Overview

In this tutorial you will:

- Create a new shapefile in ArcCatalog
- Edit your shapefile in ArcMap
- Populate the attribute table of your shapefile
- Create a table in ArcCatalog
- Populate the table in ArcMap
- Create a spatial join in ArcMap
- Produce a meaningful Map

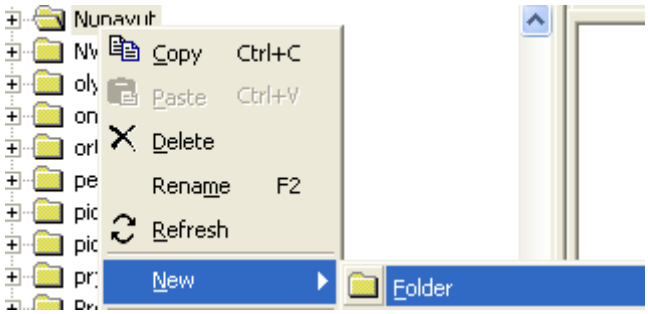
Note: To complete this exercise, you will need to download the dataset designed to be used in this tutorial. Download the data files by clicking either the **WinZip** or the **Self Extracting** link located just below this tutorial. The **Self Extracting** link will automatically extract the files to a folder called **Nunavut** on your **C:\ drive**.

Part A - Creating a New Shapefile

Creating the Shapefile using ArcCatalog:

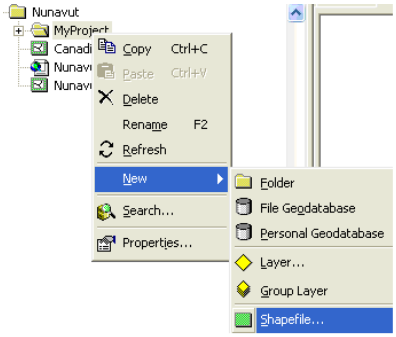
1. Open **ArcCatalog**.

2. Use the **catalog tree** to navigate to the folder (Nunavut) where the data for this tutorial is stored. Right click on the **folder** and select **New** > **Folder** to create a sub folder to house your new shapefile.



3. Name the folder **MyProject.**

4. Right click on the new **MyProject** folder and select **New > Shapefile**.



You are going to create a shapefile that defines a new National Park in Nunavut.

5. **Name** your new **shapefile** "`Nat_Park`" and select **polygon** for the **Feature Type**.

6. To select a spatial reference/coordinate system for your shapefile, click the **Edit** button.

The new shapefile you are creating is going to be built on the Nunavut dataset, consequently it should have the same spatial reference.

7. Click **Import** and browse to the **Nunavut** folder (which should be in your C:\ drive and select **Nunavut.shp**. Click **Add** when you are done.

8. Click **OK** twice.

Editing the Shapefile Using ArcMap:

1. Open **ArcMap**.

> **Hint:** The easiest way to do this is by clicking on the **Launch ArcMap** icon located on the **Standard** toolbar in **ArcCatalog**.

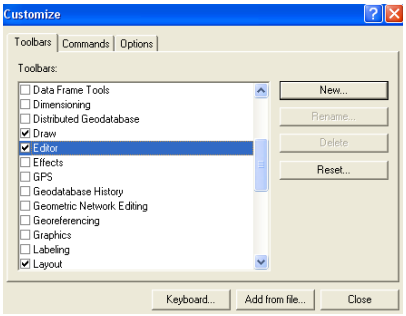
2. "Start using ArcMap with" **An Existing Map:** click the **Immediately add data** box, and then click **OK**.

3. Browse to **C:\Nunavut** and select **Nunavut.mxd**. Click **Open.**

4. In the **Add Data** dialog box browse to your **MyProject** folder and **Add** the **Nat_Parks.shp** that you created.

