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## Lesson 6: How to attach biomass and percent cover to random points

## Background

This tutorial will guide you through the process of attaching attributes from a polygon shapefile to a shapefile of random points previously created by Hawth's Analysis Tools. If you do not have a shapefile of random points created prior to beginning this tutorial, refer to "How to Create 200 Random Points using Hawth's Analysis Tools." This tutorial is not specific to a certain number of random points, 200 is the example that will be displayed in the steps to follow. Also, the example within this tutorial is applied to invasive tamarisk polygons within the Landsat scene of Row 32, Column 34 (LaJunta, CO). The random points generated in the previous tutorial are within the boundaries of these tamarisk polygons and need to include two attributes associated with polygon that contains them: *biomass for 900m*<sup>2</sup> and *percent cover*. Operations within this document will all be managed in *ArcGIS version 10*, specifically *ArcMap 10*, and *ArcCatalog 10*.

## **Preparing Data for Attachment**

- 1. Open *ArcMap 10* and choose a **Blank Map** template.
- 2. Click Ok.
- To load the polygon data you are interested in click the add data icon <sup>◆</sup> • and browse to the shapefile whose attributes you would like to attach to the

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random points. In this example the shapefile is labeled biomass.shp.

- 4. The layer will appear in the table of contents on the left side of the screen and the spatial display of biomass.shp appears on the right.
- 5. For the first time it is a good idea to start with a practice run. So, before you add the data for your random points previously created, you will first make a copy and work off of that.

6. Open *ArcCatalog 10* and navigate to where you previously stored the random point shapefile from Hawth's Tools.



7. Right click the file random\_points.shp, and click **Copy**.

8. Right click within the same folder location and click **Paste.** 

9. Rename the new file random\_p\_practice.

10. Close *ArcCatalog 10* and open *ArcMap 10* back up with the map you already added the polygon shapefile to.

11. Click the **add data** icon **\*** again and browse to the file random\_p\_practice.shp. Click **Add**.

12. Check the shapefile random\_p\_practice to make sure

the points are within the polygon boundaries by clicking the uniform **zoom** icon **\*\***. The below figure is a section of the tamarisk polygon shapefile (biomass.shp) with random\_p\_practice.shp.



## Attaching 900m<sup>2</sup> biomass and Percent Cover

- 1. Right click on the layer name **random\_p\_points** in the table of contents and select **Open** Attribute Table.
- The attribute table will open in a new window and will only contain 3 columns: FID, Shape, and Id, looking like the image to the right.
- 3. In the upper left-hand corner click on the **table options** icon 🔚 🗸



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4. Scroll down to **Joins and Relates** and click on **Joins**.

5. The joining window will appear. Near the top, click the drop down arrow under *What do you want to join to this layer?* 

6. Select Join data from another layer based on spatial location.

7. This action will change the information

*join to this layer*... use the drop arrow to select the polygon layer. In this example it is

- 8. Select the option *It falls inside* for number 2.
- 9. At the bottom of the window use the **browse** icon it to save the output file that the join will be saved under. Name the new file Rand\_biom\_join.shp for this example and be sure to select **Shapefile** from the *Save Type As* drop down.

10. Click Save

biomass.

11. When the image looks like the one below, click **Ok**.

Join Data							
Join lets you append additional data to this layer's attribute table so you can, for example, symbolize the layer's features using this data.							
What do you want to join to this layer?							
Join data from another layer based on spatial location							
1. Choose the layer to join to this layer, or load spatial data from disk:							
🕏 biomass 🖃 🖻							
2. You are joining: Polygons to Points							
Select a join feature class above. You will be given different options based on geometry types of the source feature class and the join feature class.							
Each point will be given all the attributes of the polygon that:							
If a point falls inside more than one polygon (for example, because the layer being joined contains overlapping polygons) the attributes of the first polygon found will be joined.							
O is closest to it.							
A distance field is added showing how close the polygon is (in the units of the target layer). A polygon that the point falls inside is treated as being closest to the point (i.e. a distance of 0).							
3. The result of the join will be saved into a new layer.							
Specify output shapefile or feature class for this new layer:							
I:\Project\Rand_biom_join.shp							
About Joining Data OK Cancel							

- 12. The new shapefile will appear in the table of contents on the left side of the screen.
- 13. In this case, joining the tables will transfer all of the data from the biomass.shp to the designated random points within random\_p\_practice.shp. Refer to the image below and notice how the first three fields are from the random points and the rest are from the biomass shapefile. This means that there are numerous fields that are unneeded.

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	2	Point	152	0	30	0	tb1	170.752296	20	90	mix	good	
	3	Point	90	0	33	0	tp3	18.430587	40	50	mature	poor	
	4	Point	63	0	34	0	tp4	11.907083	40	50	mature	good	
	5	Point	148	0	36	0	tp6	4.631347	30	100	mature	good	
	6	Point	127	0	40	0	tp10	77.582827	30	100	mature	good	
	7	Point	62	0	41	0	tp11	26.518457	40	100	mature	poor	
	8	Point	106	0	44	0	stc1	212.804914	30	50	mix	good	
	9	Point	196	0	44	0	stc1	212.804914	30	50	mix	good	
	10	Point	22	0	45	0	stc2	319.71515	30	40	mature	good	
	11	Point	28	0	45	0	stc2	319.71515	30	40	mature	good	
	12	Point	72	0	45	0	stc2	319.71515	30	40	mature	good	
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- 14. Remember, because in this example you are only interested in the **900m<sup>2</sup> biomass** and **percent cover**, you can delete the other fields.
- 15. To delete a field, right click on **Rand\_biom\_join** in the table of contents and click **Open Attribute Table**.

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	Г	4	Point	tp4	40	2805.597301	
	П	5	Point	tp6	30	2039.239694	
	П	6	Point	tp10	30	3311.831833	
	П	7	Point	tp11	40	4556.436636	
		8	Point	stc1	30	2039.239694	
	П	9	Point	stc1	30	2039.239694	
		10	Point	stc2	30	2039.239694	
		11	Point	stc2	30	2039.239694	
		12	Point	stc2	30	2039.239694	
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17. Repeat this process for all unnecessary fields within the new table. When you have finished it may look like the image to the left. **Note:** I kept the **Name** field of the polygon layer simply for future reference. Do not remove any fields you may believe to be useful within this shapefile in the future.

**Congratulations!** You have just successfully attached 900m<sup>2</sup> biomass and percent cover to a random point shapefile based on spatial location.