DIRT to TREES to WILDLIFE

Help Document

(revised 6 December 2018)

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Introduction

Dirt to Trees to Wildlife (DTW) is an online tool that facilitates exploration of the relationships between soils, forests, and wildlife species in New Hampshire. DTW analyzes mapped soils in a given project Area of Interest (AOI) to identify potential forest types expected to occur within each soils type. Forest types are related to preferred breeding habitat for New England wildlife species, and lists of those wildlife species are provided. Finally, in the report produced by the tool, users can include forest and wildlife management recommendations that are specific to the project AOI.

The output of the DTW tools is a report that lists soils, potential forest types, acreages, and optional forest management recommendations and wildlife species lists for the project AOI or forest stand polygons within the project AOI. Users can also produce project maps to accompany the output report.

The DTW tools operate based on a project Area of Interest (AOI). The project AOI is a single polygon feature that encompasses the geography for which the user wants to apply the analysis. An AOI can also be sub-divided into smaller polygons known as Forest Stands. However, subdividing an AOI into Forest Stands is only available to users who have signed in using an ArcGIS Online account. Guest Users cannot create Forest Stands. Signed-In users have the ability to save and edit the AOI and Forest Stand data and access additional features of the DTW tool. For those who intend to save and access their stand data over a period of time, please note that data are not maintained in a fail-safe environment. It is recommended that you download a backup copy of your stand data as a shapefile (see the final sections of this document for instructions). There are other tools available in the DTW Mapper not described in this document. For general help using the DTW Mapper interface, see the help documentation for the GRANITView Mapper, available here. Click here to watch a DTW introductory video.

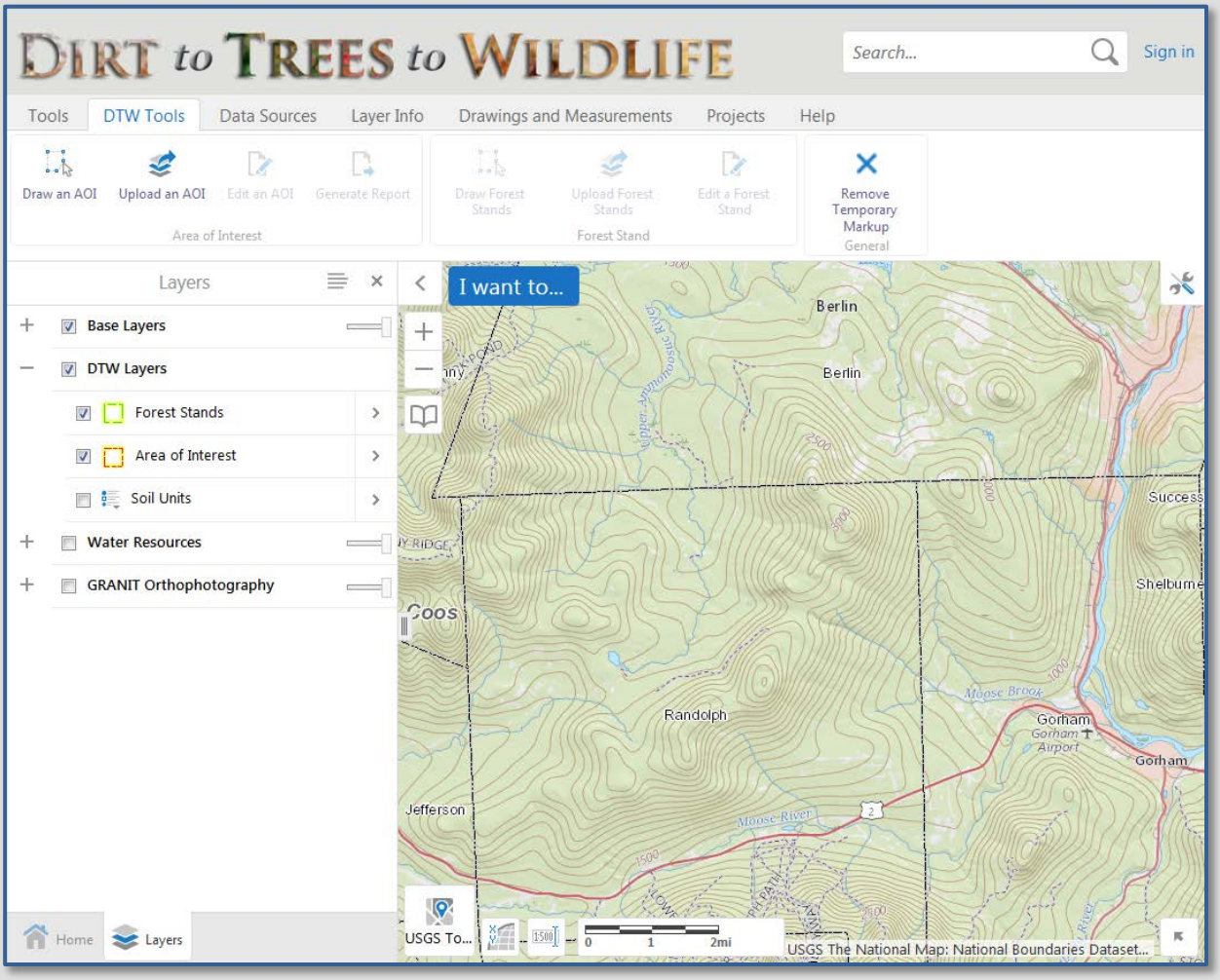


Figure 1. Example DTW viewer**.**

The following sections describe how to use the DTW Tools for either a Guest User (i.e. not Signed-In) or a user who has signed in using an ArcGIS Online account (i.e. Signed-in user).

1. Guest Users

1.1. **Open Viewer**. Begin by navigating a web browser to http://DTWMapper.unh.edu

1.2. **Select DTW Tools.** Switch to the **DTW Tools** tab of the toolbar, if necessary. (**Figure 2**). Notice that several of the tools are grayed out. This is because the user is not signed-in and therefore these tools are not available.

1.3. **Select Project AOI Input Method.** Begin by defining an Area of Interest (AOI) polygon. Use either the **Draw an AOI** or **Upload an AOI** method to define a project AOI (**Figure 2**).

1.4. **Draw Project AOI**. To screen digitize a project AOI, select **Draw an AOI** (**Figure 2**). The subsequent panel will show two options to digitize the project AOI, **Select by Polygon** and **Select by Rectangle** (**Figure 3**).

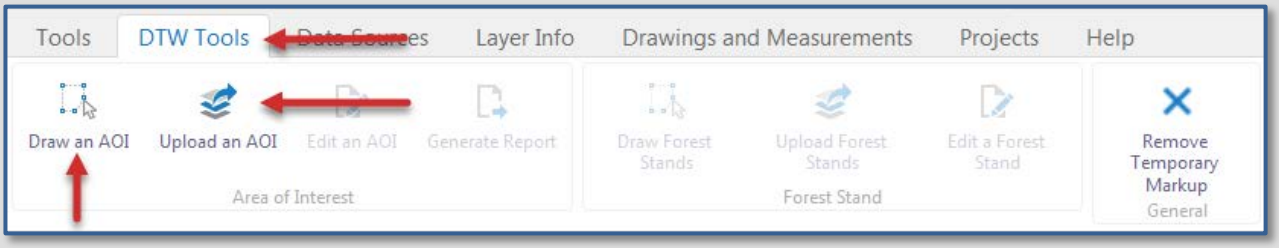


Figure 2. Draw an AOI**.**

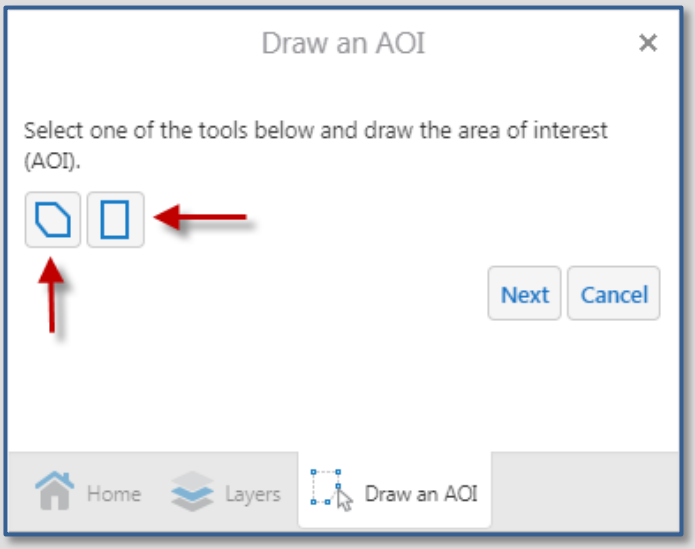


Figure 3. Draw an AOI Panel**.**

1.4.1. **Select by Polygon.** To use **Select by Polygon**, click the button and begin left-clicking a line to define the project AOI boundary. Finish the polygon by double-clicking.

1.4.2. **Select by Rectangle**. To use the **Select by rectangle** option, click the button then left-click and drag a box that encompasses the project AOI.

1.4.3. **Project Name**. After creating the project AOI, the following panel (**Figure 4**) will ask for a Project Name (this will be used to name the project AOI in the database). Enter a name and click the **Save** button.

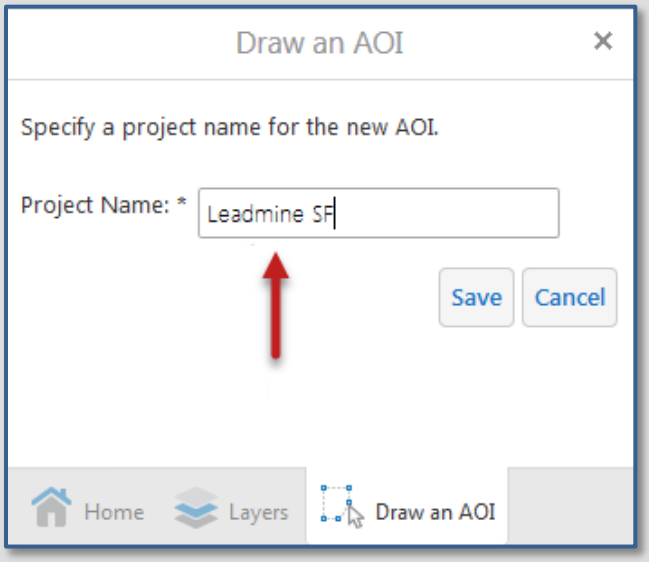


Figure 4. Enter Project AOI Name.

1.5. **Generate Report.** When using the DTW Mapper as a Guest, your AOI will not be saved; therefore, it is suggested that you generate the report now. You will not be able to return to the AOI later to generate a report. See Section 1.7.

1.6. **Upload Project AOI**. If you already have a boundary file for your Project AOI, you can upload it to the DTW Mapper. Select the **Upload an AOI** tool (**Figure 2**). Click the **Choose Files** button in the **Upload an AOI** panel (**Figure 5**). The required files are the .prj and .shp files from the shapefile that will be used. Then click the **Upload** button. The tool will zoom the map to the project AOI (note that the zoom scale may be greater than the extent of the project AOI in which case, use the +/- zoom tools to zoom out, if necessary).

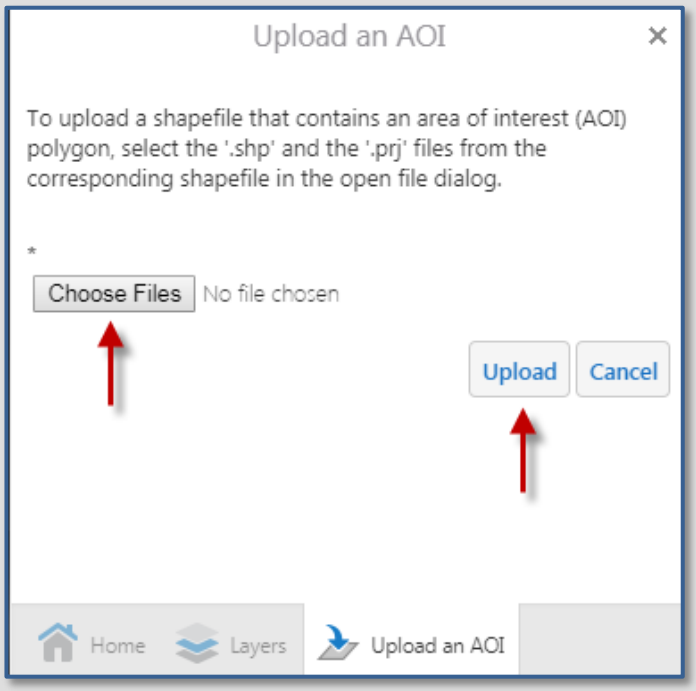


Figure 5. Upload an AOI.

1.6.1. **Project Name**. After creating the project AOI, the user will be prompted for a Project Name (see **Figure 4**). This will be used as the report title. Enter a name and click **Save**.

1.7. **Generate Report.** Once the AOI has been defined, click the **Generate Report** button in the following panel (**Figure 6**).

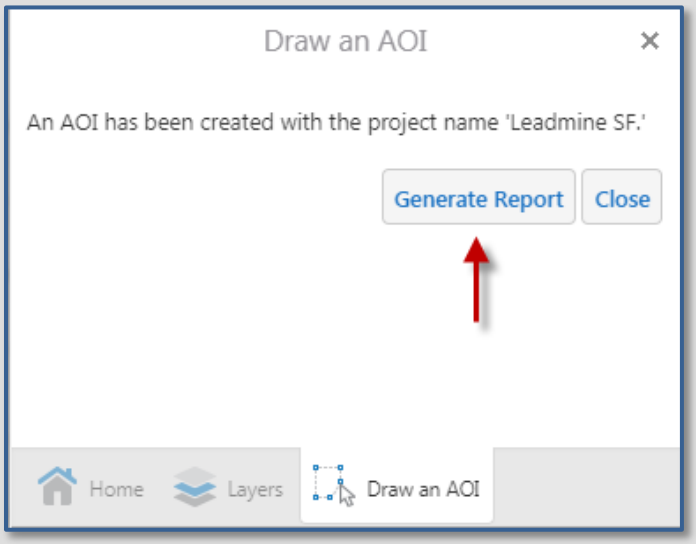


Figure 6. Generate Report.

1.7.1. **Choose Forest Type Management Recommendations to Append.** After a moment of processing, a drop-down list of forest types will be presented (**Figure 7**). This list represents forest types that are expected based on the soils types found in the AOI. Management recommendations (which include potential wildlife species) for each forest type can be appended to the report. The user may choose "select all" or may use shift/control and left click to choose specific forest types. If no management recommendations are desired, click **Skip**. Click **Next** to generate the report.

