QGIS 2.18.7

QGIS: Creating Random Points

Welcome to the Essential ArcGIS Task Sheet Series. This series supplements the Iowa State University Geospatial Technology Training Program short course series. The task sheets are designed to provide quick, easy instructions for performing mapping tasks.

In QGIS, the Random points in layer bounds tool creates a specified number of random point features. Random points can be generated inside polygon features. This task sheet will demonstrate using the Random points in layer bounds tool within a QGIS project to create random points within a selected watershed, which could be used for sampling, modeling or analysis.

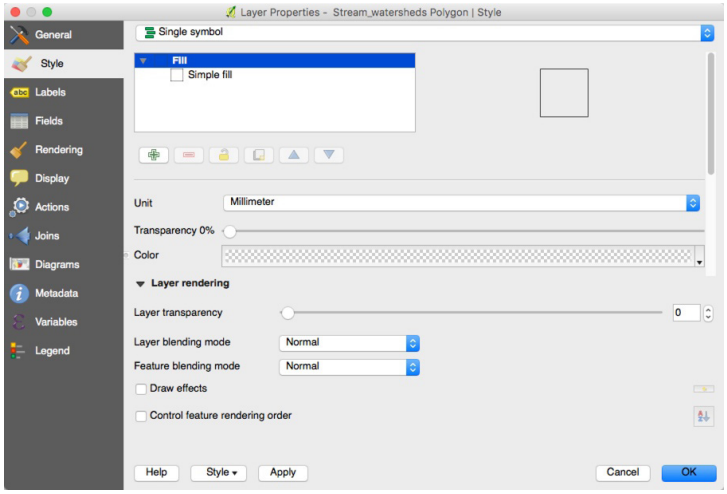
1. Getting Started

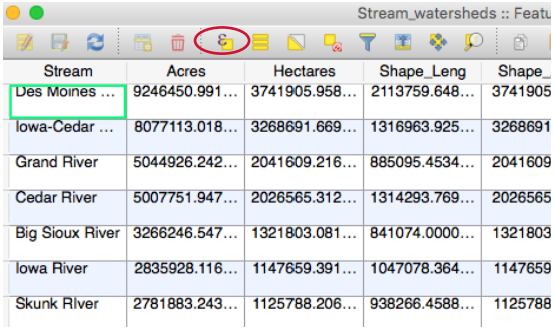
a. Download the data used in this task sheet by navigating to http://isueogtp.github.io/GISTaskSheets/TaskSheetData/PM2082-17h.zip in a web browser. The files you for this tutorial will automatically be downloaded. All files originated from the Iowa DNR NRGIS Library (https://programs.iowadnr.gov/nrgislibx/).

b. When the download is complete, you will need to copy the files from the folder to your working directory.

c. Open the **Stream_watersheds.shp** and **county.shp** in a new QGIS project.

d. You'll want **Stream_watersheds** to have no fill. Double click the layer from the **Layer Panel** and select the **Style** tab. Click on the **Color** drop down menu, select **Choose Color...**. In the **Select Color** window move the **Opacity** bar to the left until it reads **0%**. Click **OK** and click **OK** again to close the **Layer Properties** window.



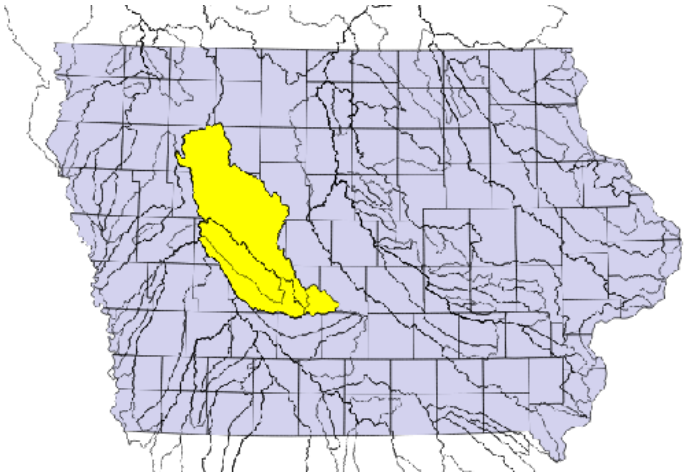


Stream	Acres	Hectares	Shape_Leng	Shape_
Des Moines ...	9246450.991...	3741905.958...	2113759.648...	3741905
Iowa-Cedar ...	8077113.018...	3268691.669...	1316963.925...	3268691
Grand River	5044926.242...	2041609.216...	885095.4534...	2041609
Cedar River	5007751.947...	2026565.312...	1314293.769...	2026565
Big Sioux River	3266246.547...	1321803.081...	841074.0000...	1321803
Iowa River	2835928.116...	1147659.391...	1047078.364...	1147659
Skunk River	2781883.243...	1125788.206...	938266.4588...	1125788

