DCN Planetears

Geospatial Data Curation:
an introduction
Module: Environment Setup

Module Objectives: Environment Setup

This module is a self paced pre-workshop session to allow all students time to download and interact with GIS tools prior to beginning the workshop activities.

By the end of this module learners should be able to:

1. Download QGIS and ArcGIS Pro (if institution has Esri License)
2. Load and display a vector dataset and raster dataset
3. Navigate the tools interface to perform tasks such as:
    a. Check layer properties
    b. Open attribute table
    c. Change the projection of a layer

At the end of the session students are expected to submit a series of screenshot to demonstrate understanding of the environment.

Download Example Dataset

Kramer, Gunnar R; Peterson, Sean M; Daly, Kyle O; Streby, Henry M; Andersen, David E. (2019). Data supporting the comparison of golden-winged warbler and American woodcock productivity in northern Minnesota, USA. Retrieved from the Data Repository for the University of Minnesota, https://doi.org/10.13020/znag-tn48.

0_Environment_Setup_Datasets

- File will need to be unzipped before you can use it

Note: this example datasets are derived from real datasets, but have been modified to highlight common curation issues.

QGIS

Download Instructions for QGIS

1. Go to the Download QGIS website
2. Locate your operating system in the list of download options
3. Please download the latest long term release. The long term release version of the program and the most stable at this time.