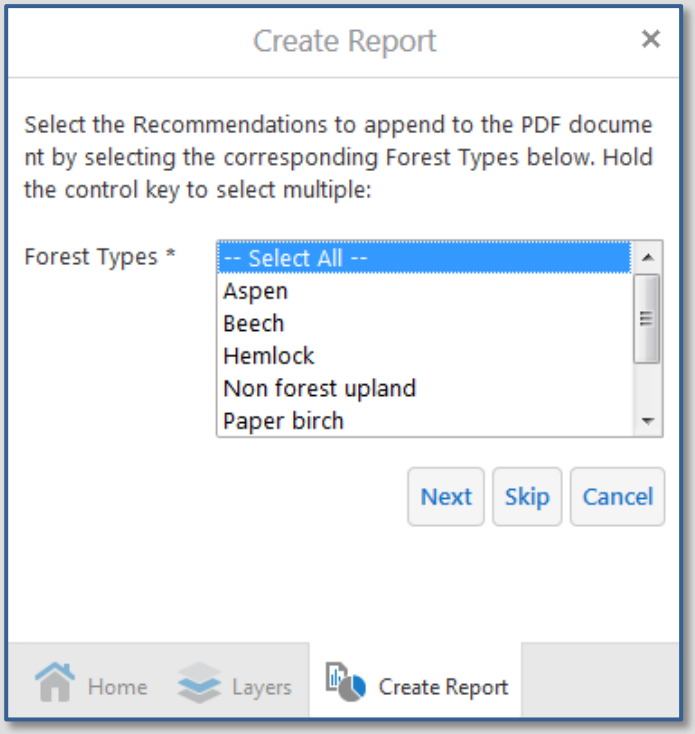


Figure 7. Choose Management Recommendations to Append.

1.7.2. **Choose Report Format.** In the next AOI Report Panel (**Figure 8**), choose to download the report as a .pdf or .xlsx file. If you have chosen to append management recommendations to the report, select the PDF version. The .xlsx version is a spreadsheet that contains only the soils information and potential forest types. Depending on how your browser opens documents, the report will appear in a new tab or window. You may also right click the Download Report link and choose "Open link in new tab".

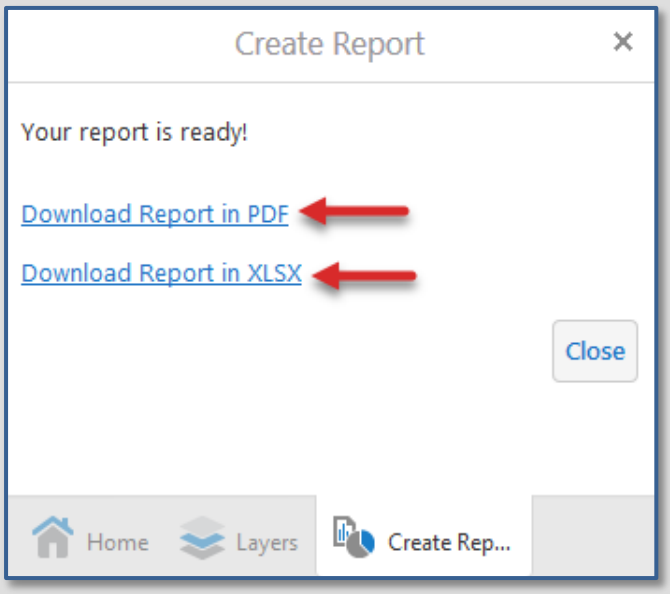


Figure 8. Choose report file type.

1.7.3. **View Report.** The main DTW Report contains a table of soils data and potential forest types (**Figure 9**). If you chose to append management recommendations when you generated the table, the report will also contain a list of wildlife species that may use each forest type as breeding habitat (**Figure 10**) and management recommendations for each forest type (**Figure 11**). Links in each Species List provide additional information about Species of Greatest Conservation Need through the website https://dirttreeswildlife.org.

Dirt to Trees to Wildlife Report

Project Name: Berlin AOI
Project Size: 1329.04 acres

Date: *Thursday, October 12, 2017*

The following report was generated by the Dirt to Trees to Wildlife tool. Based on a user-defined Area of Interest (AOI), the tool presents a main table of soils characteristics for an AOI along with a listing of Potential Forest Types. Details for each Potential Forest Type are presented in the appendix of this report, including a list of species that utilize the forest type for breeding habitat, general silvicultural guidelines that will maximize habitat quality for the listed species, and finally, recommendations for each Species of Greatest Conservation Need in said list. Please note that features less than 2 acres are omitted from the table below, which may result in a discrepancy between the Project Size listed above and the acreage totals at the bottom of this report.

Soil MU Symbol	Soil Map Unit Name	MU Acres	IFSG	Leak/Homer Soil Group	Leak/ Homer Soil Group Acres	Potential DTW Forest Types
549A	Peacham mucky peat	16.07	NC	1. Poorly Drained	150.6	Speckled Alder Red Maple Spruce-Fir Balsam Fir Non forest palustrine
832A	Peacham-Wonsqueak-Pillsbury association	134.53	NC			
73D	Berkshire fine sandy loam	4.34	IA	10. Fine Till	4.34	Non forest upland Northern Hardwoods Paper Birch Aspen
558B	Skerry fine sandy loam	3.6	IA	10C. Fine Till over compact Till. May contain Enrichedsoils	201.94	Non forest upland Northern Hardwoods Paper Birch Aspen
558C	Skerry fine sandy loam	16.65	IA			
559C	Skerry fine sandy loam	47.52	IA			
559D	Skerry fine sandy loam	46.6	IA			
78B	Peru fine sandy loam	8.18	IA			
78C	Peru fine sandy loam	47.17	IA			
79C	Peru fine sandy loam	32.22	IA			

Figure 9. Sample Report of Soils Data and Potential Forest Types.

FOREST TYPE: NORTHERN HARDWOODS (SUGAR MAPLE-BEECH-YELLOW BIRCH)

SPECIES LIST

Asterisk denotes Species of Greatest Conservation Need. Hyperlinks take you to recommendations specific to the species.

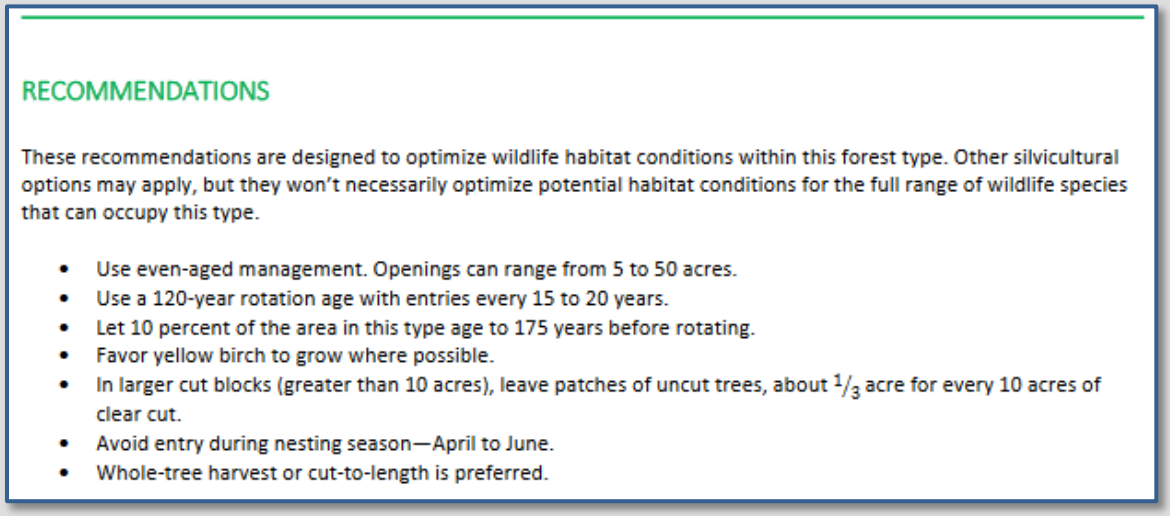
Reptiles and Amphibians

Five-lined skink*
Northern redbelly snake
Eastern box turtle*

Birds

Common goldeneye
Hooded merganser
Common merganser
Sharp-shinned hawk*
Northern goshawk*
Broad-winged hawk*
American kestrel*
American woodcock*
Barred owl
Northern saw-whet owl
Whip-poor-will*
Black crowned chickadee
White-breasted nuthatch
Eastern bluebird
Veery*
Swainson's thrush
Hermit thrush
Wood thrush*
Northern parula
Chestnut-sided warbler
Black-throated blue warbler*
Black-throated green warbler

Figure 10. Sample Report of Species List for a Potential Forest Type.



RECOMMENDATIONS

These recommendations are designed to optimize wildlife habitat conditions within this forest type. Other silvicultural options may apply, but they won't necessarily optimize potential habitat conditions for the full range of wildlife species that can occupy this type.

- Use even-aged management. Openings can range from 5 to 50 acres.
- Use a 120-year rotation age with entries every 15 to 20 years.
- Let 10 percent of the area in this type age to 175 years before rotating.
- Favor yellow birch to grow where possible.
- In larger cut blocks (greater than 10 acres), leave patches of uncut trees, about $^1/_3$ acre for every 10 acres of clear cut.
- Avoid entry during nesting season—April to June.
- Whole-tree harvest or cut-to-length is preferred.

Figure 11. Sample Management Recommendation for a Potential Forest Type.

2. Signed-In Users

Signed-In users are those who have signed-in to the viewer using an ArcGIS Online account of any type. The Signed-In user has many more options than does the Guest User. Some of these include uploading stand shapefiles, saving project data, editing project data geometry and attributes, and producing reports that summarize results by stand or the entire project AOI. As with the Guest User, a Signed-In user must first establish an AOI for the project. This can be done using the drawing or upload tools that were previously described for the Guest User. A Signed-In user may upload an AOI shapefile that contains forest stands, in which case the outer boundary of the shapfile will become the project AOI. The shapefile should use the predefined DTW schema because the field names and types must match the underlying database or the attribute information will be lost. The schema can be obtained in shapefile or geodatabase format. For more information, see Appendix I in this document. An ArcGIS Online account can be setup using this link.

2.1. **Open viewer**. Navigate a web browser to http://DTWMapper.unh.edu

2.2. **Sign In**. Sign in using the **Sign In** link at the top right of the viewer (**Figure 12**).

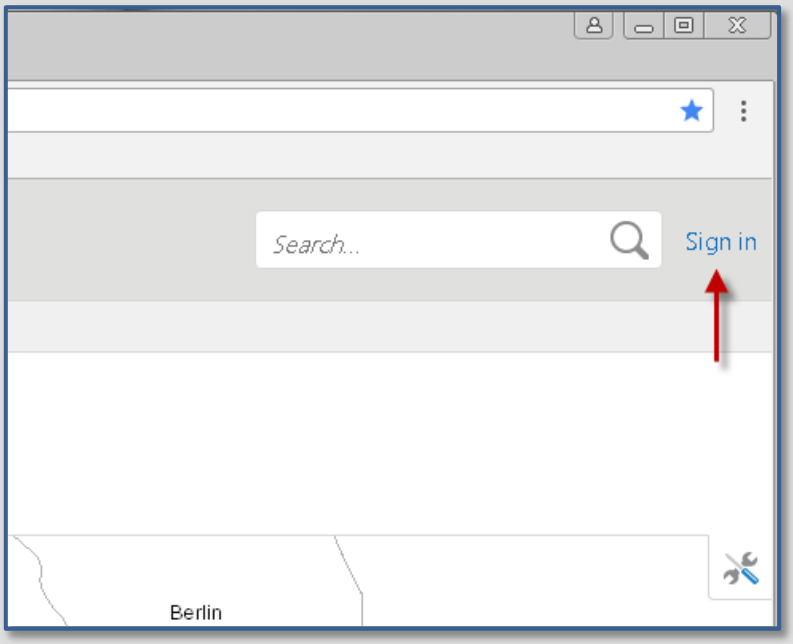


Figure 12. Sign-In Link.

2.3. **Select DTW Tools**. Switch to the **DTW Tools** tab at the top of the map, if necessary (**Figure 13**). Note the additional tools available to the user.

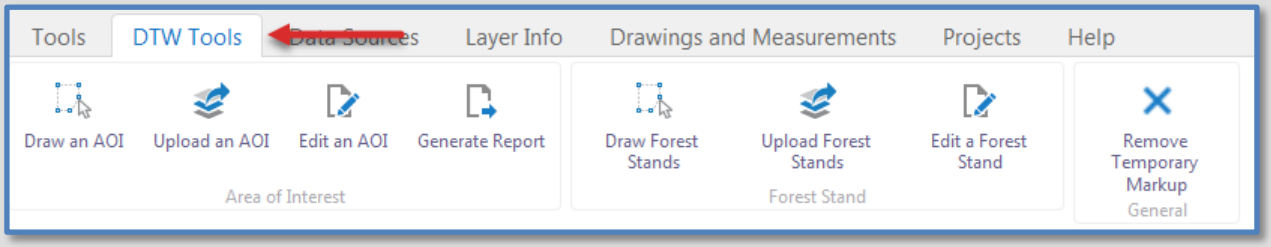


Figure 13. Signed-In DTW Toolbar.

2.4. **Define an AOI**. There are three methods to define the Area of Interest: draw an AOI, upload a shapefile with a single AOI polygon, or upload a shapefile containing an AOI divided into multiple forest stand polygons.

2.4.1. **Draw an AOI**. To screen digitize a project AOI, select the **Draw an AOI** tool from the **DTW toolbar** (**Figure 13**). The **Draw an AOI** panel (**Figure 3**) will show two options to digitize the project AOI.

2.4.1.1. **Select by Polygon**. To use the **Select by Polygon**, click the button and begin left-clicking a line to define the project AOI boundary. Finish the polygon by double-clicking.

2.4.1.2. **Select by Rectangle**. To use the **Select by Rectangle** option, click the button then left-click and drag a box that encompasses the project AOI.

2.4.1.3. **Project Name**. After creating the project AOI, the following panel (**Figure 4**) will ask for a **Project Name** (this will be used to name the project AOI in the database). Enter a name and click the **Save** button.