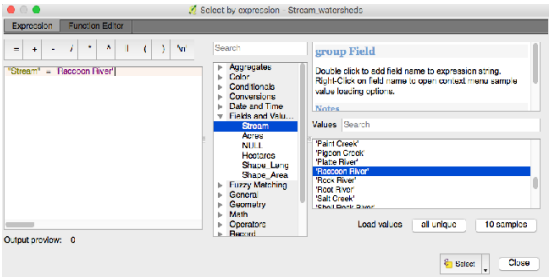
2. Selecting a Feature

a. For this tutorial we are interested in creating random points within the boundary of the Raccoon River watershed. To generate random points within one selected feature of the **Stream_watersheds.shp** shapefile (or any selected polygon area) that area of interest first needs to be selected before running the tool.

b. Right-click on **Stream_watersheds** from the **Layer Panel** and select **Open Attribute Table**. At the top of the **Attribute Table** select the **Select by expression** icon. A **Select by expression** window will open.

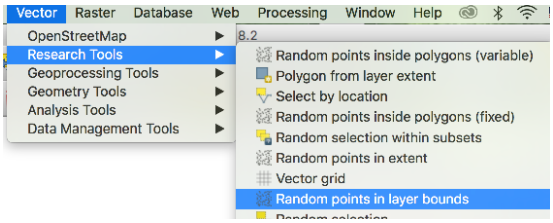


c. In the middle column, select the **Fields and Values** drop-down menu and double-click **Stream**. Next, click the **=** button above the output window. Make sure **Stream** is still selected and select **all unique**. In the box above, navigate to **Racoon River** and double-click it. Make sure your expression looks like the image to the right, and click **Close**. **Racoon River** is now selected on the map. *Note: Alternatively, to open the select by expression window, select Advanced Filter (Expression) from the bottom left drop down menu of the Attribute Table.*



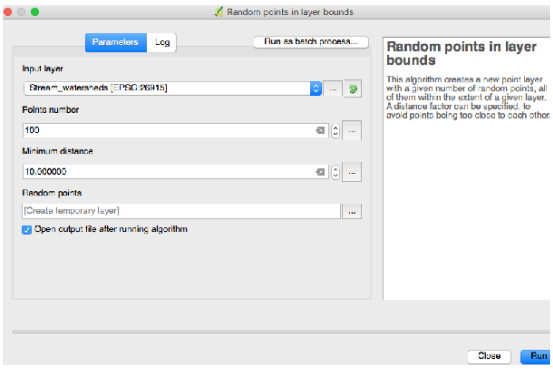
3. Creating Random Points Tool

a. In the **Menu Bar**, select **Vector** and click **Research Tools**. Navigate to **Random points in layer bounds** and select it.

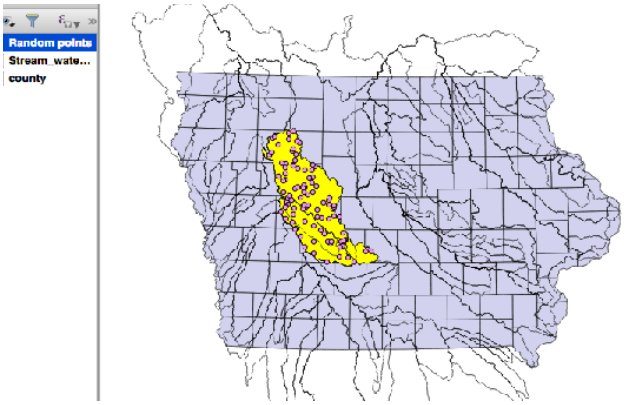


b. In the **Random points in layer bounds** window, set the **Input Layer** to **Streams_watersheds**, the **Points number** to **100**, and the **Minimum distance** to **10**.

c. Make sure **Open output file after running algorithm** is selected and click **Run**. *Note: because we have a feature selected from this shapefile, the tool will use the selected feature instead of the extent of the entire shapefile.*



d. When the tool is complete, the random points will be added to your QGIS project. Use the **Zoom In** tool to get a close up of the random points that were generated. You should see that the points are at least 10 meters apart. Open the attribute table for **Random Points**. You can see there are 100 features in the attribute table.



Contact:

Bailey Hanson bahanson@iastate.edu, 515-520-1436 or Professor Christopher J. Seeger, ASLA, GISP cjseeger@iastate.edu, 515-509-0651 for more information about the Geospatial Technology Program. This task sheet and more are available at www.extension.iastate.edu/communities/gis

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