QGIS Interface

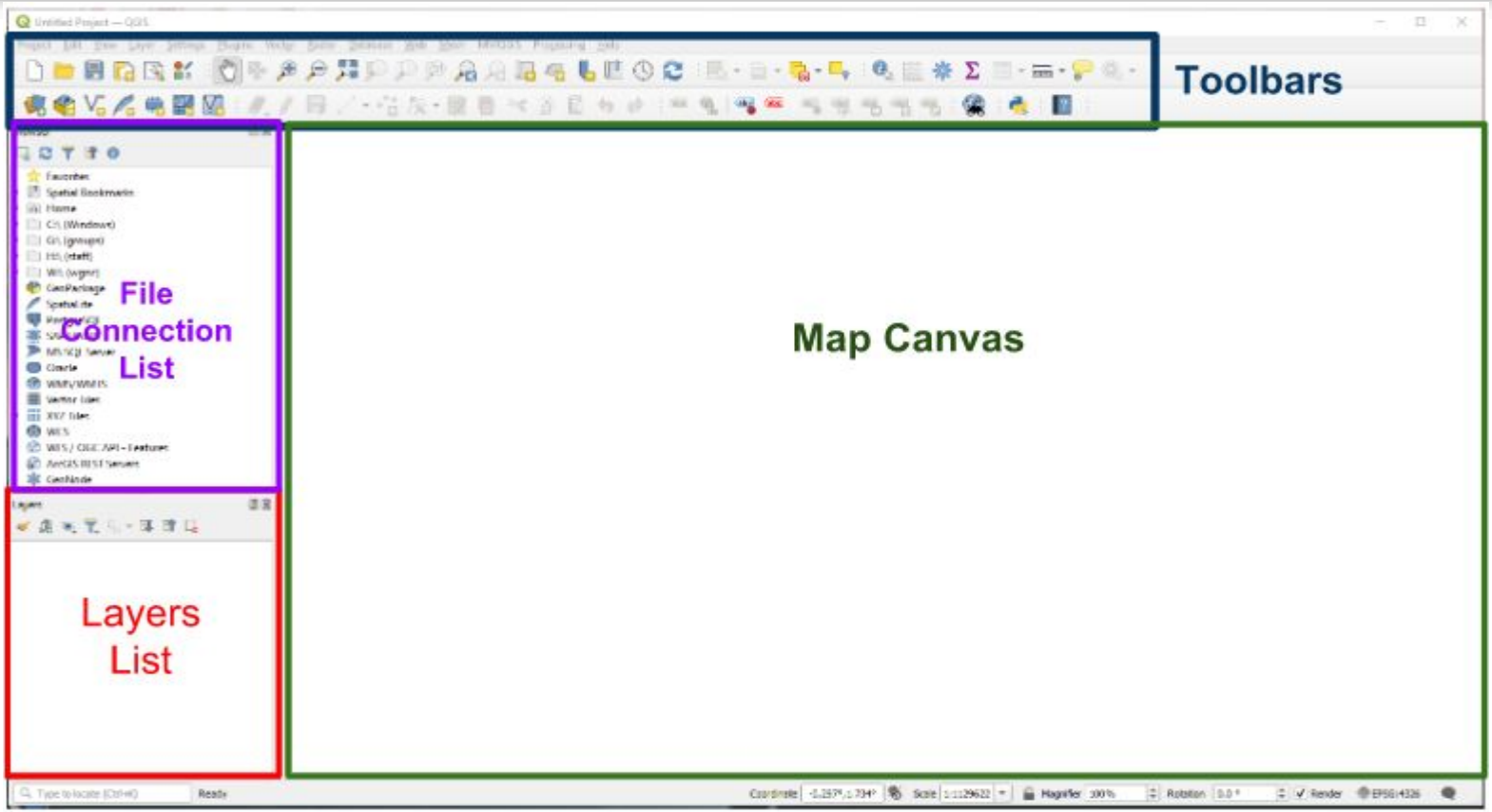

Image credit: Kelly Grove

Important Toolbar Icons in QGIS

Open Data Source Manager

Open Attribute Table

Identify Features

Pan Map

Zoom to Full Extent

Zoom In

Zoom Out

Style Manager

Layer Labeling Options

Save

Open Project

New Project

Pan Map to Selection

Adding Vector Data in QGIS

1. Click on the “Open Data Source Manager” icon