2.4.2. **Create Stands.** In the next panel (**Figure 14**), the user is asked to **Create Stands** or **Close**. If the user chooses **Close**, then the project AOI is created without stands (stands can be created at a later time, if desired). To proceed with stand creation at this point, select the **Create Stands** button.

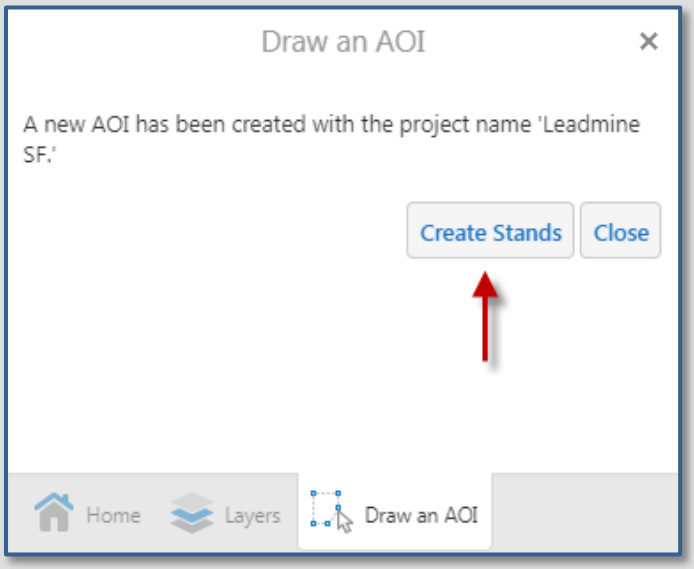


Figure 14. Create Forest Stands.

2.4.2.1. **Create One Forest Stand**. Next, the **Create Forest Stands** panel (**Figure 15**) is opened. Here, the user may create one stand (in which case the entire project AOI becomes the stand) or many stands. To create a single stand, click **One Stand**.

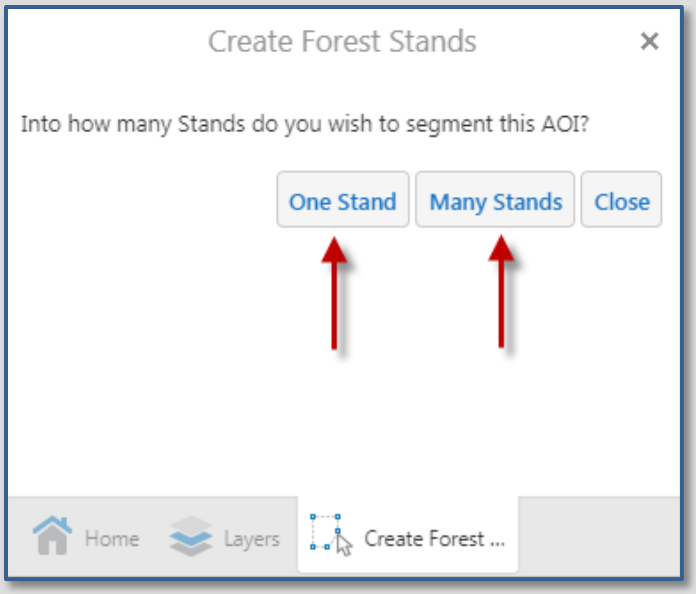


Figure 15. Create Forest Stands.

2.4.2.2. **Create Many Forest Stands**. To create multiple stands, click Create Many Stands. Left click in the map area and hold down the mouse button while tracing the boundary. This will cut existing stands (or the initial project AOI) into multiple stands. Be sure to extend the stand boundary beyond existing polygon boundaries (**Figure 16**).

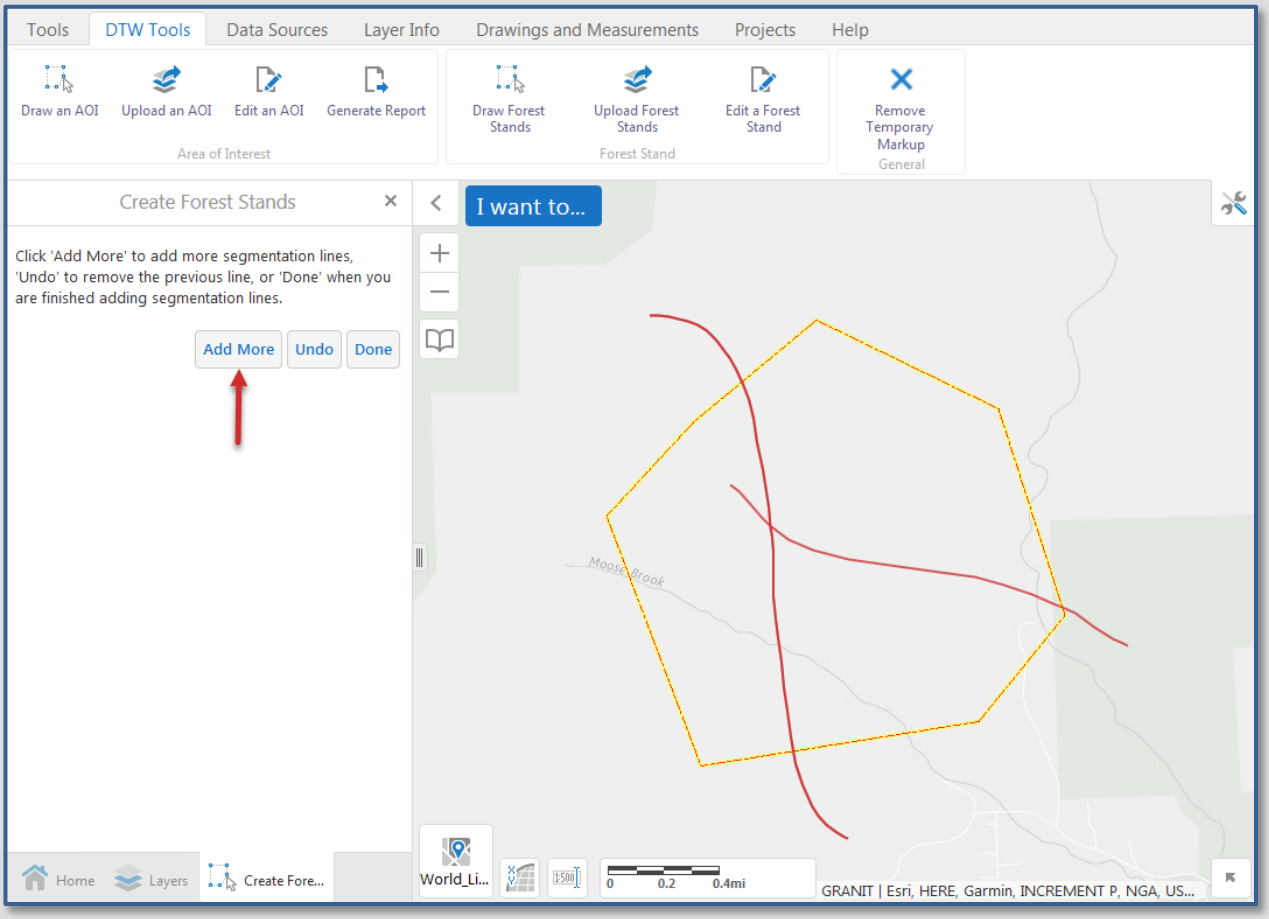


Figure 16. Draw Forest Stand boundaries with overlapping lines.

2.4.2.3. **Add More Stands.** Add stands by clicking the **Add More** button in the **Create Forest Stands** panel (see **Figure 16**) and proceeding as described above. This will need to be done for each additional stand. When finished, click the **Done** button.

2.4.2.4. **Add Attributes**. The next panel (**Figure 17**) presents the user with attribute fields the following 5 attribute fields.

Project Name: this field is automatically populated with the project name that was added in section 2.4.2.

Compartment: this field is a free form text field that the user can populate at their discretion.

Stand: this field is a free form text field that the user can populate at their discretion.

Stand Type: this field is a free form text field that the user can populate at their discretion. Typically, users will have their own stand coding domains that can used to populate this attribute.

Forest Type: this attribute must be populated with the choices offered in the drop-down list. They should be matched as closely as possible to the user's Stand Type. This information is used to associate the current conditions with the predefined list of forest type recommendations that (optionally) are included in the report.

Enter values for the stand attributes (note that the **Project Name** cannot be changed). After entering values for a stand, click **Save**. Continue these steps until all of the desired forest stands have been delineated. ***NOTE: all fields must be populated for the reporting tool to operate properly.***

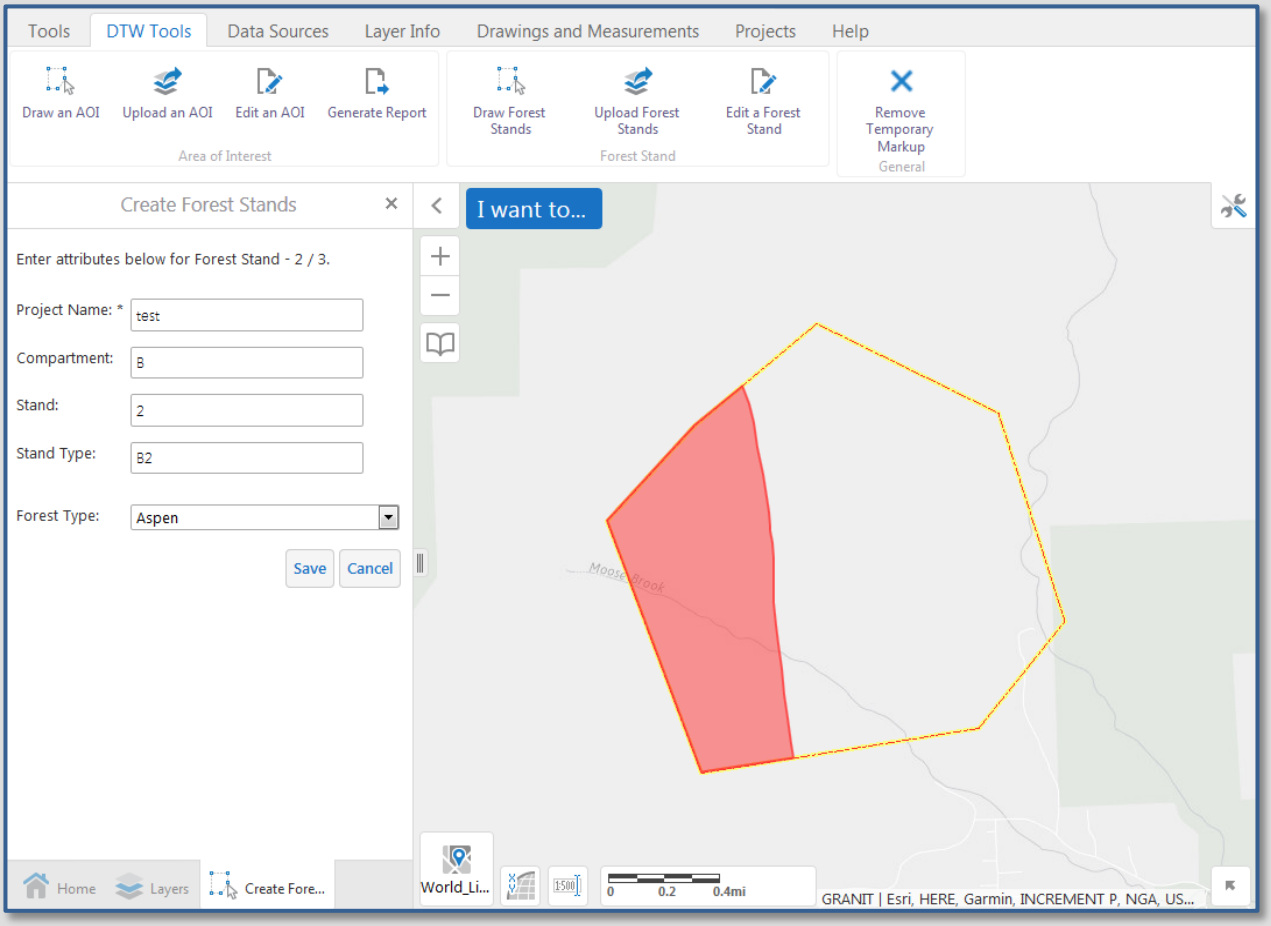


Figure 17. Add Attributes.

This concludes the instructions for drawing an AOI. Continue reading for instructions on uploading AOI shapefiles, or skip head to Section 2.5 to generate a report or Section 2.6 to edit forest stands.

2.4.3. **Upload project AOI**. The second option to create a project AOI is to upload a shapefile that represents the Area of Interest. To use this method, click the **Upload an AOI**  tool from the **DTW Toolbar**. NOTE: If your project AOI shapefile already contains multiple forest stands, you will need to use the "Upload Forest Stands" button to upload this file. This is described in Section 2.4.5.

2.4.3.1. **Choose Files**. Next, click the **Choose Files** button in the **Upload an AOI** panel (**Figure 5**). The required files are the .prj and .shp files from the shapefile to upload. Then click the **Upload** button. The tool will zoom the map to the project AOI (note that the zoom scale may be greater than the extent of the project AOI in which case, use the +/- zoom tools to zoom out, if necessary).

2.4.3.2. **Project Name**. After creating the project AOI, the next panel will ask for a **Project Name** (this will be used to name the project AOI in the database). Enter a name and click the **Save** button.

2.4.4. **Create Stands**. Next, the **Create Forest Stands** panel (**Figure 15**) is opened.

2.4.4.1. **Create Stands**. Next, the **Create Forest Stands** panel (**Figure 15**) is opened. Here, the user may create one stand (in which case the entire project AOI becomes the stand) or many stands.

2.4.4.2. **Create One Stand**. To create one stand, click the **One Stand** button.

2.4.4.3. **Create Many Stands**. To create multiple stands within the AOI, click **Many Stands**. Left click in the map and drag a line along the desired stand boundary. Be sure to extend the stand boundary beyond existing polygon boundaries (**Figure 16**).

2.4.4.4. **Add More Stands**. To add stands, click **Add More** and proceed as described above. This will need to be done for each additional stand. When finished, click the **Done** button.

2.4.4.5. **Add Attributes**. The next panel (**Figure 17**) presents the user with attribute fields that should be updated to reflect the stand conditions. The following attributes will be seen in the panel.

Project Name: this field is automatically populated with the project name that was added in section 2.5.2.2.

Compartment: this field is a free form text field that the user can populate at their discretion.

Stand: this field is a free form text field that the user can populate at their discretion.

