML	ML	ML	ML	CB
BRTE	ARTRW8	ARTRW8	ARTRW8	ARTRW8	CY
	PSSP6	PSSP6	PSSP6	PSSP6	D
	BRTE	BRTE	BRTE	BRTE	EL
					G
					LC
					M
					R
					S
					ST
					WA
					ARTRW8
					PSSP6
					BRTE
- Navigation:** Next..., Previous, Same As Last
- Go to Position #...:** [Dropdown menu]
- Notes:** [Text area]

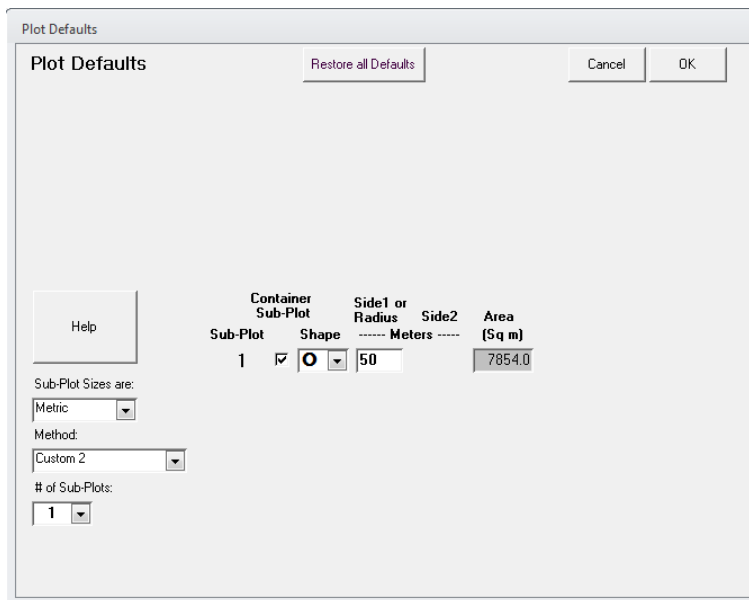
- Click on plant species codes to add them to the current point's data record. At a minimum, a soil surface must be specified. If plant canopies are encountered, a top canopy must be specified and then additional canopy layers in order from one to four.
- Clicking on a plant species code will add it to the Current Data box for that layer and promote it to the top of the species list. Over time, the most common species will tend to be toward the top of the lists.
- Click **Next** to go to the next LPI point on the transect. You can use the **Next, Previous, and Go to position #** controls to navigate to different points along the transect.
- Record the height of the different canopy layers as specified in the AIM protocol.
- Click on the **Modify Plot's Species List** button if you encounter a species that is not in the plant list. You can modify the plot species list and add new species encountered.
- Click on **Help on Codes** for explanations of what the standard LPI codes (e.g., L, BR, S, R) are.


13. Click on the **square button** below each canopy layer data box to clear the data entry for that canopy layer.
14. Click **Close** when you have recorded data for all points along the transect. This will return you to the standard LPI form.
15. Click **Close** when you are done entering the LPI data for that transect to return to the Enter/Edit Data page.
16. Repeat these steps for the additional transects.

Plot-level Species Richness

The total list of species occurring on a plot is one of the core indicators of the AIM strategy. This is accomplished by a plot-level inventory after the LPI data have been collected.

1. Select the Species Richness method and the appropriate site and plot in the Enter/Edit Data page.
2. Click **New** to create a species richness record for the plot. This will open the richness Plot Defaults page.
3. Choose “Custom 2” from the **Method** drop-down list and set the **# of Sub-Plots** to “1”. Check the box under Container Sub-Plot, change the shape to circular, and set the radius of the plot according to your plot dimensions. These settings follow the AIM protocol recommendations.



Sub-Plot	Container Sub-Plot	Shape	Side1 or Radius	Side2	Area (Sq m)
1	<input checked="" type="checkbox"/>		50		7854.0

Sub-Plot Sizes are:

Metric:

Method:

of Sub-Plots:

4. Click **OK** to open the Richness data page.
5. Enter the **Recorder, Observer, and Transect**. The data entry fields on the form will be locked until these are filled in. In the case of the AIM protocol, richness is estimated at the plot level, and not for individual transects. In this case, just choose line (transect) 1 for recording

the richness data, but actually count species over the entire plot.

