Python Script
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Introduction

As the GIS RA with Minnesota Extension - Health and Nutrition, I have been working on a project known as the Minnesota Food Network. For the past year, I have worked with a team to help gather information of all known food networks within Minnesota and map them in order to use them as a resource for Extension and other networks in the state. The web map I created is periodically updated with new food networks or changes to the data.

Currently, there are about 70 different food networks that I have identified and created as layers in the map. In order to create these networks, specific key information is needed to populate the fields of the layer. This includes the following:

- Network Name - the name of the food network.
- Geography - describes where the network is represented in the state. This could be labeled as a county, city, or multiple areas.
- Region - currently there are 7 different regions. They include: statewide, southwest, southeast, northwest, northeast, metro and central region.
- Status - This refers to the current status of the network. This can be active, in development or inactive.
- Contact - name of the primary contact for the food network
- Email - email of the food network contact.

To keep all of the different food networks organized, they are in different folders specific to their region. Figure 1 shows an example of how the data is organized. There is also one extra folder called “All Networks” which contains a special shapefile that holds all of the food network information in one layer. For the web map, it is important to have this file in order to query the information.

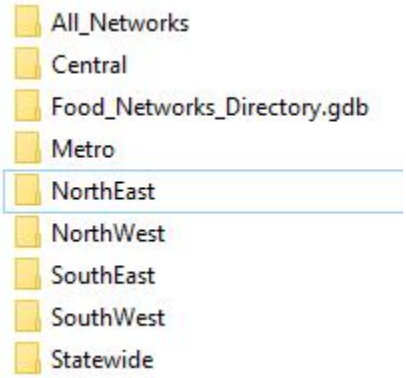

Figure 1

Since there are so many food networks it unfortunately takes a lot of time to create a new one with the correct fields, and then append it over to the master “All Networks” shapefile. In

addition, since many of the food network geographies have already been created (i.e. statewide food networks), many of the new entries simply require using the same shape.

For these reasons, I created a script that does several things for me in ArcMap. First, it copies a Food Network, and then calculates the fields of the new file so that you can quickly enter the new field information. Lastly, it appends this newly created file to the master “All Networks” shapefile. This script will save me a lot of time editing and copying information and allow me to work more quickly and efficiently in my day-to-day work. In total, I spent about 15 hours creating the script and writing the tutorial.

Tutorial

Based on the information above, you have been provided a folder called “FoodNetworks” which contains the following sub folders:

- AllNetworks - this contains the *AllNetworks.shp* file, which is the master shapefile of all food networks. For simplicity sake, instead of giving you all 70 food networks, this shapefile contains just 5 different food networks. Figure 2 shows what the shapefile and its attribute table look like when loaded into ArcMap.