Stand Type: this field is a free form text field that the user can populate at their discretion. Typically, users will have their own stand coding domains that can used to populate this attribute.

Forest Type: this attribute must be populated with the choices offered in the drop-down list. They should be matched as closely as possible to the user's Stand Type. This information is used to associate the current conditions with the predefined list of forest type recommendations that (optionally) are included in the report.

Enter values for the stand attributes, where necessary (note that the **Project Name** cannot be changed). After entering values for a stand, click **Save**. Continue these steps until all of the desired forest stands have been delineated. ***NOTE: all fields must be populated for the reporting tool to operate properly.***

This concludes the instructions for uploading an AOI shapefile. Continue reading for instructions on uploading a shapefile containing multiple forest stand polygons or skip head to Section 2.5 to generate a report or Section 2.6 to edit forest stands.

2.4.5. **Upload Forest Stands**. The third option to create forest stands is to upload a pre-existing shapefile containing stand attributes and geometry (see Appendix I for additional information). Using this method, it is necessary that the shapefile use the DTW database schema (e,g, field names, types). If the shapefile is in a schema other than that used by the DTW database, the attributes will not carry through to the DTW database (although the geometry will do) and the user will need to re-enter the values once it is uploaded. To upload a forest stand shapefile, in the **DTW Toolbar** (see **Figure 17**), click the **Upload Forest Stands** button

2.4.5.1. **Choose Shapefile.** From the Create Forest Stands panel (**Figure 18**) that opens, select Choose Files and add the .dbf, .prj, and .shp that belong to the shapefile. Click **Upload** (if the shapefile schema does not match the DTW schema, a warning message will appear).

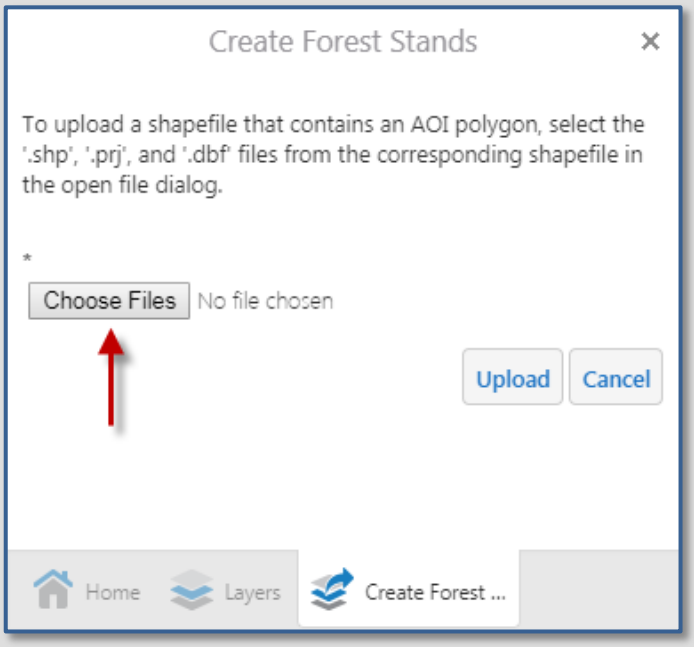


Figure 18. Choose Shapefile Files.

2.4.5.2. **Create Forest Stands**. Next, the **Create Forest Stands** panel (**Figure 19**) will appear. Enter a project name, if necessary, and click the **Create Stands** button. The tool will create stands in the DTW database and report the number of features in a pop-up window.

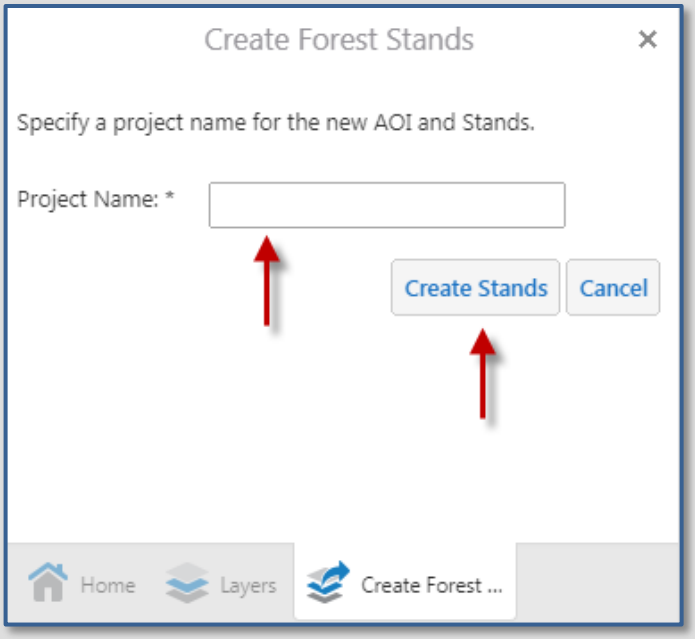


Figure 19. Create Forest Stands from Uploaded Shapefile.

This concludes the instructions for uploading forest stands shapefile. Continue reading to generate a report for your AOI or skip ahead to Section 2.6 to edit forest stands.

2.5. **Generate Report**. There are two methods to create a stand report, using the **Generate Report** button on the **DTW Toolbar** or from the **Map Tips** pop-up window.

2.5.1. **Generate report from toolbar**. From the DTW tab of the toolbar (**Figure 20**), click the **Generate Report** button.

2.5.1.1. **Select an AOI**. From the **Select a Report** panel, choose an AOI project from the drop-down menu (**Figure 20**).

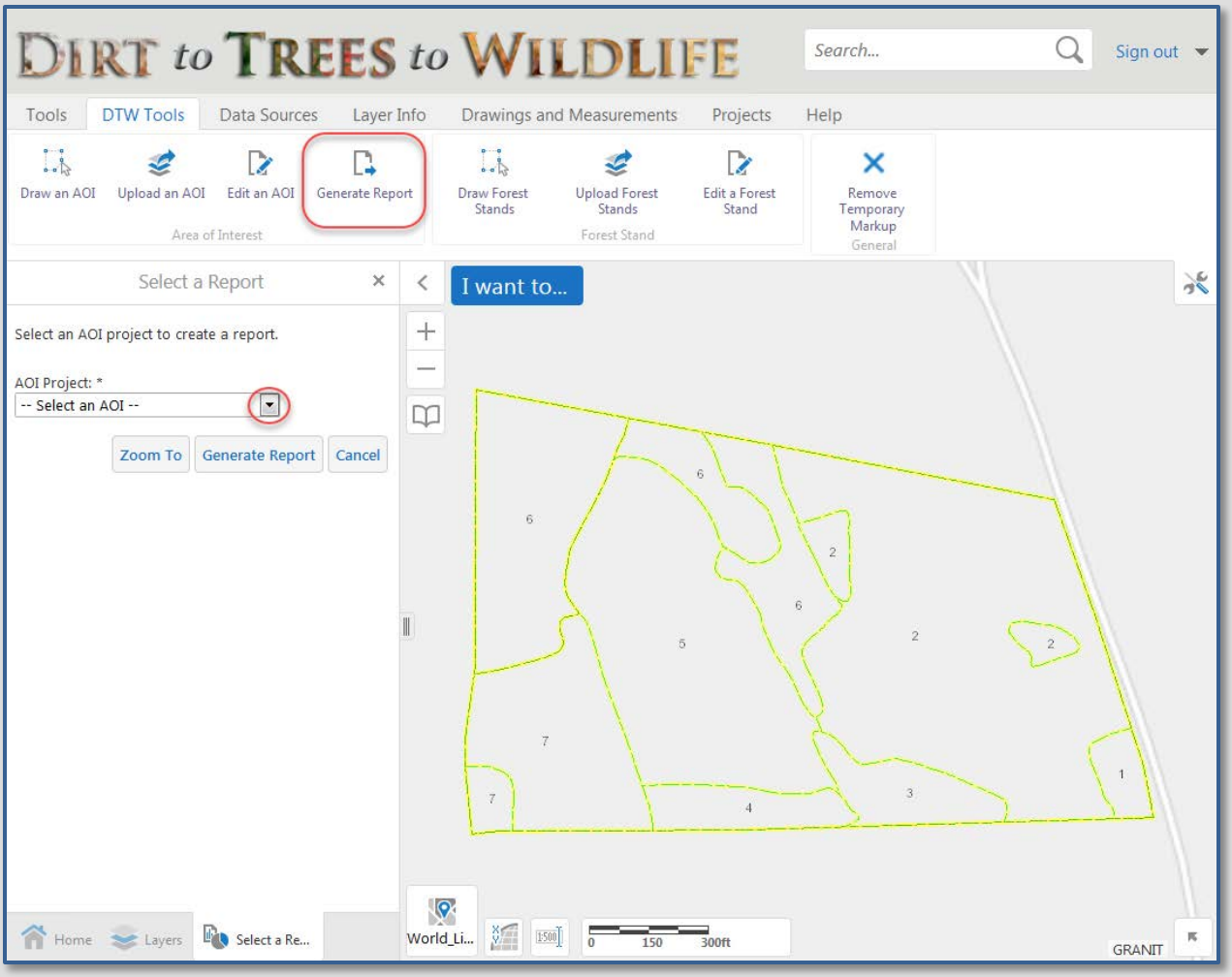


Figure 20. Select an AOI project.

2.5.1.2. **Select a report type**. Choose to generate a report for the whole AOI or by forest stands (**Figure 21**). Click **AOI Report** to generate a report for the entire project AOI without summarizing the results by stands. Click **Create Stand Report** to generate a report that summarizes the results by stand.

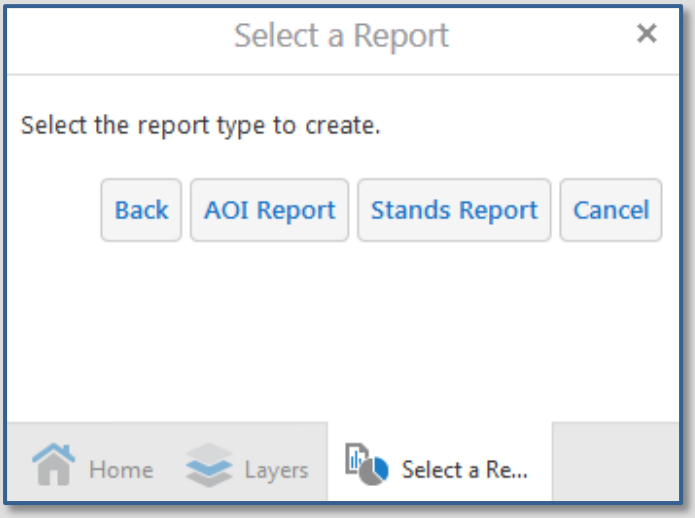


Figure 21. Select a report type.

2.5.1.3. **Create Report**. After a moment of processing, a drop-down list of forest types (**Figure 22**) will be presented. This list represents forest types that are expected based on the soils types found in the AOI. Management recommendations (which include potential wildlife species) for each forest type can be appended to the report. The user may choose "select all" or may use shift/control and left click to choose specific forest types. If no management recommendations are desired, click Skip. Click Next to generate the report. Next, choose to download the report as a pdf or xlsx file (**Figure 23**). Depending on how your browser opens documents, the report will appear in a new tab or window. You can also right click the **Download Report in PDF** link and choose **Open link in new tab**.

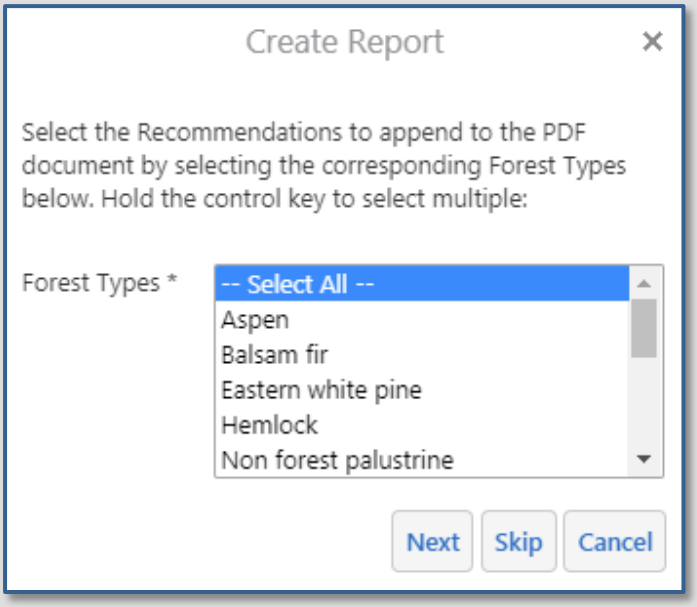


Figure 22. Forest Types Drop-Down List.

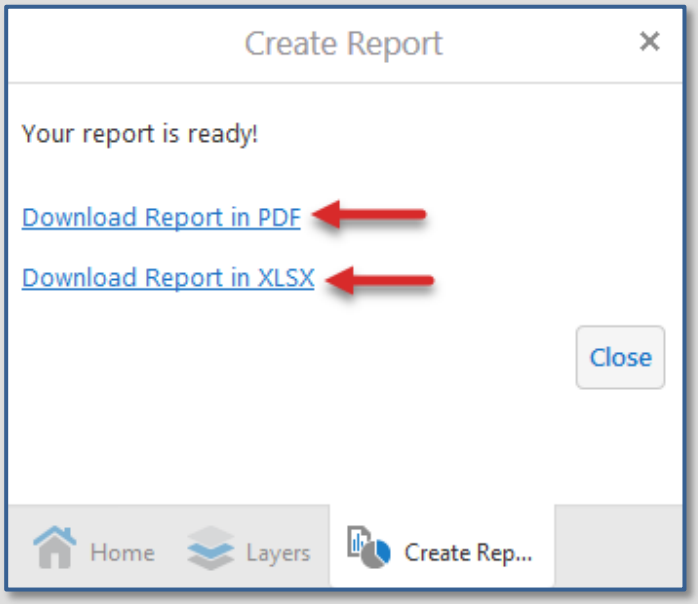


Figure 23. Choose report file type.

2.5.2. **Generate report from Map tips**. Another method to create a report is to use the **Map Tips** pop-up window (**Figure 24**). To access this window, left click a stand or AOI in the map. Use the drop-down menu in the upper left corner of the Map Tips window to select the desired AOI. Click the link for "Generate AOI report" or "Generate Stands report." For more information on generating a report, see Section 2.5.1.3. Tip: the layers that are listed in the

Map Tips pop-up window can be controlled by turning layers on/off in the **Layers** (or Table of Contents) panel.