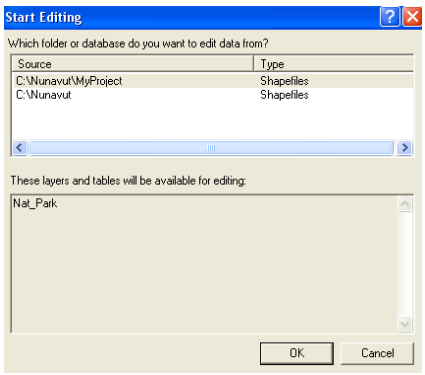
You are now going to draw the National Park using the polygon tool. Keep in mind, this park will have different regions, so you will be creating multiple polygons representing these regions.

5. Add the **Editor** toolbar if it is not already present. From the **Tools** menu select **Customize**. In the *Customize* window on the **Toolbars** tab click on the **Editor** tool, so that a check mark appears next to it. Click **Close** to close the **Customize** window.

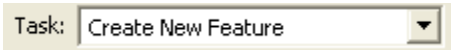


6. From the new *Editor* toolbar that appears, click **Start Editing**.

7. Choose the **Nunavut\MyProject** folder to edit from, so that the **Nat_Park** layer is available for editing and click **OK**. Click **Start Editing** if another warning comes up about a different coordinate system.

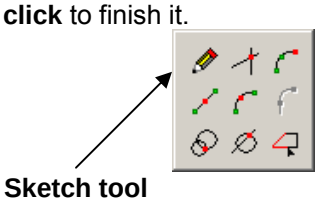


8. On the *Editor* toolbar, ensure that the edit **Task:** is set to **Create New Feature.**



Now you must establish an appropriate spot for your park. Use the **Zoom In** and **Zoom Out** tools to determine a location that you think would be well suited for a National Park.

9. Once you've established the general location of your National Park, use the **Sketch** tool to draw 8 polygons that will comprise unique areas of the park. Remember that you are going to populate the attribute table for each section in the next stage of the tutorial. **Click** each time you want to set a point in your polygon and **double click** to finish it.



12. You can delete a polygon by clicking it with the **Edit** tool on the *Editor* toolbar, so that it is highlighted in blue, then pressing the **delete** key.

13. When you are finished, click **Stop Editing** from the Editor drop down menu. **Save** your edits.

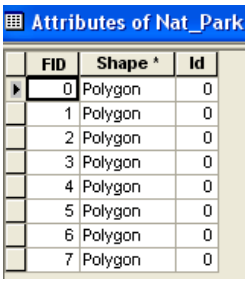
In ArcMap you can edit the attribute table of features you just created. You can add new fields to the attribute table and then add information to that field.

As with editing map features in ArcMap, editing the attributes of features takes place within an edit session. When you've completed your edits, you can save them and end the edit session, just as you did when creating the polygons above.

Part B - Adding Attributes to your Shapefile

Adding Fields:

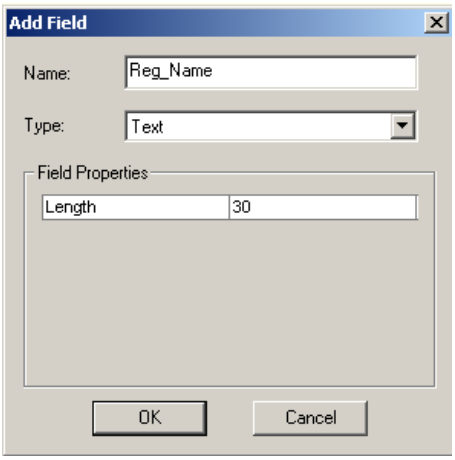
1. In order to assign attributes to your newly created shapefile right click on the layer **Nat_Park** in your table of contents and click **Open Attribute Table**.