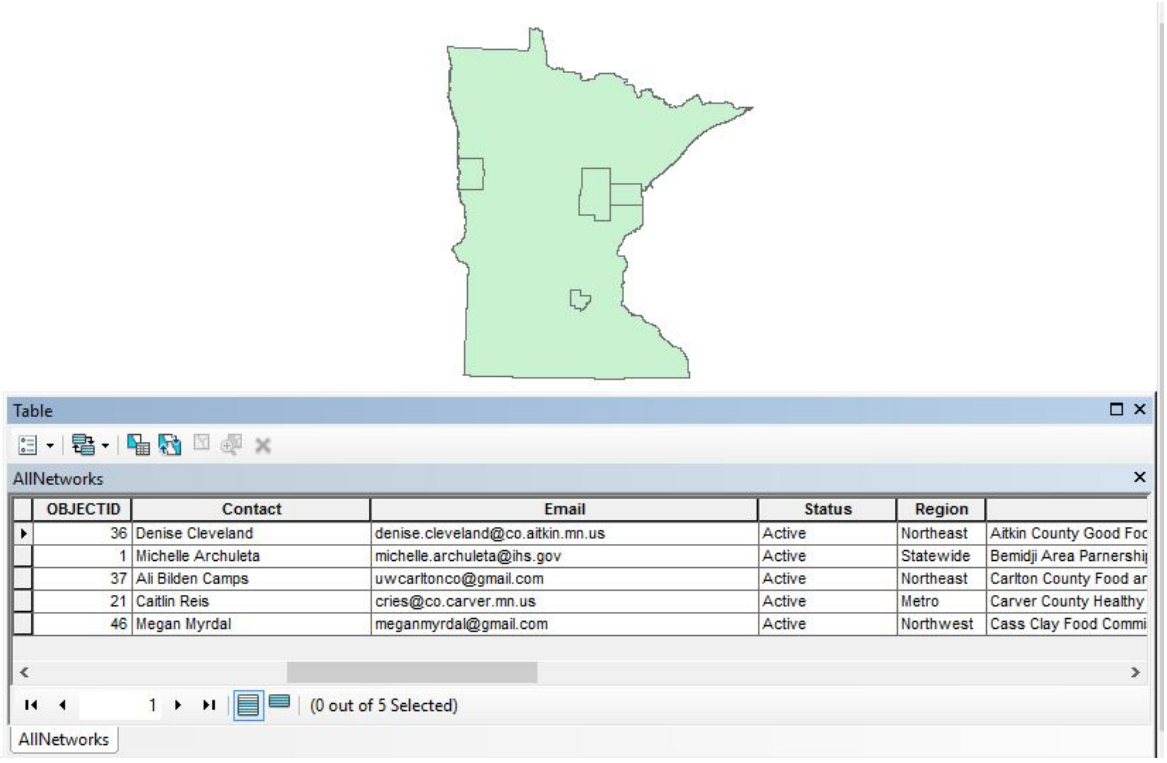

Figure 2

- NorthWest - this contains the *Cass_Clay.shp* file, which is a Food Network that has been previously created. Again, instead of providing you with all 70 individual shapefiles, just one example is necessary. Figure 3 shows what the shapefile and its attribute table look like when loaded into ArcMap.

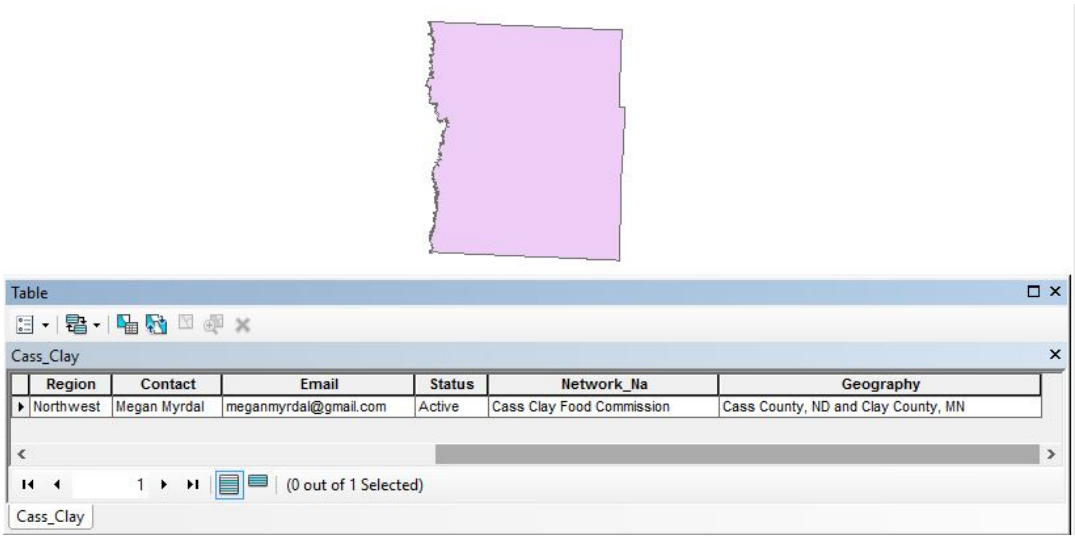

Figure 3

When looking at the attribute tables for both *AllNetworks* and *Cass_Clay*, notice that they both contain attributes that were previously mentioned - Contact, Email, Status, Region etc. Also, notice in Figure 2 that the shapefile *Cass_Clay* is the fifth attribute in the *AllNetworks.shp.*

You have also been provided a python script called "*Food_Network_Script"* which we will run in order to copy an original food network, enter the new data, and append it to the master *AllNetworks.shp.*

<u>Step 1</u>: Running the Script

1. Before opening the *Food_Network_Script*, make sure that your "FoodNetworks" folder containing all of the subfolders is located somewhere it is easily accessible.