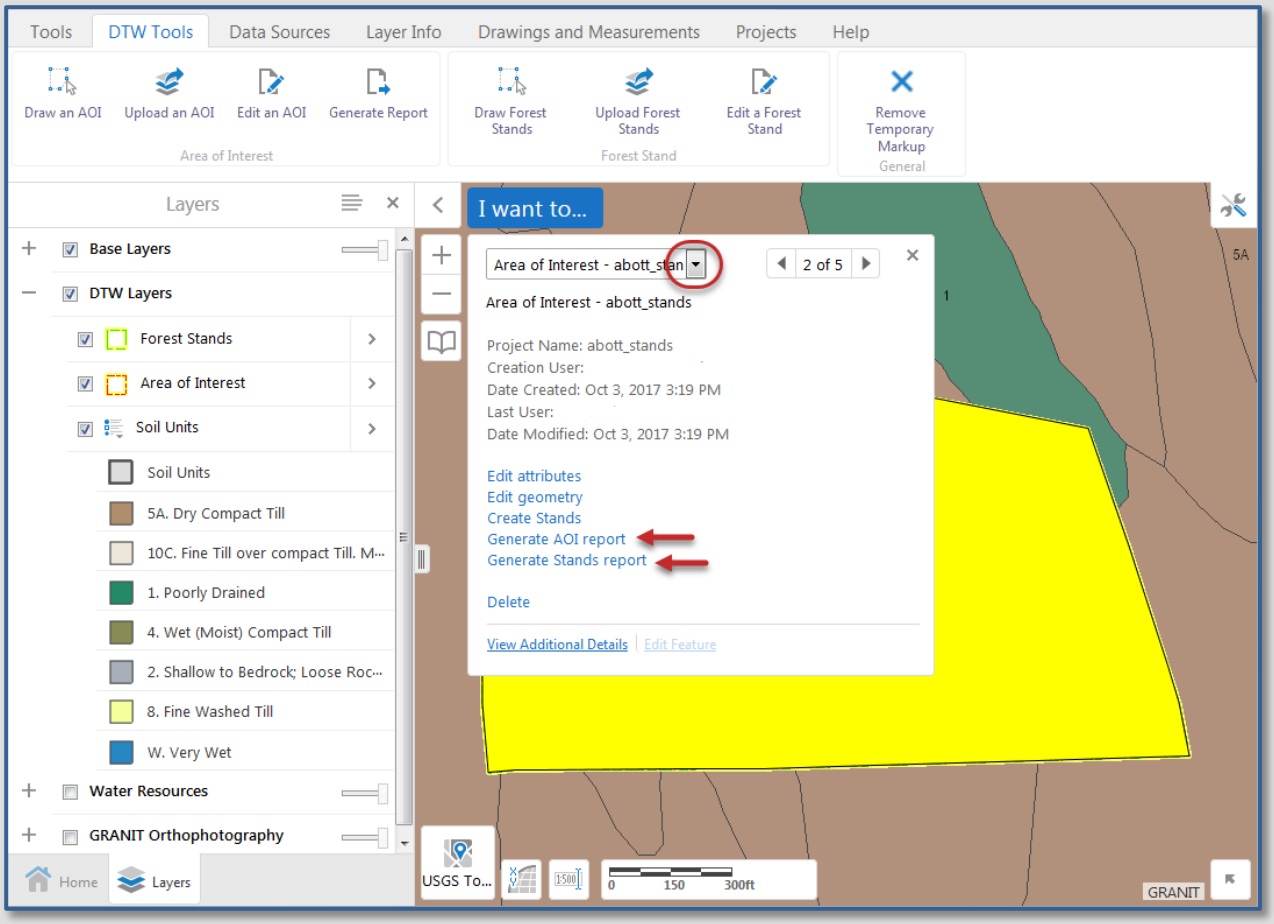


Figure 24. Use the Map Tips window to create a report.

2.6. **Edit Project AOI, Create Forest Stands, or Edit Forest Stands**. Signed-In users have the capability to edit the geometry and attributes of their project AOIs or forest stands (for project AOIs, the only editable attribute is the **Project Name**) and also to add forest stands to a pre-existing project AOI.

2.6.1. **Edit AOI Attribute**. Edit the Project Name of an AOI by clicking the **Edit an AOI** button from the **DTW Tools** toolbar, or by clicking the AOI in the map and selecting the **Edit attribute** link in the **Map Tips** pop-up window,

2.6.1.1. **Edit Project AOI Attribute From Toolbar**. To edit a project AOI attribute from the toolbar, select the **Edit an AOI** button from the **DTW Tools** tab (**Figure 25**). This will open the **Edit AOI** panel. Select the project AOI from the drop-down list and click the **Edit attributes**

button. Enter a new **Project Name** for the project AOI and click **Save**. The **Project Name** is the only editable attribute for project AOIs.

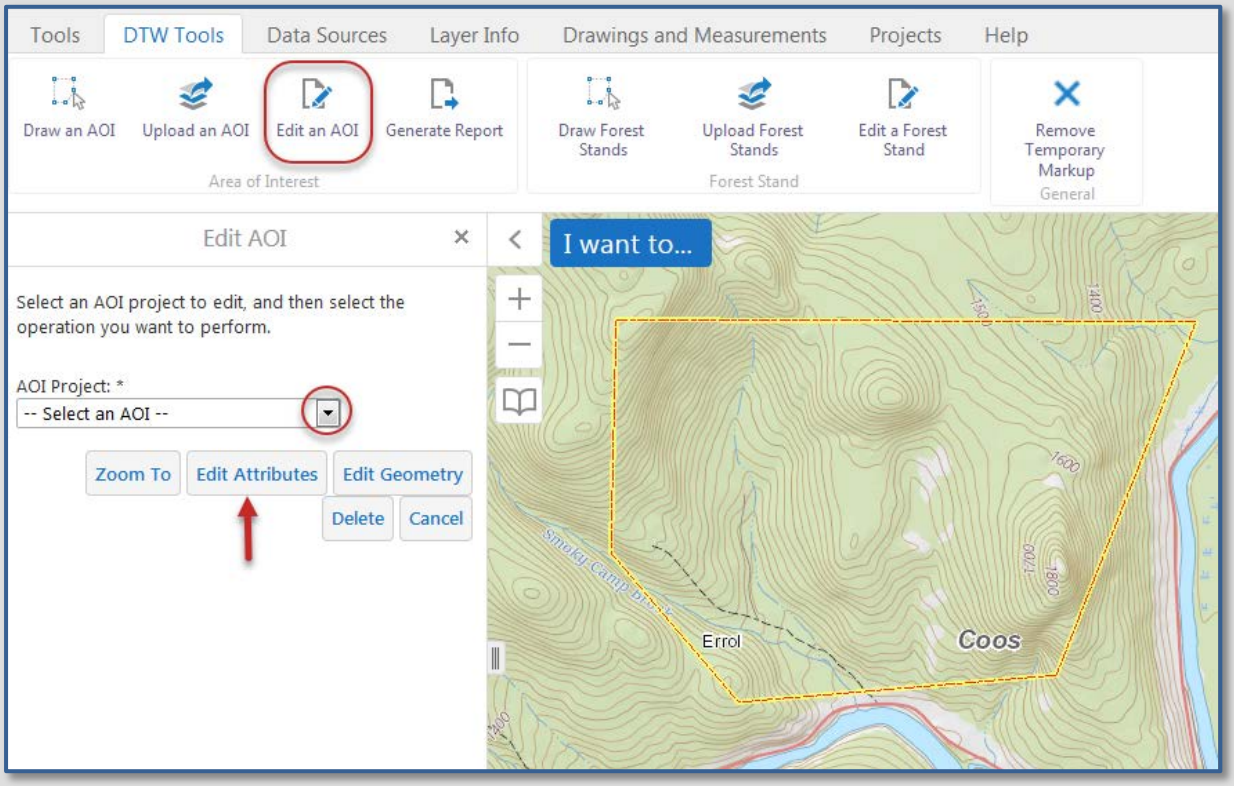


Figure 25. Edit AOI Panel.

2.6.1.2. **Edit Project AOI Attribute From Map Tips**. Left click a project AOI in the map. A **Map Tips** pop-up window will appear (**Figure 26**). Click the drop-down list and select the project AOI. Next, select the **Edit Attributes** link and proceed as explained in section 2.6.1.1. Tip: the layers that get reported in the **Map Tips** pop-up window can be controlled by turning layers on/off in the Layers (or Table of Contents) panel.

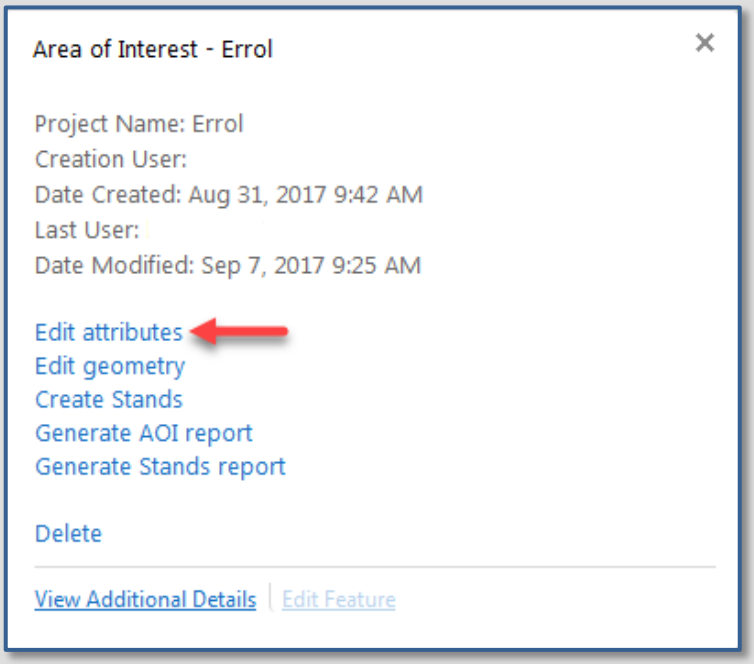


Figure 26. Edit Attributes using the Map Tips Pop-Up Window.

2.6.2. **Edit Project AOI Geometry**. The geometry of an AOI can be edited by clicking the **Edit an AOI** button from the **DTW Tools** toolbar, or by clicking a project AOI in the map and selecting the **Edit geometry** link in the **Map Tips** pop-up window. Note that it is not possible to edit the geometry of a project AOI that contains forest stands.

2.6.2.1. **Edit Project AOI Geometry From Toolbar**. To edit a project AOI from the toolbar, select the **Edit an AOI** button from the **DTW Tools** tab (see **Figure 25**). This will open the **Edit AOI** panel. Select the project AOI from the drop-down list and click the **Edit Geometry** button. When the **Edit geometry** button is clicked, the project AOI geometry becomes editable (**Figure 27**). To change the shape of the boundary, left click and drag the solid gray vertices (or dots). To insert vertices, left click and drag the empty vertices to the desired location. To delete a vertex, right click on the vertex and click **Delete**. To finish editing, click outside the project AOI.

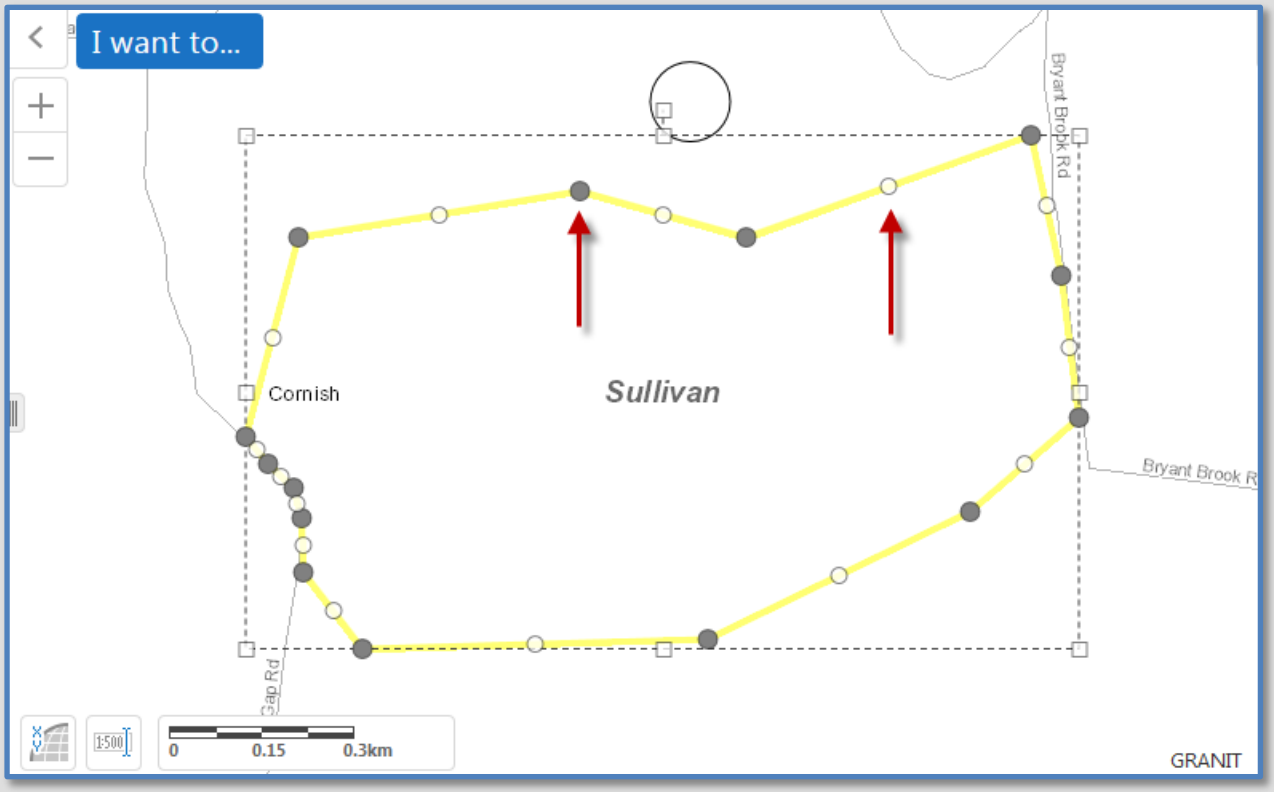


Figure 27. Edit AOI Geomtery.