You will notice that 3 attribute columns will already be provided for you. The first column **FID** stands for feature identification. This field is automatically generated by ArcMap to ensure that each record has a unique value. The second field, **Shape** is another automatically generated field that specifies the characteristic appearance of the geographic object being represented in that layer. In this instance we will be working with polygons, but points and lines are the two other types of shapes represented in vector format. The third field, **ID** is an editable field. This field is automatically generated to prompt the user to define a unique numeric value for each record. This field can be very useful for querying and sorting data in your table.

2. You are going to add an attribute field to the table which will describe the various regions in your park. Click on **Options** and **Add Field.**

3. In the **Add Field** window type in `Reg_Name` for the name of the region, **Text** for the **Type,** and change the **Length** to **30.** Click **OK**.



12 Concorde Place, Suite 900 ● Toronto, Ontario, M3C 3R8 ● Tel: (416) 441-6035
Fax: (416) 446-1639 ● Email: education@esricanada.com ● Web site: www.k12.esricanada.com

Populating Fields:

1. On the **Editor** toolbar click **Start Editing** and choose the **Nunavut\MyProject** folder to Edit from again so that you can start populating your table. Click **Start Editing** if another warning comes up about a different coordinate system.

2. If you closed the attribute table for Nat_Park, right click on your **Nat_Park** layer and click **Open Attribute Table**. You are going to populate the **Park_Name** field with the names below for each of the regions you created.

White Pines
Rolling Rocks
Caribou Hill
Flushing Meadows
Inuit Cove
Seal Island
Polar Bear Point
Beluga Bay

3. To do this, **highlight** the first row in the table by clicking on the **tab** to the left of the record. This will cause the corresponding polygon (section of the park) to be highlighted on your map, so that you can visualize the polygon for which you are providing attribute data. You may need to move the table around to view your map.

4. Then click in the empty box under the **Reg_Name** column and type in the name for that region of the park.

5. Be sure to click in the ID column as well to provide a unique numeric value for each polygon. Number the records in chronological order as shown in the screen shot below.

6. Repeat this procedure until both fields are populated for all of the polygons.

Attributes of Nat_Park

FID	Shape *	Id	Reg_Name
0	Polygon	1	White Pines
1	Polygon	2	Rolling Rocks
2	Polygon	3	Caribou Hill
3	Polygon	4	Flushing Meadows
4	Polygon	5	Inuit Cove
5	Polygon	6	Seal Island
6	Polygon	7	Polar Bear Point
7	Polygon	8	Beluga Bay

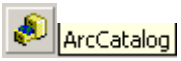
7. **Save** your edits when you are done and **Stop Editing**.

8. Close the **attribute table** when you are done.

12 Concorde Place, Suite 900 ● Toronto, Ontario, M3C 3R8 ● Tel: (416) 441-6035
Fax: (416) 446-1639 ● Email: education@esricanada.com ● Web site: www.k12.esricanada.com

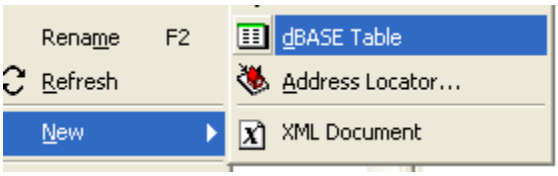
Part C - Creating a Table

Creating a Table in ArcCatalog:

1. Go back to **ArcCatalog** or if it is not opened, click the **ArcCatalog** Icon 

from the *Standard* toolbar in ArcMap.

2. Navigate to the **Nunavut** folder. Right click on your **MyProject** folder and select **New > dBase Table.**



3. Label your table `NatPark_Attributes`.

4. Double click on it to bring up the **DBASE Table Properties** and click on the **Fields** tab.

> **Note:** You will see that two fields have been automatically generated for you. The **Object ID** field automatically assigns a unique value to each record and is the tabular equivalent to the Feature ID in an ArcMap attribute table. The **Field 1** field is the tabular equivalent of ID in the ArcMap attribute table. It is an automatically generated field that prompts the user to define a unique numeric value for each record for data management purposes.