Species Richness

Unlock Lock Delete Form Close

Site: NV-123 Edit Species /Plot # of Sub-Plots: 1 Recorder: CT
Plot: abcd Sub-Plot sizes are: Metric Observer: JG People...
Line: 1 Data Entry:
Date: 4/20/2011 Error Check:

Data Computations/Notes

Sub-Plot# /Description 1 Plot Species List (Canopy and Invasives): LYBE MOCE MUAR MUPO2 MUTO2 OPPH PAH15 PAIN2 PAOB PEAN PLMU3 POHA5 POJA5 POOL PRGL2 PRPA2 SAAB SATR12 SCBR2 SEBA3 SOEL SPAI SPC04 SPCR

Select Current Sub-Plot: 1 Current Sub-Plot Container
Shape: Side 1 Side 2

Delete SELECTED Species Count: 12

Plot Species List Single-Click
Add Species to Sub-Plot
Display Species Scientific/Common Name

6. Click on species in the plot species list (center column) that you observe in the plot. The plant codes for these species will be recorded in the plot richness field at the left.
7. Click **Close** when you are done recording species that occur in the plot.

Canopy Gap Intercept

Canopy gap intercept is also a core method of the AIM strategy. This method is implemented on the same transects as LPI and can be done quickly following LPI by reading the transect backwards (i.e., LPI starts from 0 and reads along increasing distances, gap intercepts starts at the maximum distance away from the origin and reads back down the tape toward the plot center).

1. Select the Gap Intercept method and the appropriate site and plot in the Enter/Edit Data page.
2. Click **New** to create a gap intercept record for the plot. This will open the gap intercept Plot Defaults page.



The screenshot shows a dialog box titled "Plot Defaults" with the following fields and controls:

- Plot Defaults** (Title)
- Restore all Defaults** (Button)
- Cancel** (Button)
- OK** (Button)
- Data collected is:** metric english
- Line Length:** 50 m
- Minimum Gap:** 20 cm
- Data to be Collected:** Canopy Gap only (dropdown menu)

3. Set the **Data to be Collected** drop-down box to "Canopy Gap only."

- Click **OK** to go to the gap intercept data collection page.

Gap Intercept

Unlock Lock Delete Form Close

Site: NV-TEST Edit Species /Plot Line Length: 50 m Recorder: Jason Karl
 Plot: abcd1234 Minimum Gap: 20 cm Observer: Jason Karl People...
 Line: 1 Date: 4/21/2011
 Plants that stop a gap:
 Perennial Plants Annual Forbs
 Annual Grasses Other
 Data Entry: Error Check:

Data Computations/Notes

Canopy Gap

Start	End	Gap Size
4950	4910	40
4875	4750	125

Canopy Gap data direction: High to Low
 Basal Gap data direction: Low to High

- Enter the **transect number, observer, and recorder** to unlock the gap intercept form.
- Check the **Canopy Gap data direction** settings. If reading the transect backwards after reading LPI, set this to "High to Low."
- Record the start and stop locations (i.e., distance from the origin of the transect) of canopy gaps in the form. Every time you enter values for a canopy gap a new row is added to the form.
- NOTE THAT THE CANOPY GAP FORM RECORDS GAPS IN **CENTIMETERS OR INCHES**.
- Click **Close** to save your data and return to the Enter/Edit Data page when you have finished recording canopy gaps for the transect.

Soil Stability

The soil stability test is a contingent method for the AIM strategy and is only measured when there is reason to believe that there are problems with soil stability at the plot. Refer to the Monitoring Manual (Herrick et al. 2009) for detailed instructions on implementing this method.

1. Select the Soil Stability method and the appropriate site and plot in the Enter/Edit Data page.
2. Click **New** to create a soil stability record for the plot. This will open the soil stability Plot Defaults page.

3. Verify that the settings are for “Surface Only” with an interval of 15 seconds.
4. Click **OK** to proceed to the data collection page.