2.6.2.2. **Edit Project AOI Geometry from Map Tips**. To open the Map Tips window, left click a project AOI in the map. Use the drop-down list to select the project AOI. Next, select the **Edit geometry** link (see **Figure 26)**. (Tip: the layers that get reported in the **Map Tips** pop-up window can be controlled by turning layers on/off in the Layers (or Table of Contents) panel). When the **Edit geometry** link is clicked, the project AOI geometry becomes editable. To change the shape of the boundary, left click and drag the solid gray vertices (or dots). To insert vertices, left click and drag the empty vertices to the desired location (**Figure 27**). To finish editing, click outside the project AOI.

2.6.3. **Draw Or Create Forest Stands**. Forest stands can be added to an empty project AOI. If a project AOI that is selected already has stands associated with it, you may delete all existing stands and draw new stand

boundaries. As with the other **DTW Tools**, the two primary methods to create forest stands are via the toolbar or Map Tips window.

2.6.3.1. **Draw Forest Stands from Toolbar**. To draw a forest stand from the toolbar, select the **Draw Forest Stand** button from the **DTW Tools** tab (**Figure 28**). This will open the **Create Forest Stands** panel. Select the project AOI for which stands will be created and click **Add Stands**. Create new stand boundaries as described in Section 2.4.2. If you are replacing existing stand boundaries with new drawings, follow the prompts to delete all existing stands in the AOI.

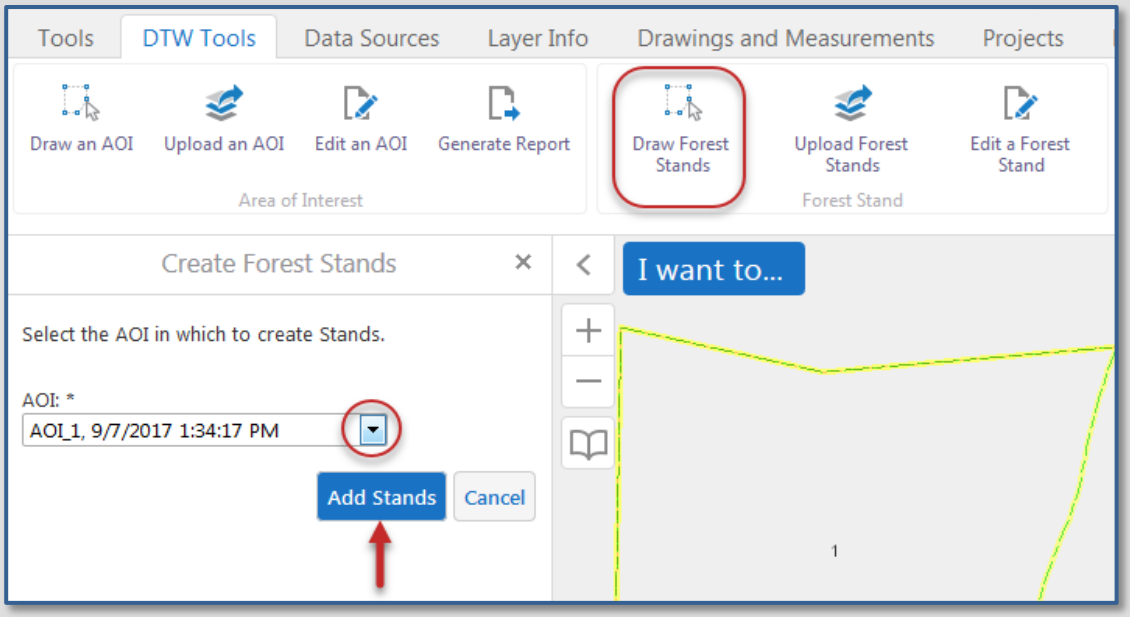


Figure 28. Draw Forest Stands.

2.6.3.2. **Draw Forest Stands From Map Tips Window.** Left click a project AOI in the map. A **Map Tips** pop-up window will appear. If necessary, click the left/right arrows or drop-down list and select the project AOI. Select the **Create Stands** link (**Figure 29**) and proceed as shown in Section 2.4.2 Tip: the layers that get reported in the **Map Tips** pop-up window can be controlled by turning layers on/off in the **Layers** (or Table of Contents) panel.

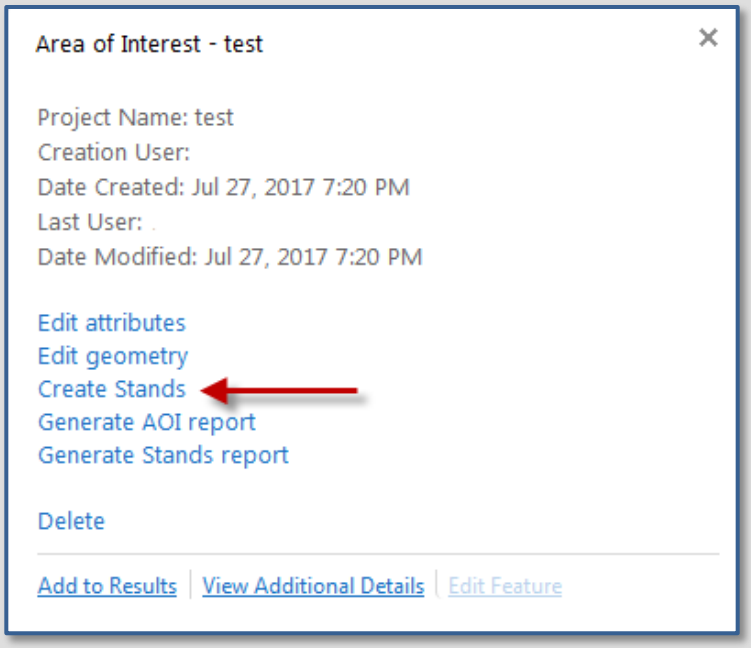


Figure 29. Draw Forest Stands From a Map Tips Window.

2.6.4. **Edit Forest Stand Attributes**. The two primary ways to edit the stand attributes are by clicking the **Edit a Forest Stand** button from the **DTW Tools** toolbar, or by clicking the stand in the map and selecting the **Edit attribute** link in the **Map Tips** pop-up window.

2.6.4.1. **Edit Forest Stand Attributes From Toolbar**. To edit forest stand attributes from the toolbar, select the **Edit a Forest Stand** button from the **DTW Tools** tab (**Figure 30**). This will invoke the **Edit Stand** panel. Select the project from the project AOI drop-down list, then select a forest stand. Click the **Edit Attributes** button. The **Edit Forest Stand** panel (**Figure 31**) will open. Change the attributes as necessary (note that the **Project Name** is not editable) and click the **Save** button. ***NOTE: all fields must be populated for the reporting tool to operate properly.***

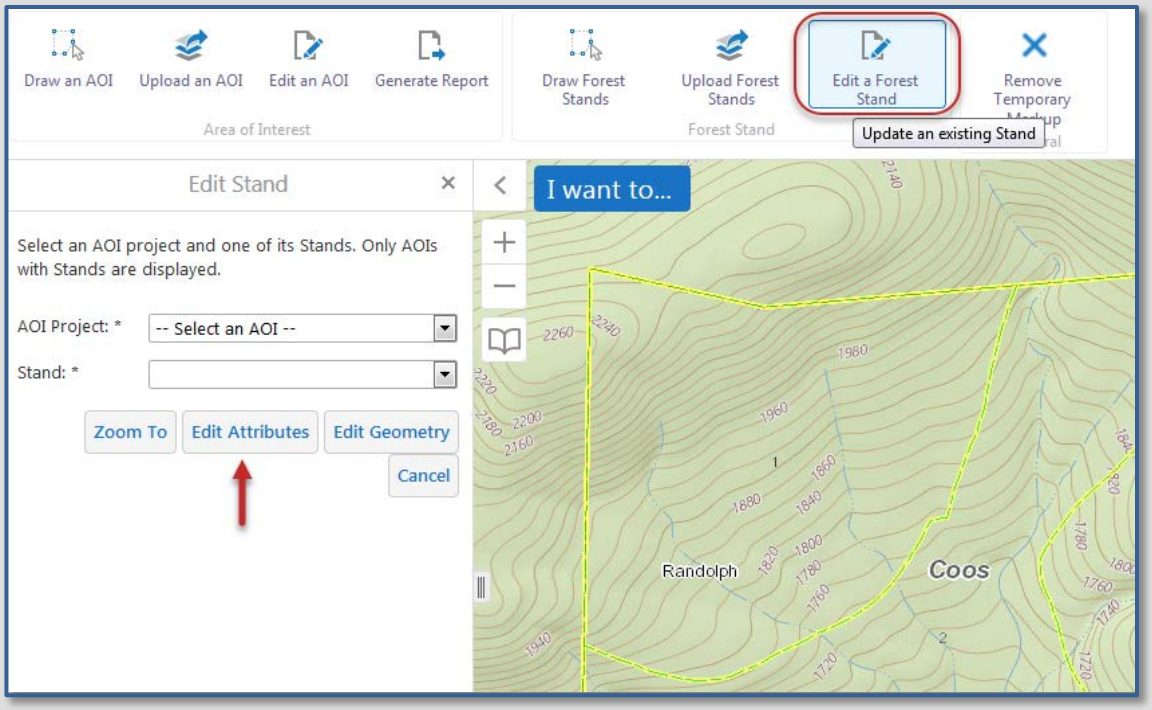


Figure 30. Edit a Forest Stand.

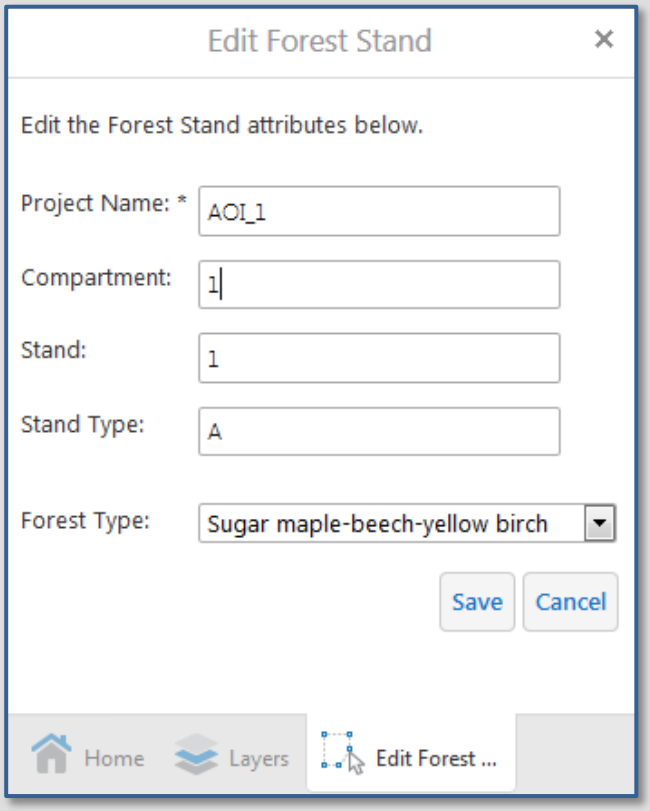


Figure 31. Edit Forest Stand Attributes Panel.

2.6.4.2. **Edit Forest Stand Attributes From Map Tips**. Left click a forest stand in the map area. A **Map Tips** pop-up window will appear. Click the drop-down list and select the project AOI (**Figure 32**). Next, select the **Edit attributes** link and edit attributes as desired (see **Figure 31**).

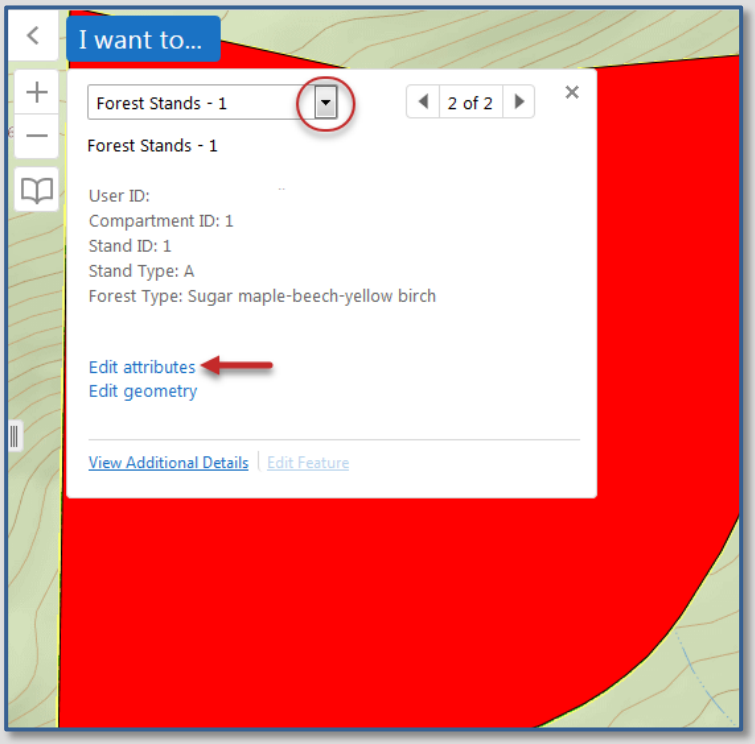


Figure 32. Edit Forest Stand Attributes from Map Tips Window.

2.6.5. **Edit Forest Stand Geometry**. To edit the geometry of a project AOI, click the **Edit a Forest Stand** button from the **DTW Tools** toolbar or click a forest stand in the map and select the **Edit geometry** link in the **Map Tips** pop-up window.

2.6.5.1. **Edit Forest Stand Geometry From Toolbar**. To edit a forest stand from the toolbar, select the **Edit a Forest Stand** button from the **DTW Tools** tab (see **Figure 30**). This will open the **Edit Stand** panel. Select the project from the project AOI drop-down list, then select a forest stand. Next, click the **Edit geometry** button and the stand geometry becomes editable. To change the shape of the boundary, left click and drag the solid gray vertices (dots). To insert vertices, left click and drag the empty vertices to the desired location (**Figure 33**). Right

click a vertex and select **Delete** to delete it. To finish editing, click outside the selected stand.