2. Select “Vector” from the side menu
3. Click on the three dots next to the Source box
4. Locate where the data layers are saved and select the SHP file extension
   a. Select the file *0_study_area_cover_type.shp*
5. Click the “Add” button

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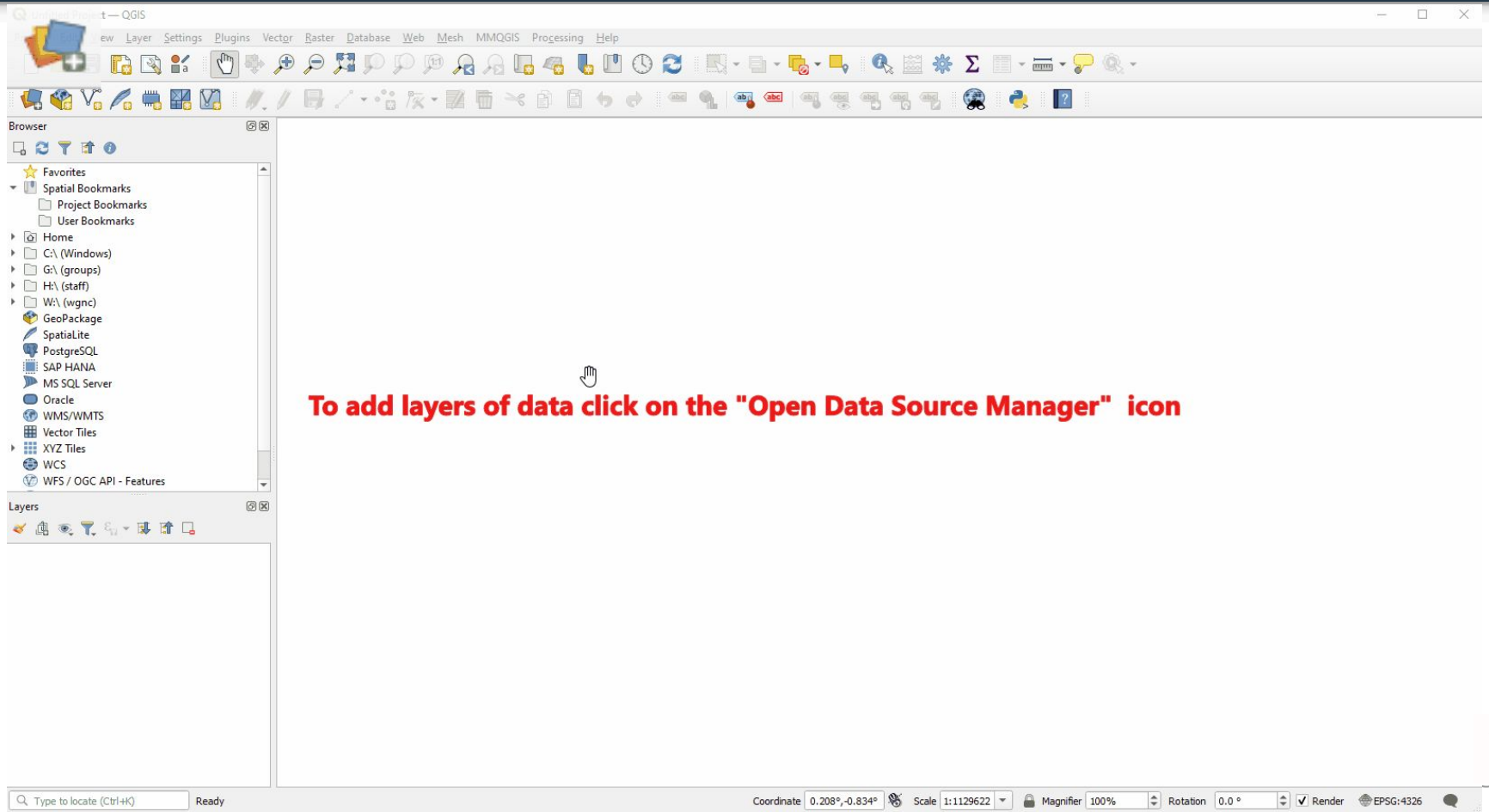
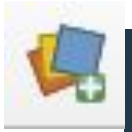
Adding Vector Data in QGIS: Example Video



