

QGIS: Finding and Utilizing Iowa Resources

Welcome to the QGIS 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.

Iowa has a wealth of free geospatial resources. In this QGIS task sheet, we will be reviewing several different websites that offer access to free GIS data. We will also be reviewing how to use different formats of data from these sources, such as shapefiles (.shp) and web services (.wms and ArcGIS REST Services) within QGIS.

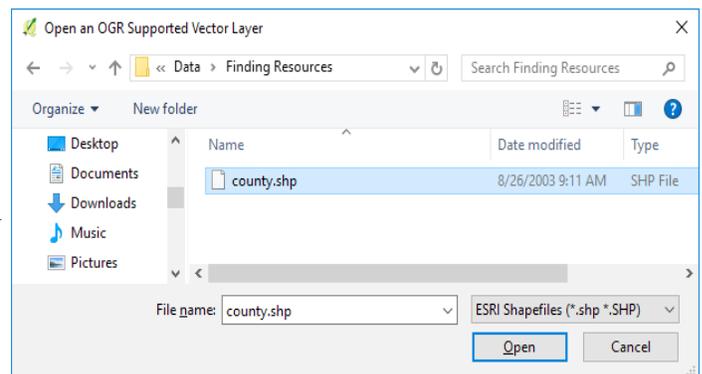
1. Downloading a Shapefile from the Iowa Geodata Website

- Go to the Iowa Geodata Website: <https://geodata.iowa.gov/>. Under **Categories**, select **Boundaries**. Then type **county** in the search box and click **Apply**.
- There will be a list of several results, click on **County Boundaries of Iowa**. This will show you more information about the data layer.
- Click on the **Download** button. A zipped folder will download. Open the zip folder and extract* all the data to the place where you save your GIS data. *Note: you need all the files in this folder for the shapefile to work correctly, so please make sure to download them all and keep them together. *Mac users don't need to unzip or extract the files from the folder.*



2. Adding a Shapefile to QGIS

- Open **QGIS** and **create a new project**, by clicking on **Project > New**. Click on the **Add Vector Layer** icon. The **Data Source Manager** window will open.
- Under the **Source** section, use the **...** ellipsis icon to browse to the location of your saved data. Make sure to use the drop-down menu to specify **ESRI Shapefile**. Select **county.shp** and then click **Open**.
- Back in the **Add vector layer window** click **Open**. Then click **Add** and **Close**. Now the Iowa counties shapefile should appear.



3. Connecting to an ArcGIS REST Service Layer

- Go to the <https://www.iowadot.gov/gis> and click on the link for the **Iowa DOT REST directory**. This page lists their REST Services. Click on **Rail > Rail/Rail Lines (MapServer)** and copy the webpage URL.

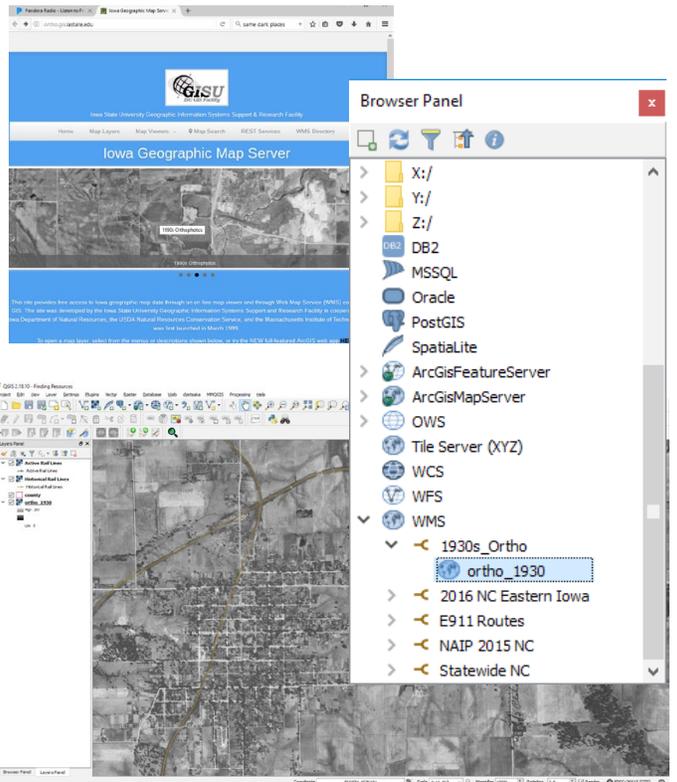
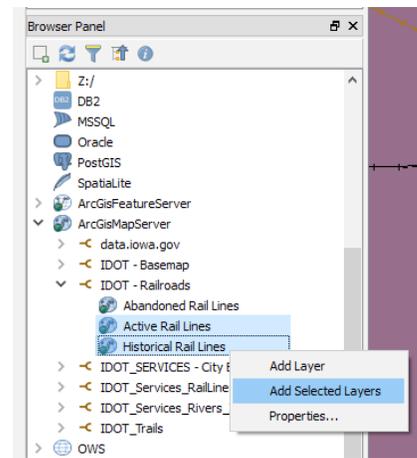
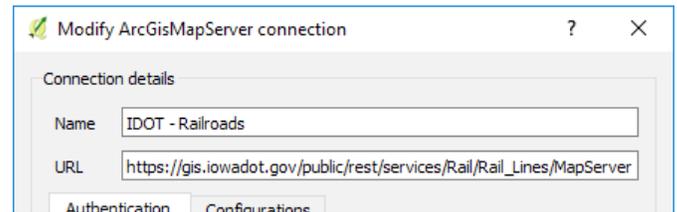


- b. To connect this service into your QGIS project, click on **Layer > Add Layer > Add ArcGIS MapServer Layer**. When the window opens, click on the **New** button.
- c. In the **Name** box, type **IDOT - Railroads** and paste the copied URL: https://gis.iowadot.gov/public/rest/services/Rail/Rail_Lines/MapServer in the URL box and click **OK**.
- d. Click on the **Connect** button. Add **Active** and **Historical Rail Lines** by holding down the **Ctrl** key* and select both layers, then click **Add**. Make sure the **Active Rail Lines** layer is listed first in the **Layers Panel**. Visually compare the layers. *Note: *Mac users should hold down the command key instead of Ctrl.*

4. Connecting to a WMS Layer

- a. Go to the Iowa Geographic Map Server website: <http://ortho.gis.iastate.edu/>. Click on **WMS Directory** from the main menu. From the list, click on **ortho_1930**, and copy the URL: http://ortho.gis.iastate.edu/arcgis/services/ortho/ortho_1930/ImageServer/WMServer?
- b. In QGIS, add the **Browser Panel** from the main toolbar by going to **View > Panels > Browser Panel**.
- c. In the **Browser Panel**, scroll down to **WMS/WMTS** and select it then right-click and select **New Connection...** The **Create a new WMS connection** window will appear. In the **Name:** box, type **1930s_Ortho** and paste the copied URL into the **URL** box. Click **OK**.
- d. The layer **1930s_Ortho** should appear under the **WMS** icon in the browser panel. To add the layer to the map, double-click on it and then double-click on **ortho_1930**. Drag the layer below the railroad layers to examine the historic railroads layer and see which rail lines existed in the 1930s.

Bonus: add the 2015 WMS layer to find which rail lines have been removed.



Contact:

Amy Logan amylogan@iastate.edu, 515 294 0980 for QGIS specific questions. 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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