Adding Fields in ArcCatalog:

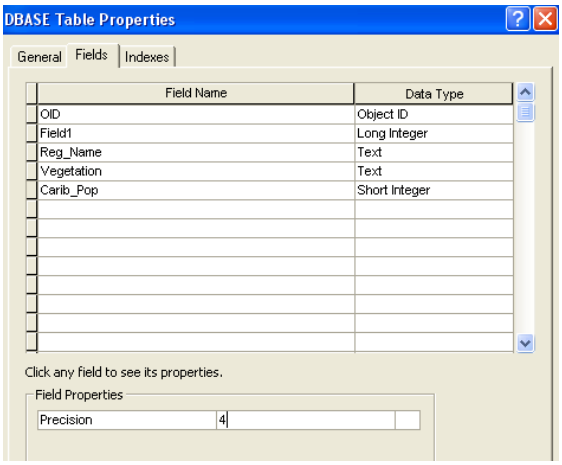
1. To **Add fields** simply type in the field name in the first available record in the **Field Name** column. Then click in the space under the **Data Type** column beside the record and select a data type from the drop down menu.

2. Add a Reg_Name field, so that you can spatially join this table to the shapefile that you created in the previous section.

3. Type in `Reg_Name` in the first available record in the *Field Name* column and select **Text** from *Data Type* drop down menu. Set the length to **30**.

4. Next add a field called `Vegetation` and make it a **Text** field. Leave the *Length* defaulted to 50.

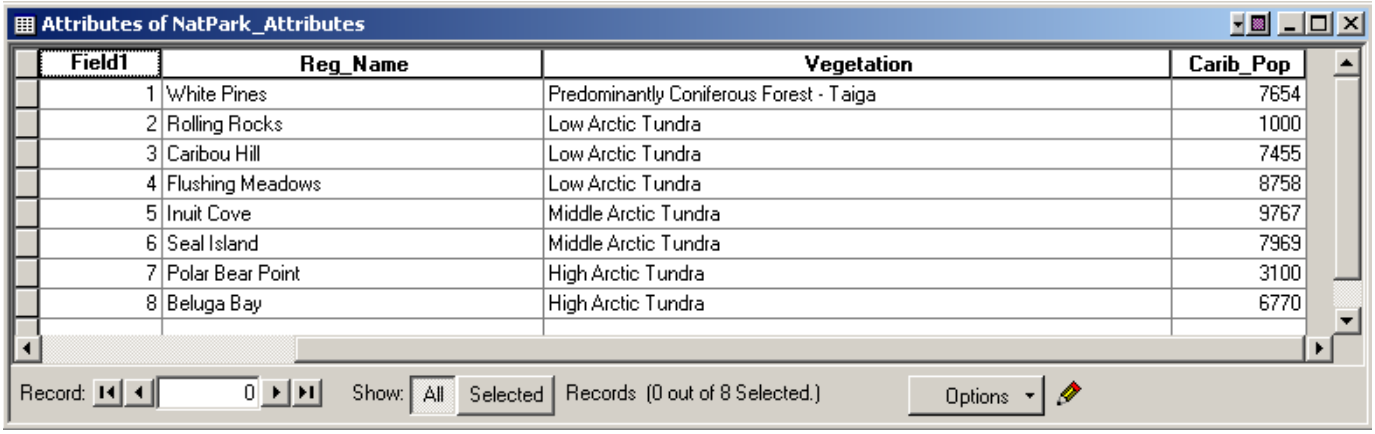
5. Lastly, add a field called `Carib_Pop` (Caribou Population) and make it a **Short Integer** data type with a *Precision* of **4**. (Precision indicates the maximum length of the field – 4 digits)



6. Click **OK** when you are done.

Populating the Table in ArcMap:

1. Return to **ArcMap**.
2. Click on the **Add Data** icon, browse to your **MyProject** folder and **Add** your newly created **NatPark_Attributes.dbf**. (Notice the table appears under the *Source* tab in the *table of contents*)
3. Go to the **Editor** drop down and select **Start Editing.** Choose the **Nunavut\MyProject** folder and click **OK.** Click **Start Editing** in a new coordinate system when this dialog appears.
4. Then right click on your **NatPark_Attributes** table in your *table of contents* and select **Open**.
5. Begin by populating the **Field1** column. **Number it chronologically like you did with the ID field.** Click the cell in the last empty record under Field1 and type in the value.
6. Click the **Move to end of table** button and a new record is added at the bottom of the table. Repeat this procedure until you have the same number of records that you had in the previous table.
7. **Copy** the records in the table provided below. Ensure that the region names are spelt identically to the region names in the *Nat_Park* layer. You can right click on **Nat_Park** layer and select **Open Attribute Table** to **copy** (Ctrl C) the region names and **paste** (Ctrl V) them in the **NatPark_Attributes** table.

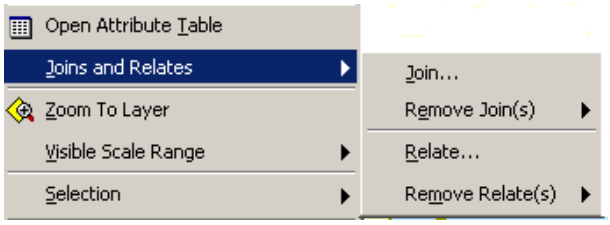


12 Concorde Place, Suite 900 ● Toronto, Ontario, M3C 3R8 ● Tel: (416) 441-6035
Fax: (416) 446-1639 ● Email: education@esricanada.com ● Web site: www.k12.esricanada.com

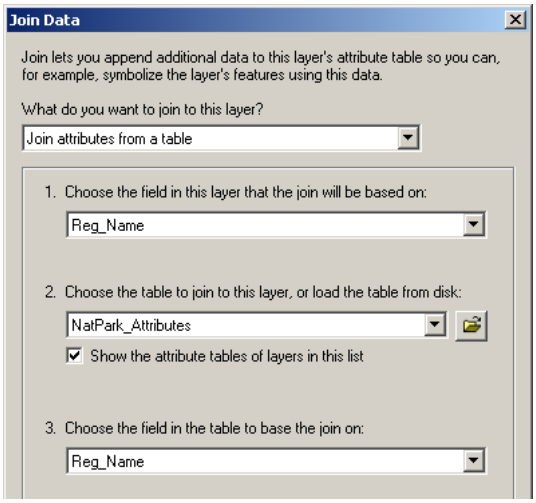
8. Once your table is completely populated close the **table**, click **Stop Editing** from the editor toolbar and **Save** your edits.

Joining your Table to your Shapefile:

1. In order to join your new table to your shapefile in ArcMap, right click on the **Nat_Park** shapefile in the table of contents and select **Joins and Relates⟶Join…**



2. Select the following options from the drop down menu then click **OK**. If you are asked to create an index click **Yes**.



3. Right click on **Nat_Park** and choose **Open Attribute Table** to look at the new data in the layer. If you see <Null> in any of the records it means that the region name in the *Nat_Park* attribute table is not spelt exactly the same as the region name in *NatPark_Attributes* table. Close the attribute table for **Nat_Park** and remove the join by right clicking on **Nat_Park > Joins and Relates > Remove join(s) > NatPark_Attributes**. Repeat the steps in the section Populating the Table in ArcMap above, starting at step 3.

Congratulations! You have successfully joined a shapefile and a table that you created. Right click on the **Nat_Park** layer in your table of contents and click **Open Attribute Table** to examine the changes to your table.