5. Specify the **Recorder and Observer** to unlock the form.

6. Prepare soil samples and record the position of each sample in the test kit and the type of vegetation from each sample. The data form provides the times at which samples should be submersed in water and dipped.
7. Begin the soil sampling and record the stability values for each sample in the # column drop-down boxes.
8. Click **Close** when you are finished to return to the Enter/Edit Data page.

Rangeland Health Indicators

The 17 indicators described in Interpreting Indicators of Rangeland Health (Pellant et al. 2005) are a qualitative assessment technique. While they are not officially part of the AIM strategy core methods (but do consider some of the AIM strategy indicators in a qualitative sense), it is common for the Rangeland Health Indicators to be assessed at sites where the AIM Strategy quantitative monitoring is also taking place. The following steps illustrate how to record the rangeland health indicators in DIMA.

1. Select the Rangeland Health Indicators method and the appropriate site and plot in the Enter/Edit Data page.
2. Click **New** to create a Rangeland Health evaluation for the plot. This will open the Rangeland Health page.

Rangeland Health (Qual. Assess.)

Rangeland Health (Qual. Assess.) Delete Form Close

Site: NV-TEST Edit Ecol Site: R023KY5010R / SHALLOW LOAM 16-25 P2
Plot: abcd1234 Species / Plot Recorder: Jason Karl Reference Sheet
Date: 4/21/2011 Observer: Jason Karl Existing - downloaded from NRCS Open PDF...
People... Sheet Date: Author initials:

Evaluation Area Evaluation Sheet Attribute Ratings

Aerial Photo: _____

Site Photo Taken?

Evaluation Area Size: _____

Criteria used to select this particular evaluation area as REPRESENTATIVE: _____

Composition (indicators 10 and 12) based on:
 Annual Production
 Cover Produced During Current Year
 Biomass

3. Enter in pertinent information on the **Evaluation Area** tab. The Ecological Site for the plot should have already been defined when you created the plot. If it was not, close this form and go back to the plot form and define the ecological site for the plot.

- Click on the **Evaluation Sheet** tab.

Rangeland Health (Qual. Assess.)

Rangeland Health (Qual. Assess.) Delete Form Close

Site: NV-TEST Ecol Site: R023\Y50TOR / SHALLOW LOAM 16-25 PZ

Plot: abcd1234 Recorder: Jason Karl

Date: 4/21/2011 Observer: Jason Karl

Reference Sheet
Existing - downloaded from NRCS Open PDF...

Sheet Date: Author initials:

People:

Evaluation Area **Evaluation Sheet** **Attribute Ratings**

Indicator	Rating	Comment
1 Rills	SM	
2 Water-flow Patterns	M	
3 Pedestals and/or Terracettes	M	
4 Bare Ground _____%	M	Estimated as 45% bare ground from step point method
5 Gullies		
6 Wind-scoured and/or Deposition Areas		
7 Litter Movement		
8 Soil Surface Resistance to Erosion		
9 Soil Surface Loss or Degradation		
10 Plant Community Composition		
11 Compaction Layer		
12 Functional/Structural Groups		
13 Plant Mortality/Decadence		
14 Litter Amount		
15 Annual Production		
16 Invasive Plants		
17 Reproductive Capability of Perennial Plants		

- Fill in the ratings for the 17 indicators using the drop-down boxes. Provide adequate comments to document your rationale for the ratings you chose.
- Click on the **Attribute Ratings** tab when you are finished to see the overall site ratings.
- Click **Close** when finished to return to the Enter/Edit Data page.

References

- Herrick, J. E., J. W. Van Zee, K. M. Havstad, L. M. Burkett, and W. G. Whitford. 2009. Monitoring manual for grassland, shrubland, and savanna ecosystems. USDA-ARS Jornada Experimental Range, Las Cruces, New Mexico.
- Pellant, M., P. Shaver, D. A. Pyke, and J. E. Herrick. 2005. Interpreting indicators of rangeland health, version 4. BLM/WO/ST-00/001+1734/REV05, U.S. Department of the Interior, Bureau of Land Management, National Science and Technology Center, Denver, CO.