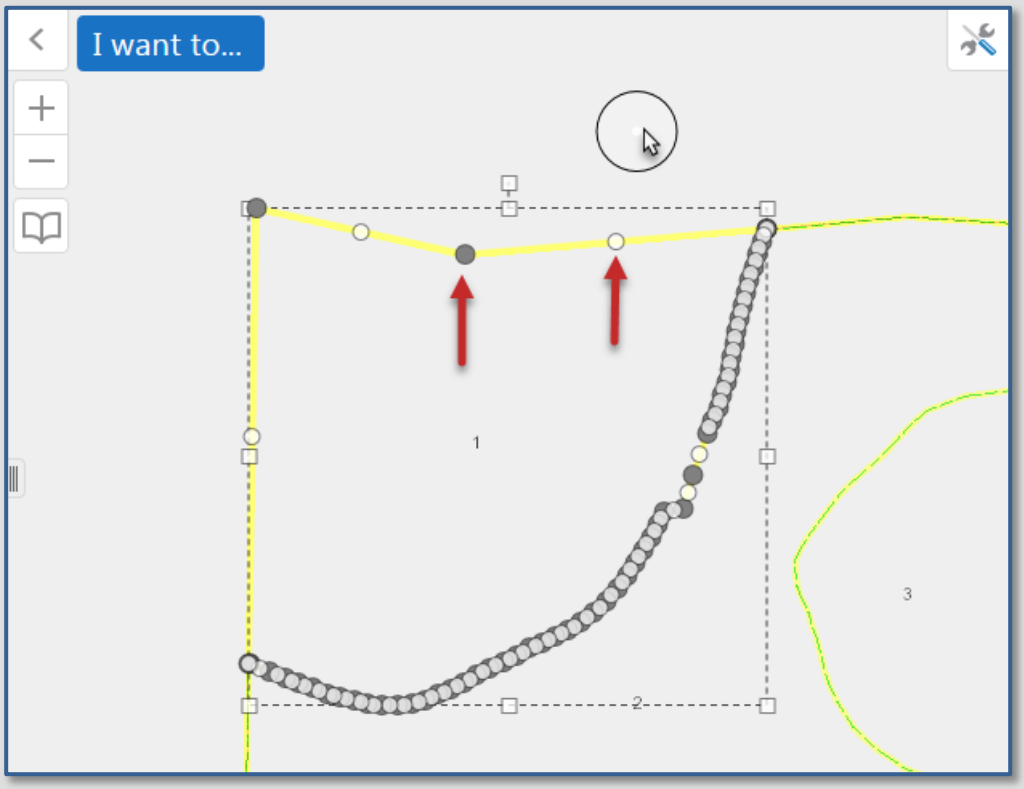


Figure 33. Edit Forest Stand Geometry.

It is important to note that changing the stand geometry for one stand does not change any adjacent stand boundaries. As a result, gaps and overlaps can occur along stand boundaries, resulting in inaccurate acreage calculations in the DTW report. Therefore, you will need to manually update any abutting stand boundaries to match geometry edits. To assist in matching each stand boundary, enable snapping by pressing the letter F on the keyboard (press F again to disable snapping). When snapping is enabled, there will be a gray halo encircling the mouse pointer (see cursor in **Figure 33**). The halo indicates the snapping radius. In other words, the vertex that is being moved will snap to other vertices that are within the halo. Snapping may not work properly in all web browsers. If snapping or other functions of the DTW mapper do not function as expected, try using a different web browser.

Users should be aware that these tools do not provide a suitable means to edit polygon geometry at a fine level of detail; therefore, only coarse edits should be attempted. At this time the DTW tools do not allow for new stands to be added, nor can a stand be deleted or subdivided. To start over and draw new stand boundaries, see Section 2.6.3. Note that drawing new stand boundaries will require deleting all existing stands and their attributes within the project AOI.

2.6.5.2. **Edit Forest Stand Geometry From Map Tips**. Left click in the desired forest stand in the map. A **Map Tips** pop-up window will appear. Click the drop-down list to select the project AOI. Next, select the **Edit geometry** link and proceed as shown in Section 2.6.5.1. Tip: the layers that get reported in the **Map Tips** pop-up window can be controlled by turning layers on/off in the Layers (or Table of Contents) panel.

For more detailed instructions, view the Edit Stand Geometry video.

2.7. **Download Forest Stand Data as Shapefile**. As a Signed-In user of the DTW tools, you will be able to access your project AOI and forest stand layers each time you sign in. However, it is prudent to maintain a backup copy of your data and not rely solely on the version accessible through the DTW Mapper. You may also wish to download your forest stand data so that you can perform boundary edits in ArcMap or other GIS software. If you edit attributes outside of the DTW Tools, it is important to maintain the attribute field names as described in Appendix I.

2.7.1. **Use Query Data Tool to Select Data Layer**. To select the data to be exported, click the **Layer Info** tab in the Toolbar and select the **Query** tool (**Figure 34**).

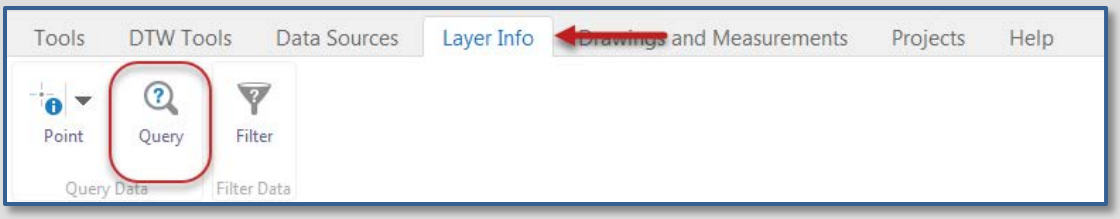


Figure 34. Select Query Data Tool.

2.7.2. **Select Desired Project**. Use the **Data Source** drop-down menu to select "Forest Stands." Use the Query boxes to create the equation, "Project Name = *Your Forest Stand Layer*" (**Figure 35**). Click **Search**.

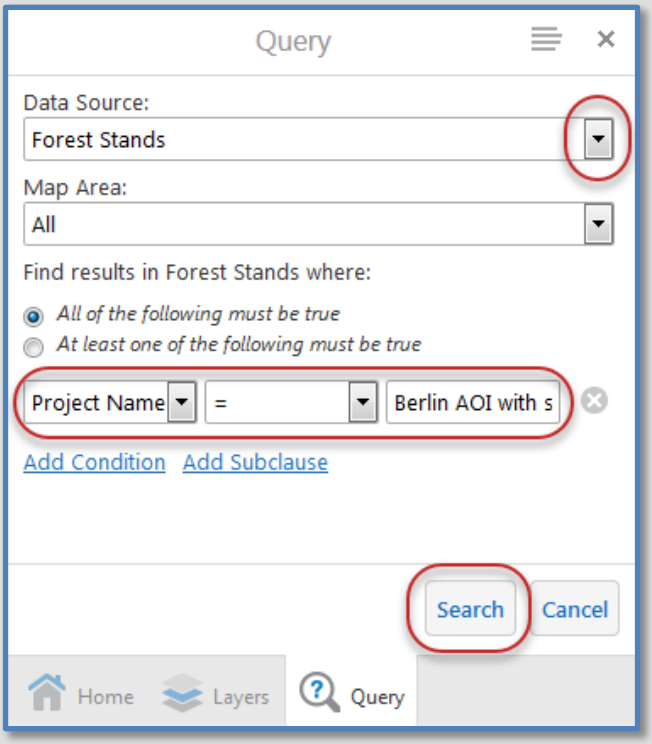


Figure 35. Select Query Data Tool.

2.7.3. **Export to Shapefile**. Click the **Panel Actions Menu** and select **Export to Shapefile (Figure 36)**. A zip file called Export.zip will be created. Follow your web browser's prompts to download this file. The shapefile will be named Forest Stands.shp.

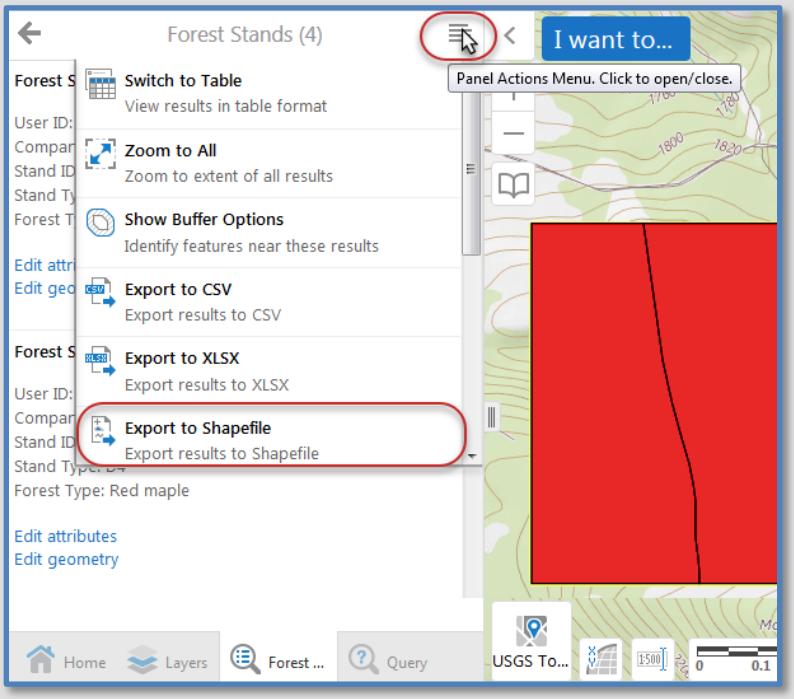


Figure 36. Export to Shapefile.

For additional information about the Dirt to Trees to Wildlife tool, see dirttreeswildlife.org or email granit@unh.edu

Appendix I.

In order to successfully upload and use forest stand data in the DTW database, the stand data must be uploaded in a shapefile containing the following attribute fields: **USER_ID** (Text, 254), **COMP** (Text, 10), **STAND** (Text, 10) , **STAND_TYPE** (Text, 50), **PROJ_NAME** (Text, 254), **AOI_ID** (Long, 10), **DTW_TYPE** (Text, 60). An empty shapefile containing these fields can be downloaded here or users can create their own shapefile that adheres to the schema above. When the stand shapefile is uploaded to the DTW database, the USER_ID will automatically be populated with the email address of the signed-in user. This USER_ID will be used to identify all data belonging to the user with that email address. This field is not available for editing. Also, the user must enter a PROJ_NAME during the upload process – the default PROJ_NAME is that which is present in the PROJ_NAME field for the first FID in the shapefile. The default name can also be changed at this point in the upload process. The PROJ_NAME will not be editable after the shapefile is uploaded.

In addition, for the DTW reporting tools to operate correctly, the DTW_TYPE field must be populated with the proper codes. **Table 1** lists these codes along with a stand type description.

Another method by which to generate data for uploading to the DTW database is to use a predefined file geodatabase that can be downloaded here. Using this database, the DTW_TYPE code can automatically be populated from a drop-down list of stand descriptions while editing the geodatabase feature class. This ensures that the DTW_TYPE code will be correctly populated. The feature class can then be exported to a shapefile and uploaded to the DTW database (geodatabase feature classes cannot be directly uploaded to the DTW database).

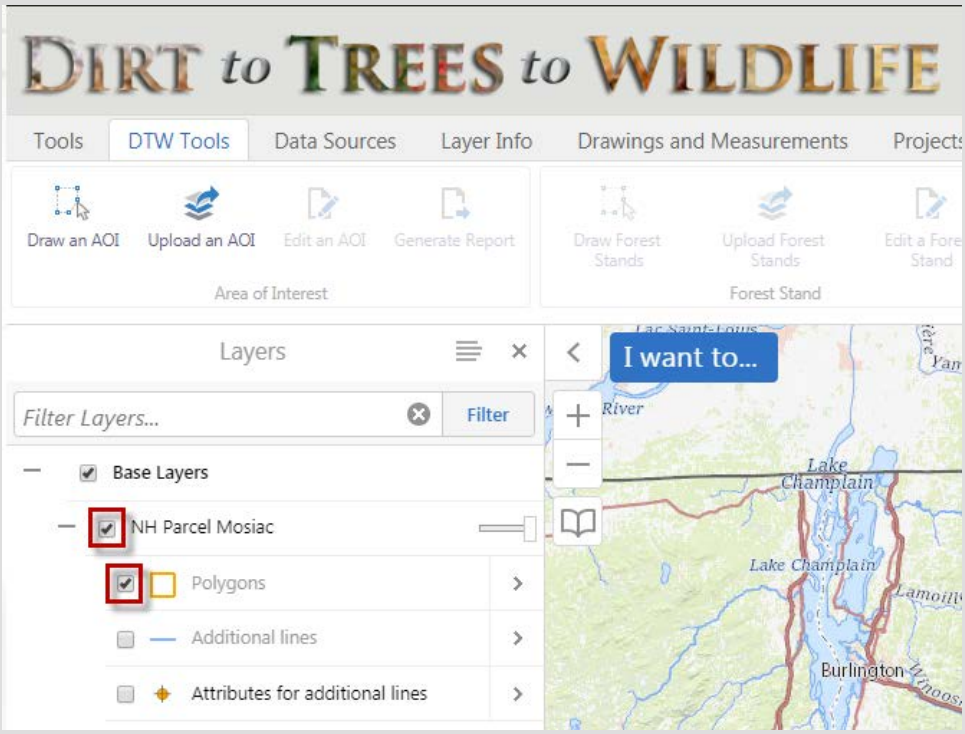
DTW_TYPE Description	DTW_TYPE Code
Aspen	AB_AS
Hemlock	EH_HE
Non forest palustrine	NF_P
Non forest upland	NF_U
Paper birch	AB_PB
Speckled alder	O_SA
Pine-oak-maple	OP_POM
Northern red oak	OP_RO
Eastern white pine	OP_WP
Balsam fir	SF_BF
Balsam fir (high elevations)	SF_BFh
Red spruce	SF_RS
Red spruce (high elevations)	SF_RSh
Spruce-fir	SF_SF
Spruce-fir (high elevations)	SF_SFh
Red maple	SH_RM
Silver maple	SH_SiM
Beech	NH_BE
Sugar maple	NH_SM
Sugar maple-beech-yellow birch	NH_SMBEYB
Yellow birch	NH_YB

Table 1. DTW_TYPE codes.

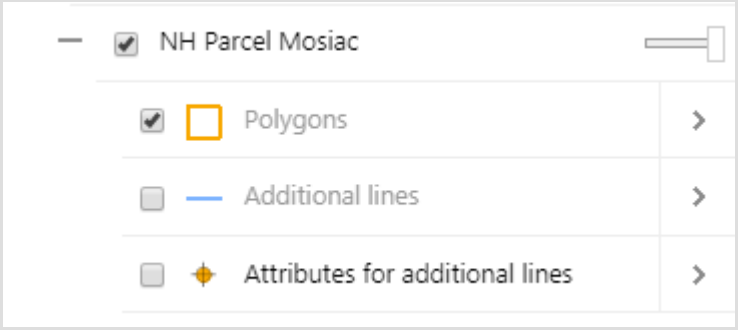
Appendix II.