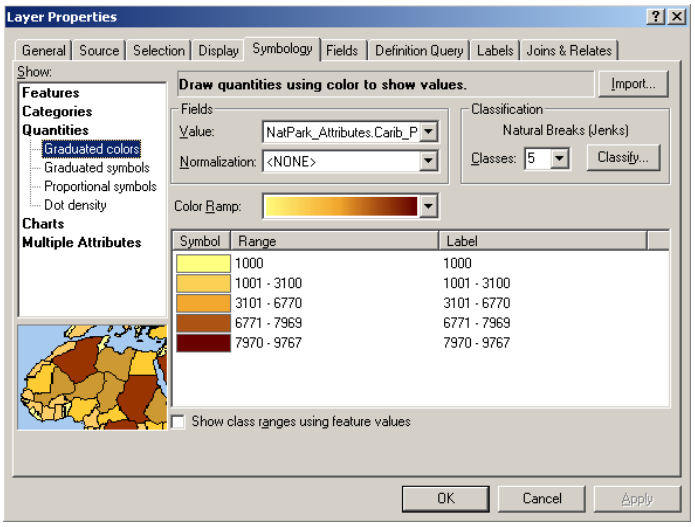
12 Concorde Place, Suite 900 ● Toronto, Ontario, M3C 3R8 ● Tel: (416) 441-6035
Fax: (416) 446-1639 ● Email: education@esricanada.com ● Web site: www.k12.esricanada.com

Symbolizing your Data:

You are now going to create a graduated color map using your newly created data.

1. Double click on the **Nat_Park** layer to bring up the **Layer Properties** dialog box.

2. Click on the **Symbology** tab and under *Show* choose **Quantities – Graduated Colors.** Under *Fields* select **NatPark_Attributes.Carib_Pop** for the *Value* and use a single color graduated color in the color ramp. In the classification box choose **5** *Classes* and leave **Natural Breaks (Jenks)** as the classification method. Click **OK** when you are done.



The National Park that you created should now be shaded according to the number of caribou in each region. The darker the shade of the region, the more caribou it contains. **Congratulations!** You have now made a meaningful map from data that you created.

Deleting Fields from a Table in ArcCatalog:

1. Should you wish to delete fields from a table in ArcCatalog, double click on the table in the *table of contents* it to bring up the **DBASE Table Properties** and click on the **Fields** tab.

2. Click on the **tab** to the left of the field you wish to delete in the *DBase Table Properties* Dialog box, (which will highlight it), and press the delete key.

Deleting Fields from a Table in ArcMap:

1. Make sure you are not in an edit session.

2. Open the **table**.

3. Right click on the field heading.

4. Click **Delete Field**.

5. Click **Yes** to confirm the deletion.

Note: Deleting a field is permanent and cannot be undone.

12 Concorde Place, Suite 900 ● Toronto, Ontario, M3C 3R8 ● Tel: (416) 441-6035
Fax: (416) 446-1639 ● Email: education@esricanada.com ● Web site: www.k12.esricanada.com

Deleting records

1. Click **Editor** on the Editor toolbar and click **Start Editing**.
2. Right-click the **layer** or **table** you want to edit and click **Open Attribute Table**.
3. Select the **records** you want to delete. Press and hold the **Ctrl** key while clicking to select more than one record.
4. Press the **Delete** key on the keyboard. The geographic features associated with the records, if any, are also deleted.

Copying and Pasting Records

1. Click **Editor** on the Editor toolbar and click **Start Editing**.
2. Right-click the **layer** or **table** you want to edit and click **Open Attribute Table**.
3. Select the records you want to copy. Press and hold the **Ctrl** key while clicking to select more than one record.
4. Click the **Copy** button on the Standard toolbar.
5. Click the **Paste** button on the Standard toolbar. The new records are added at the end of the table.

Note: This method of copying and pasting records is only valid for attribute tables of layers. It will not work for standalone tables.

12 Concorde Place, Suite 900 ● Toronto, Ontario, M3C 3R8 ● Tel: (416) 441-6035
Fax: (416) 446-1639 ● Email: education@esricanada.com ● Web site: www.k12.esricanada.com