The *Food_Network_Script* was first designed using ArcMap model builder and then was edited in IDLE. To run the script you only need to have access to IDLE.

2. Find the *Food_Network_Script,* open it and run the module.

<u>Step 2</u>: Setting the Workspace

As soon as you start the script, you are given a message that describes what the script's function is. You are also given the message seen in Figure 4 asking for your workspace path. This path is referring to where inputs are taken and outputs are placed when running tools.

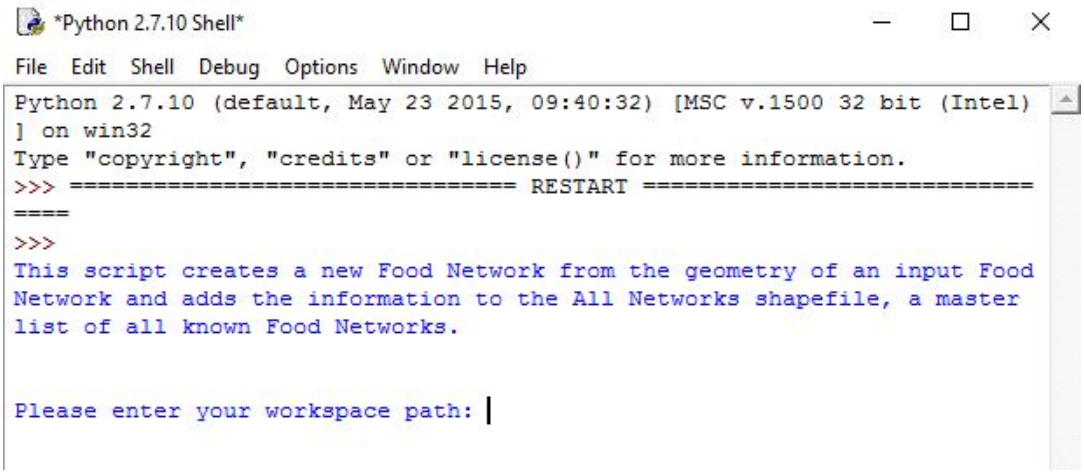

Figure 4

In this case, we need to set the “FoodNetworks” folder as the workspace path since it contains all of our data. There are many ways to find the path information of a folder:

1. Right-click the “FoodNetworks” folder > Properties and look at the location. See Figure 5.

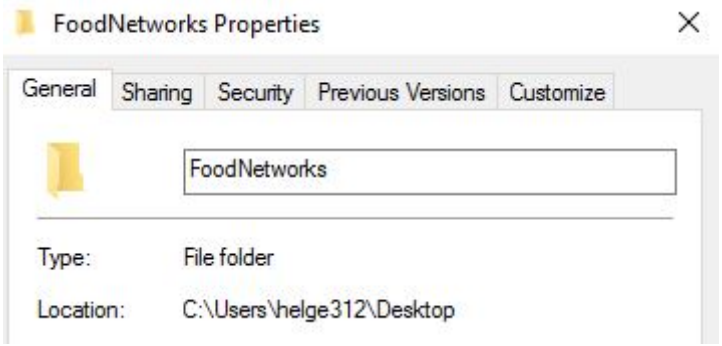

Figure 5

2. Open the “Food Networks” folder and click inside the title bar. This will appear if you have your file explorer options set up to show path information. See Figure 6.