Video credit: Kelly Grove

Adding Raster Data in QGIS

1. Click on the “Open Data Source Manager” icon 
2. Select “Raster” type from the side menu
3. Click on the three dots next to the Source box
4. Locate where the data layers are saved and select the .tif file type
    a. Select the files *0_warblerProductivity.tif* and *0_woodcockProductivity.tif*
5. Click the “Add” button

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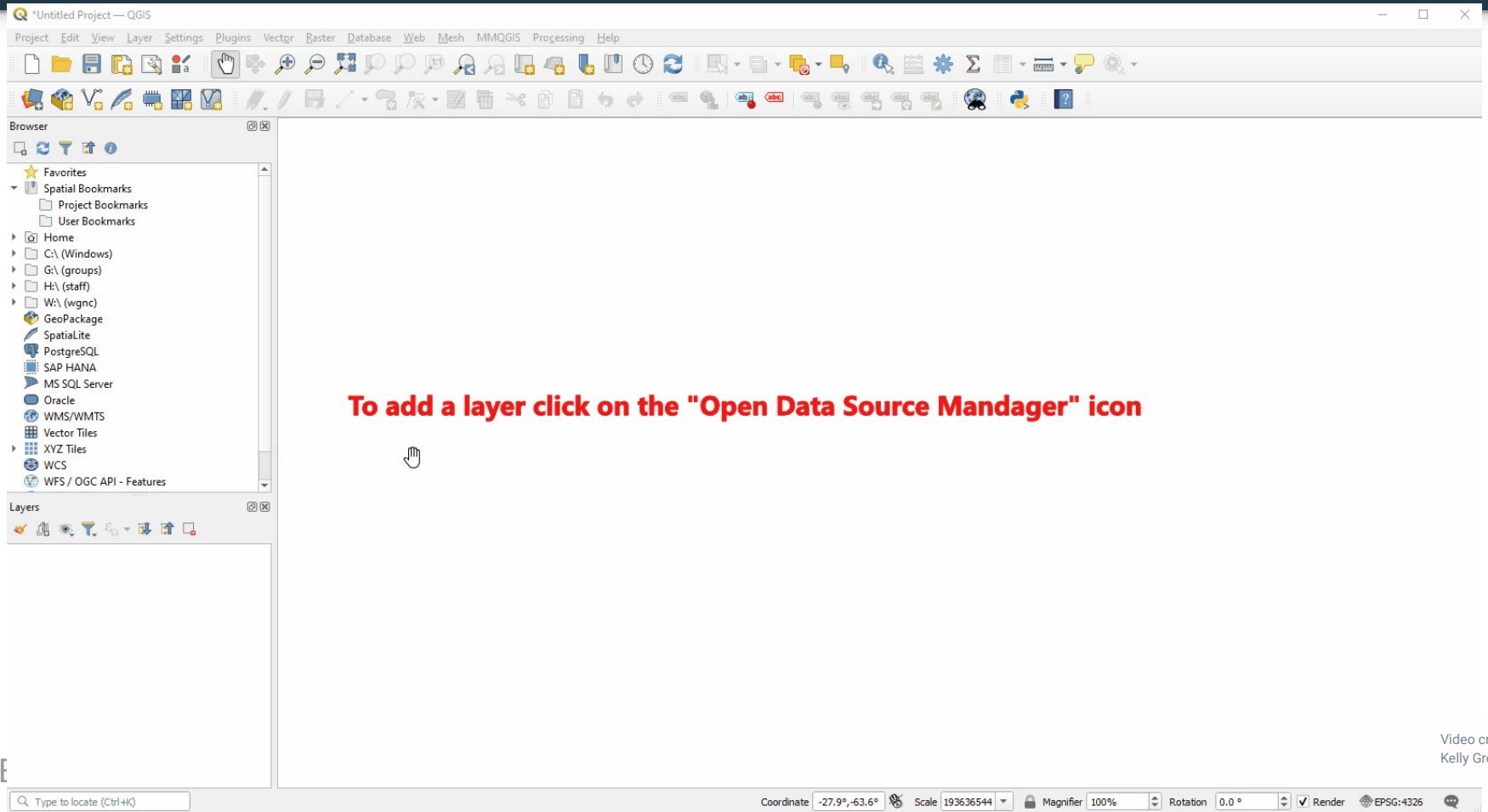
Adding Raster Data in QGIS: Example Video



Video credit:
Kelly Grove

Checking Layer Properties in QGIS

1. Right click on the layer you wish to check
    a. Select the file 0_study_area_cover_type layer
2. Select “Properties” from the pop-up menu
3. Select “Information” from the side menu of the Layer Properties window