Using the NH Parcel Mosaic Polygons to Define Property Boundaries

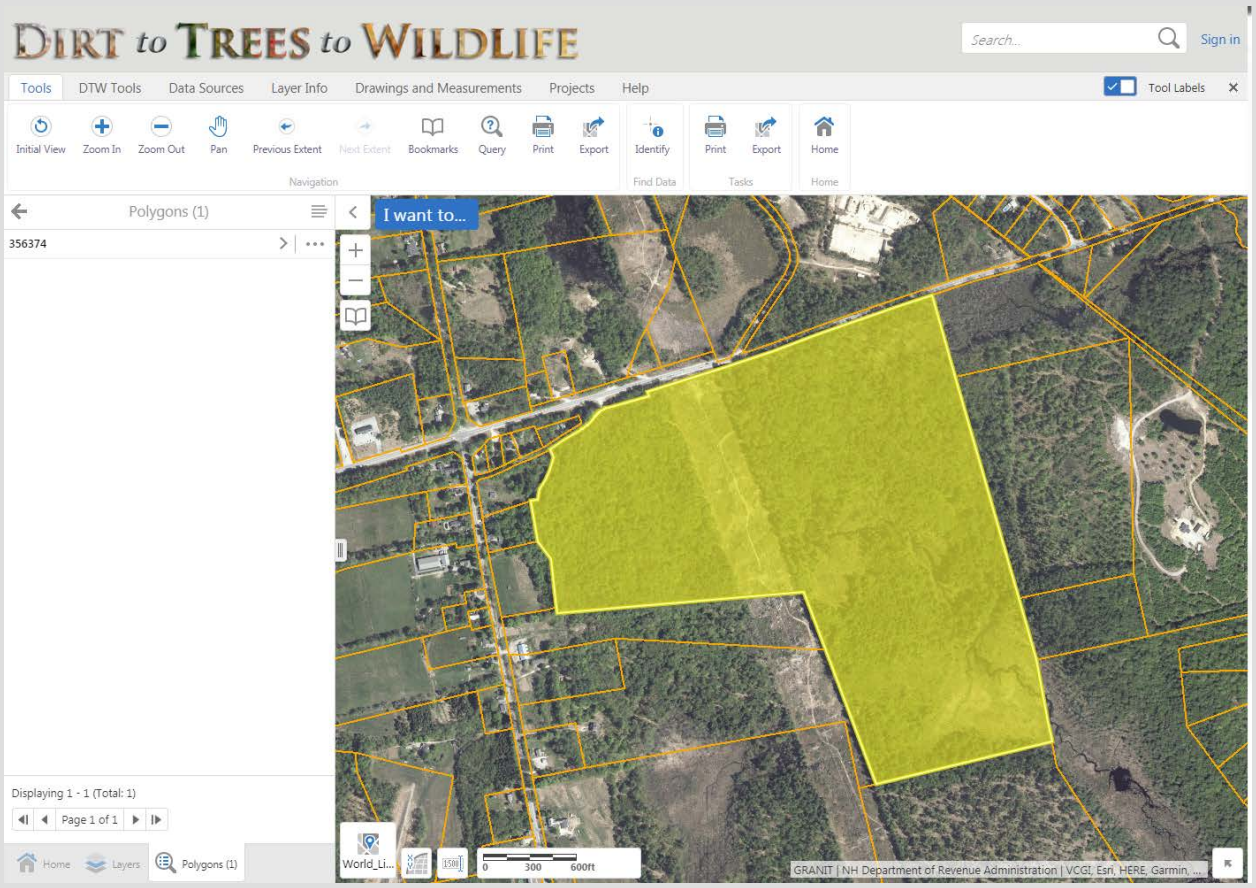
1. In the **Table of Contents**, find the NH Parcel Mosaic under Base Layers



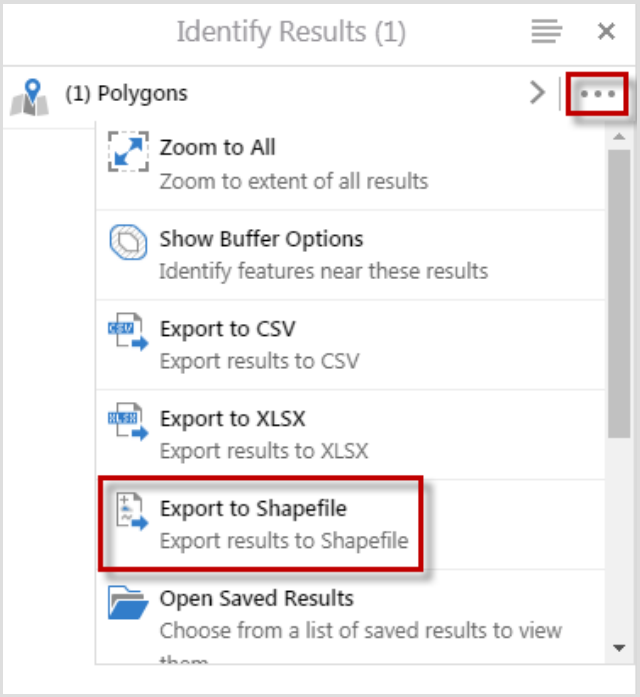
2. Check the selection box next to both NH Parcel Mosaic and Polygons.
    a. If only NH Parcel Mosaic is selected, nothing will show on the map viewer.
    b. If the polygons are not visible, trying zooming to a larger scale.



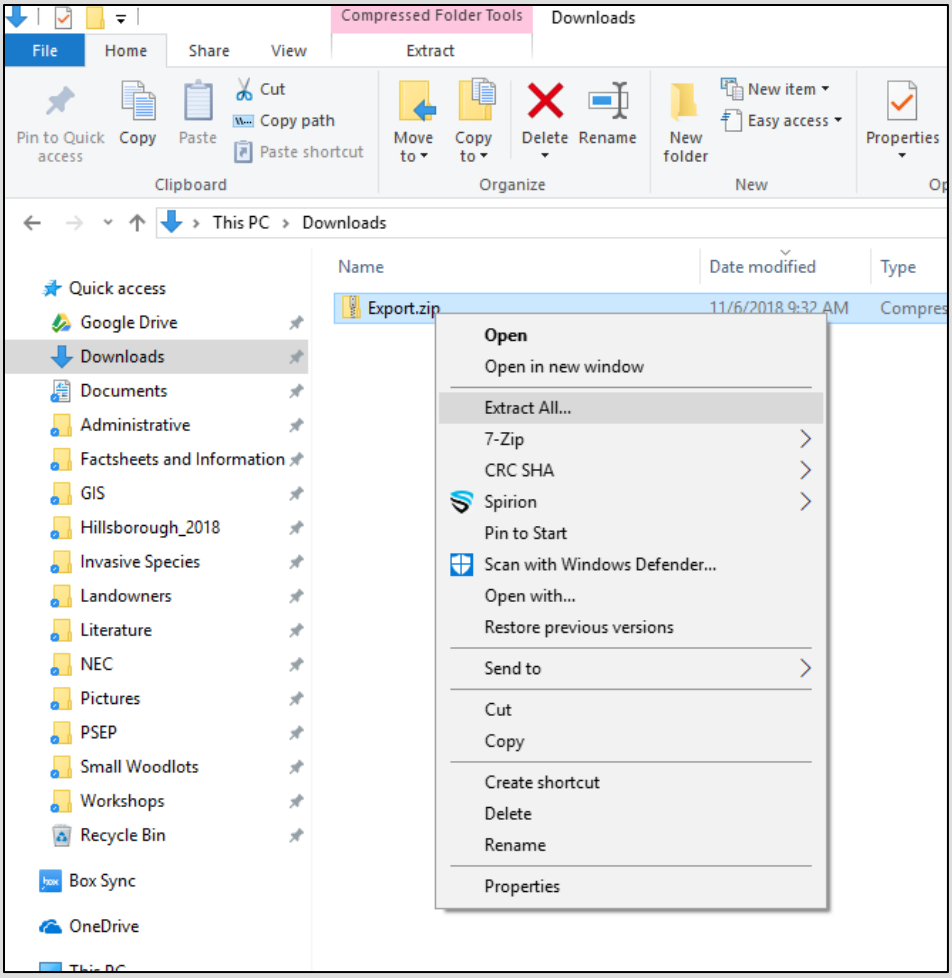
3. Navigate to the area where you are working, select the Identify tool (located in the Tools tab), and click a parcel.
    a. The selected parcel will be added to the Results list at the left of the viewer.
    b. These parcel boundaries are derived from each town's online tax maps.
    c. Accuracy of these parcels can vary, but is usually sufficient for mapping purposes.



4. Click the ellipse (•••) symbol to the right of your parcel in the results pane and select Export to Shapefile



5. Open Windows Explorer and navigate to the Downloads folder
    a. Right click on the Export.zip folder that was downloaded from GRANIT Viewer, and select Extract All.

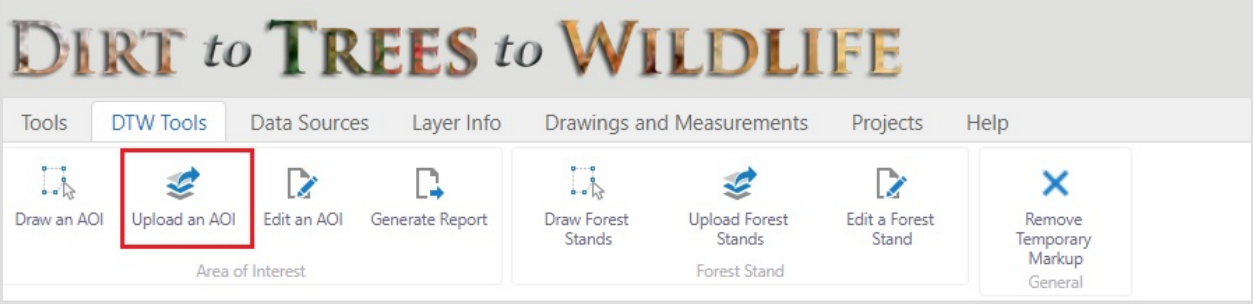


6. Rename extracted folder to a recognizable name, and move it to wherever your other mapping files are stored.
    a. The default from GRANIT Viewer is to create a file named Polygon.shp for any exported boundary. As such, it will be impossible to distinguish between 2 exported files without opening them, making it important to rename the folder to something you can distinguish.

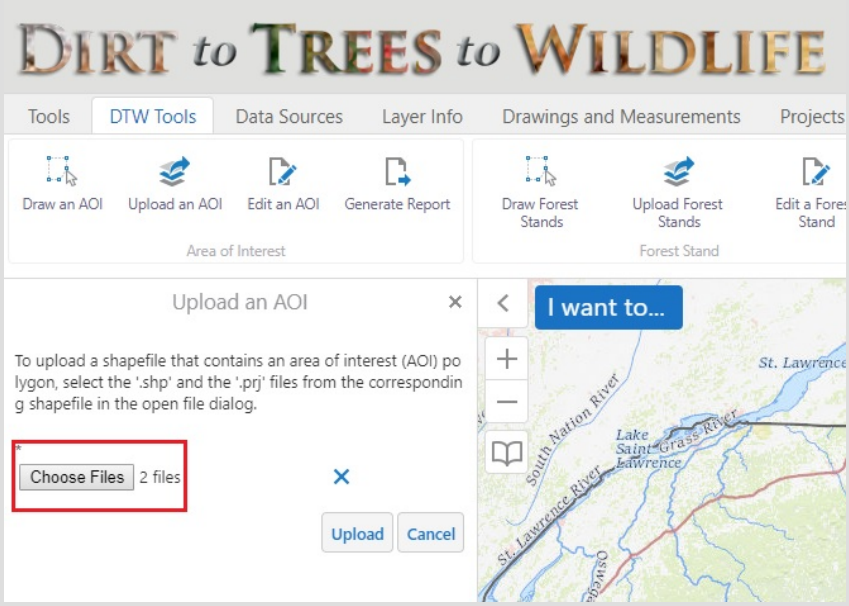
7. Repeat steps 5 through 10 for each additional parcel you would like to analyze in Dirt to Trees to Wildlife.
    a. This process will select, export and create a series of folders, each of which contains a shapefile with a single parcel outline.
    b. Be sure to clear the drawing layer between each parcel (step 11).

8. Click at the top right corner of the screen to Sign in to ArcGIS Online.
    a. If this button shows up on your monitor as Sign out, you are already signed in.

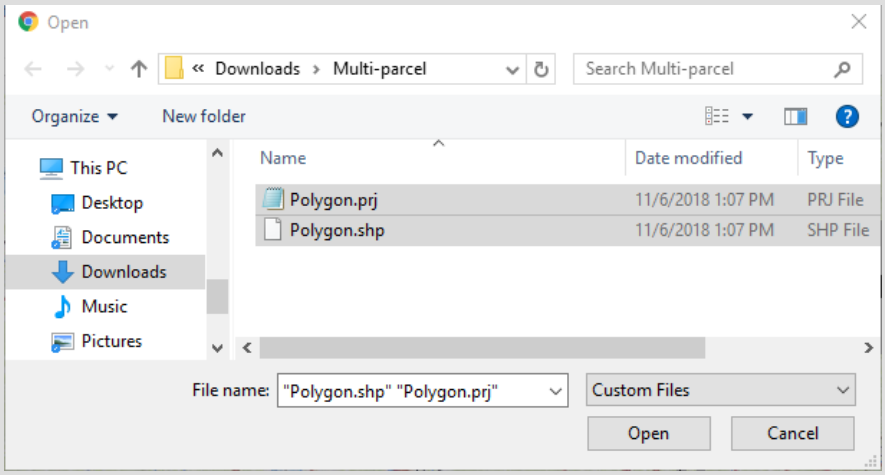
9. On the **DTW Tools** tab, select Upload an AOI.



10. In the Table of Contents on the right hand side, click Choose Files, and navigate to the folder you saved in step 10 of the previous section.



11. Using your left mouse button and holding down the Control key, highlight the shapefile (filename.shp) and projection file (filename.prj) for the parcels you selected in the previous section.
    b. Click Open.



12. Click Upload in the **Table of Contents** and enter a name for your new AOI.

13. Use this AOI to create stands and generate reports, as directed elsewhere.