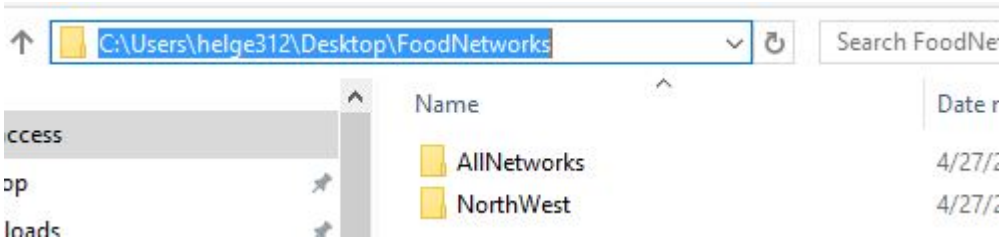

Figure 6

Either way, make sure that the path contains “FoodNetworks” as shown in Figure 7 and hit enter.

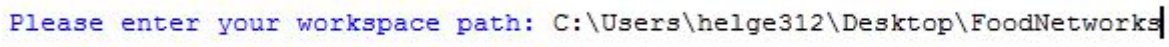

Figure 7

<u>Step 3</u>: Copying a Food Network

Now that you have your workspace path setup, you are prompted to enter a new path seen in Figure 8:

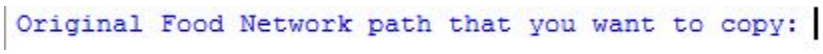

Figure 8

This is asking you to select an original Food Network that has already been previously created. Let’s say that we have discovered a new food network where the project covers Clay County. We know that we already have an existing Food Network that is in the shape of Clay County (*Cass_Clay.shp)* so we simply need to copy it.

1. Go into the “FoodNetwork” folder and click on the “NorthWest” folder.
2. Using the method of your choice to find the folder path, copy and paste it into IDLE. Figure 9 shows the result. Make sure that C:\....*FoodNetworks\NorthWest\Cass_Clay.shp* is written.

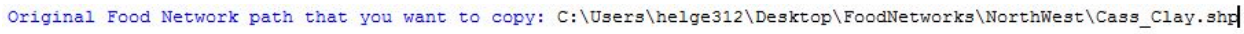

Figure 9

3. Hit enter.

<u>Step 4</u>: New Food Network

Now that you have copied your old Food Network, it’s time to rename it. You are prompted to enter the path to where the new Food Network will exist, and it’s new name.

In order to make sure that the folders represent their proper regions (i.e. NorthWest), the path will remain the same. We only need to give the new network a name.

1. Copy/paste the path that leads to the “NorthWest” subfolder into IDLE.
2. Write the name “*Clay_Food_Project.shp*” as the new name. See Figure 10 for reference.
3. Hit enter.

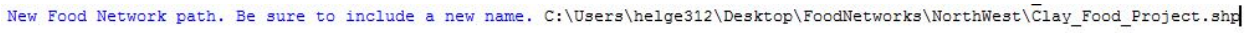

Figure 10

Step 5: All Networks shapefile

We have successfully created and renamed a new shapefile. We need just one more path to the master "*AllNetworks.shp"* where "*Clay_Food_Project.shp"* will be appended.

1. Find the "*AllNetworks.shp"* in the "AllNetworks" folder.
2. Copy/paste the path that includes the "*AllNetworks.shp"*. See Figure 11 for reference.
3. Hit enter.

```
AllNetworks shapefile path: C:\Users\helge312\Desktop\FoodNetworks\AllNetworks\AllNetworks.shp
```

Figure 11

Step 6: New attributes

Next, we need to re-calculate the fields of the newly created "*Clay_Food_Project.shp"* so they correctly represent the new Food Network. You will be prompted to enter the same key information that was mentioned in the introduction. Therefore, please enter the following information (in double quotes):

New Network Name: "Clay Food Project"
Contact: "John Doe"
Email: "jdoe@gmail.com
Status: "Active"
Region: "Northwest"
Geography: "All of Clay County"

Use Figure 12 for reference:

```
New Network Name: "Clay Food Project"
Contact: "John Doe"
Email: "jdoe@gmail.com"
Status: "Active"
Region: "Northwest"
Geography: "All of Clay county"
```

Figure 12

Step 7: Final product

After entering the information, you will receive the following message:

```
Your new Food Network has been created.
>>>
```

If you return to ArcMap and connect to the “FoodNetworks” folder, you will see the *AllNetworks.shp, Cass_Clay.shp* and the newly created *Clay_Food_Project.shp.* If you open the attribute table of the *AllNetworks.shp* (seen in Figure 13), you will see that the new network has been appended to the master shapefile.