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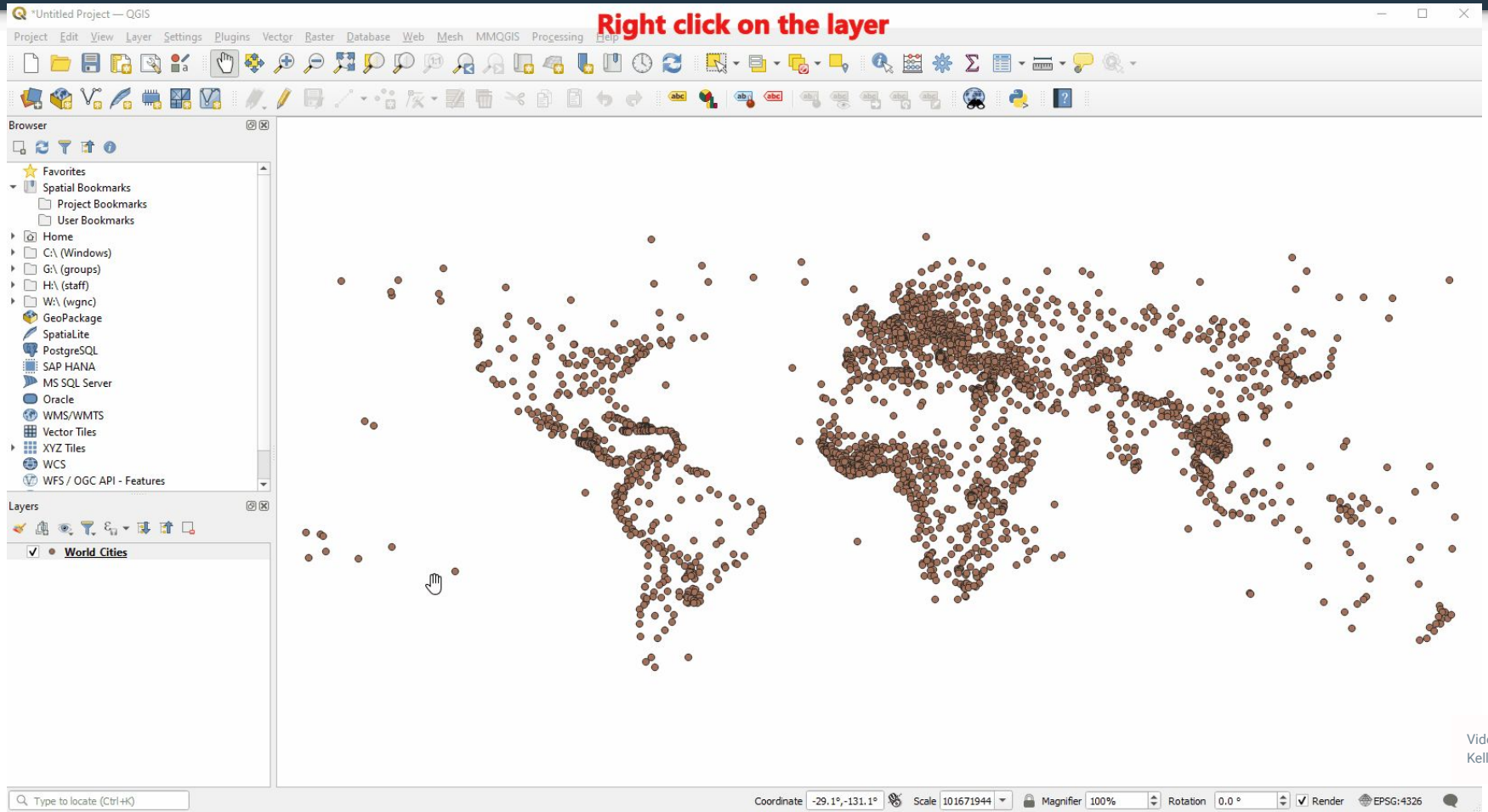
Checking Layer Properties in QGIS: Example Video



Video credit: Kelly Grove

Looking at Attribute Table in QGIS

1. Right click on the layer you wish to check
    a. Select the file 0_study_area_cover_type layer
2. Select “Open Attribute Table” from the pop-up menu

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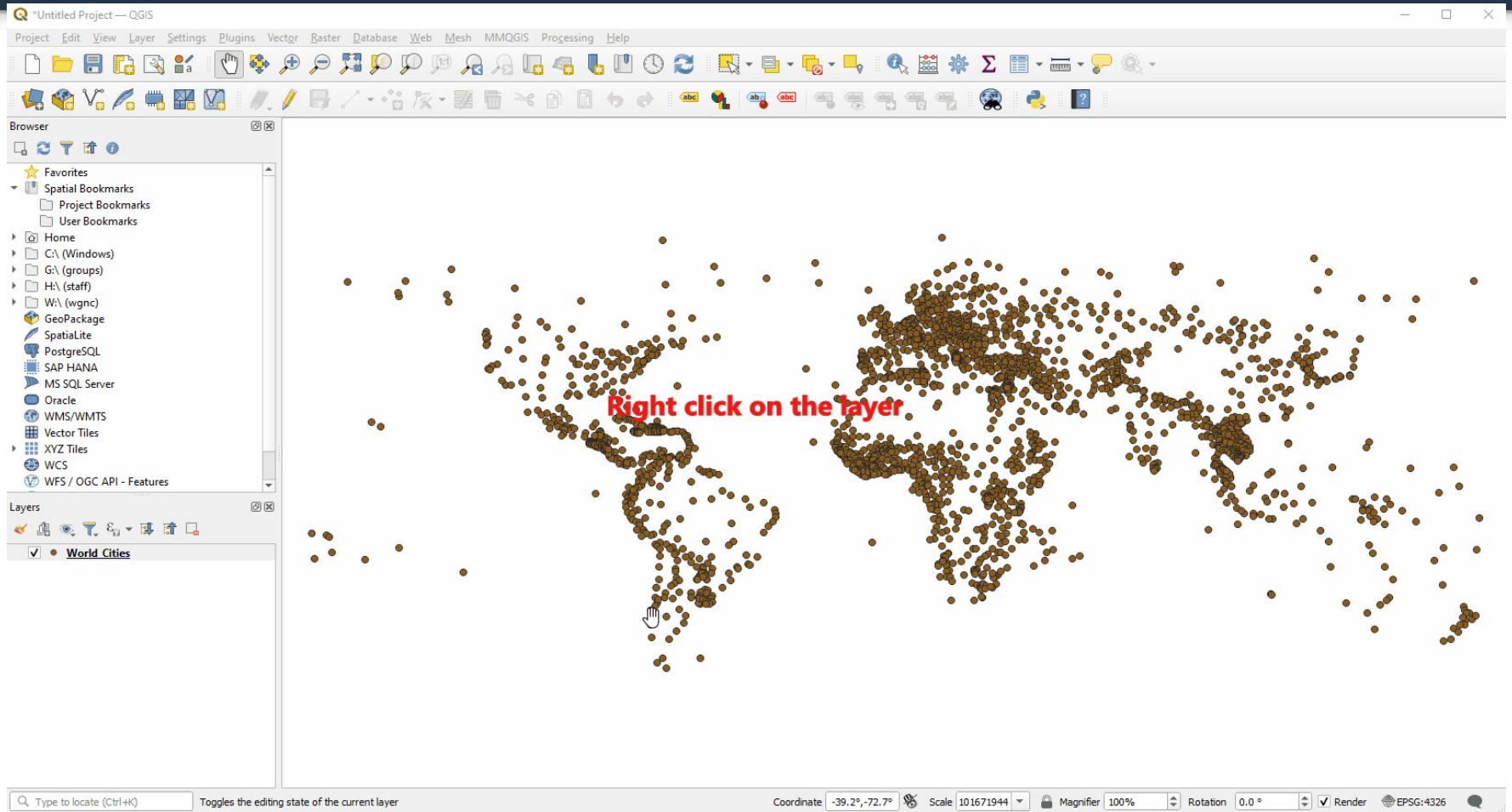
Looking at Attribute Table in QGIS: Example Video



On the Fly Projection Change in QGIS

1. Right click on the layer you want to change and go to “Layer CRS”
    a. For this example we will change the projection of all three layers
2. Click on “Set Layer CRS”
3. Search for the projection you need or select from the recently used list
    a. For this example search for EPSG:26915 - NAD/UTM zone 15N
4. Click OK
5. When the layer disappears right lick on the layer and select “Zoom to Layer”