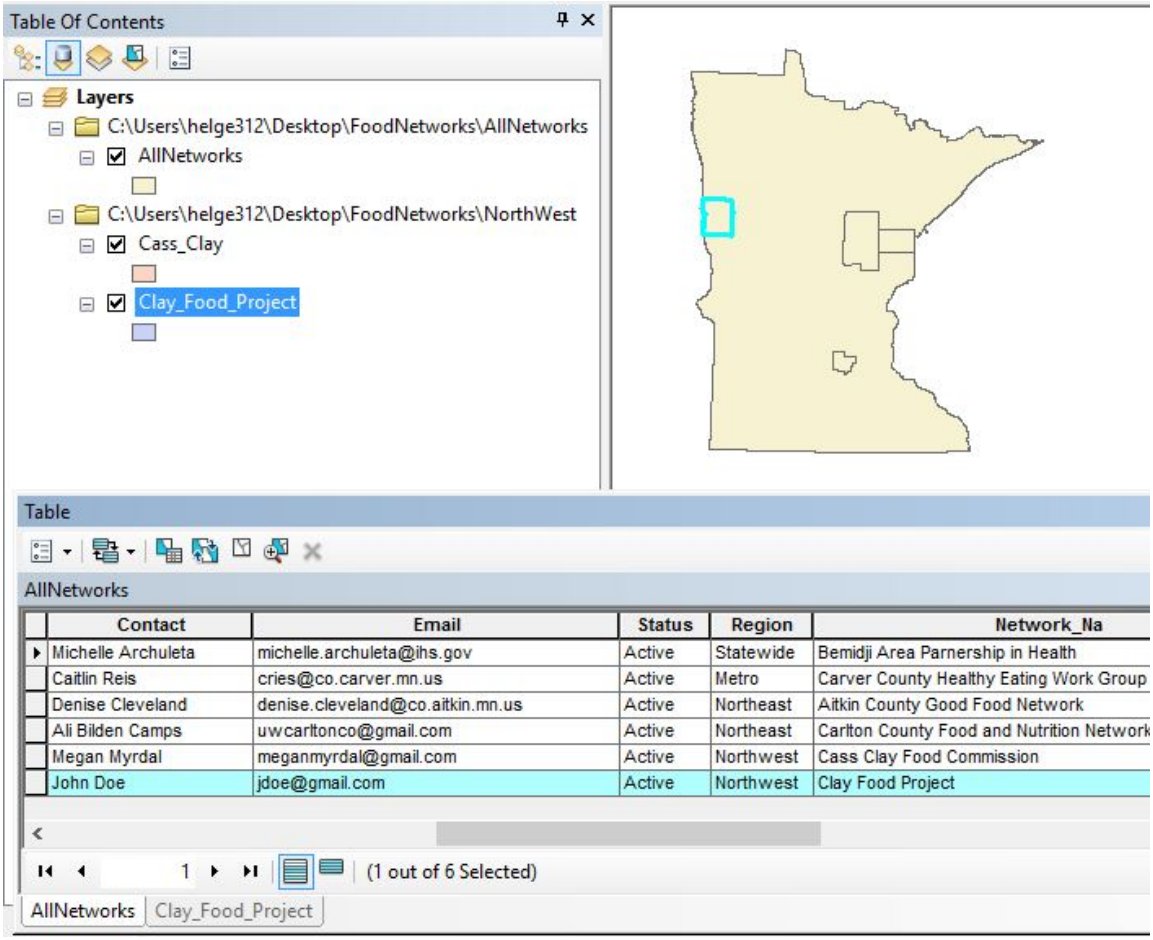

Figure 13