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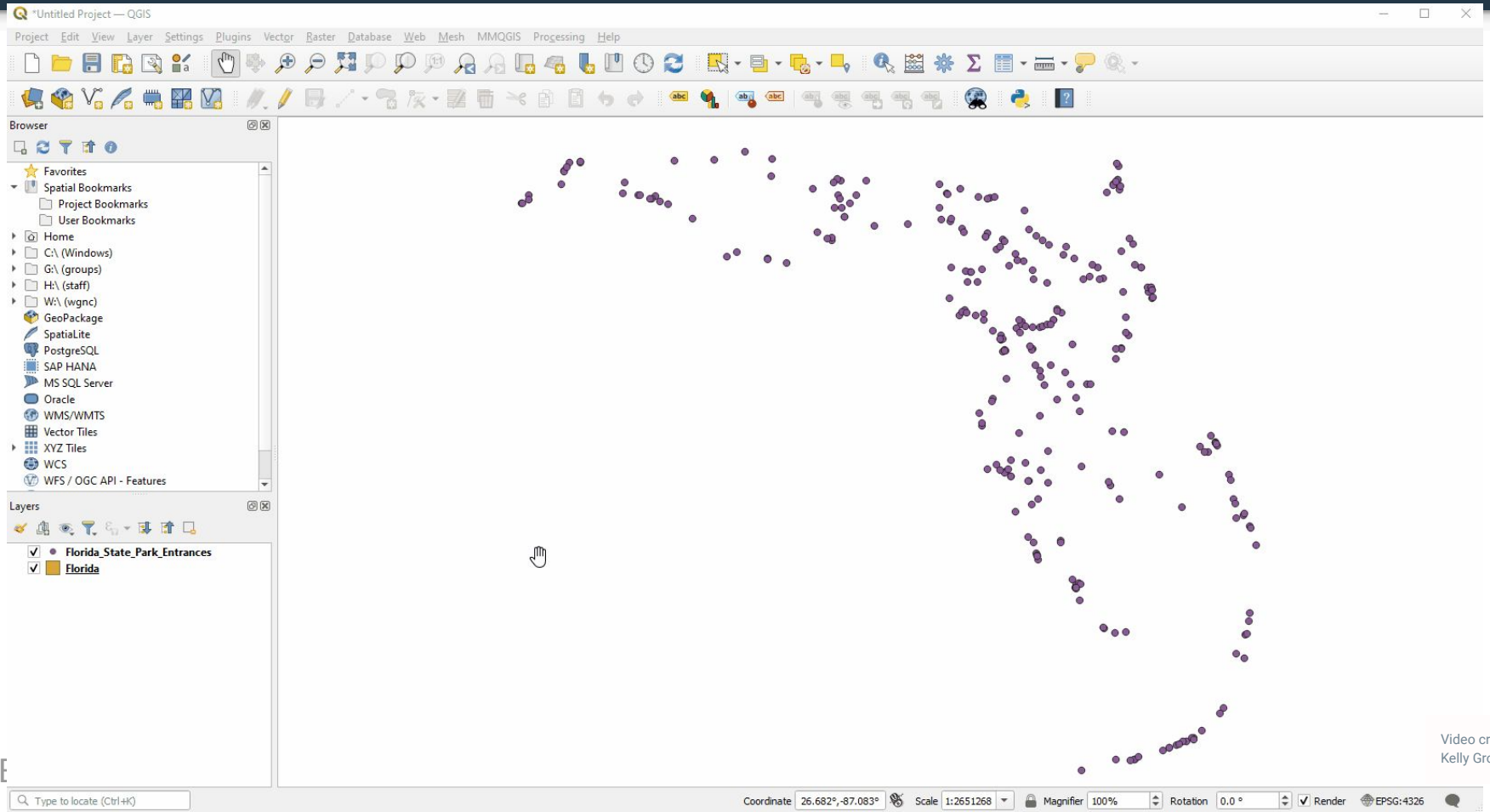
On the Fly Projection Change in QGIS: Example Video



Video credit:
Kelly Grove

Save Layer in New Projection in QGIS

1. Right click on the layer
2. From the menu select “Export” and then “Save Feature As…”
3. Use drop down menu for “Format” to choose appropriate file format
4. Use the three dot button next to “File Name” to rename the file and place it in the appropriate folder
    a. We suggest using same naming convention and adding the new projection name at the end of the file name (example: 0_study_area_cover_type_UTM15N)
5. Click on the globe icon to find the appropriate projection
    a. Use the EPSG:26915 - NAD/UTM zone 15N projection for this example
6. Choose a transformation option that best fits your situation
    a. For this example simply click okay when asked

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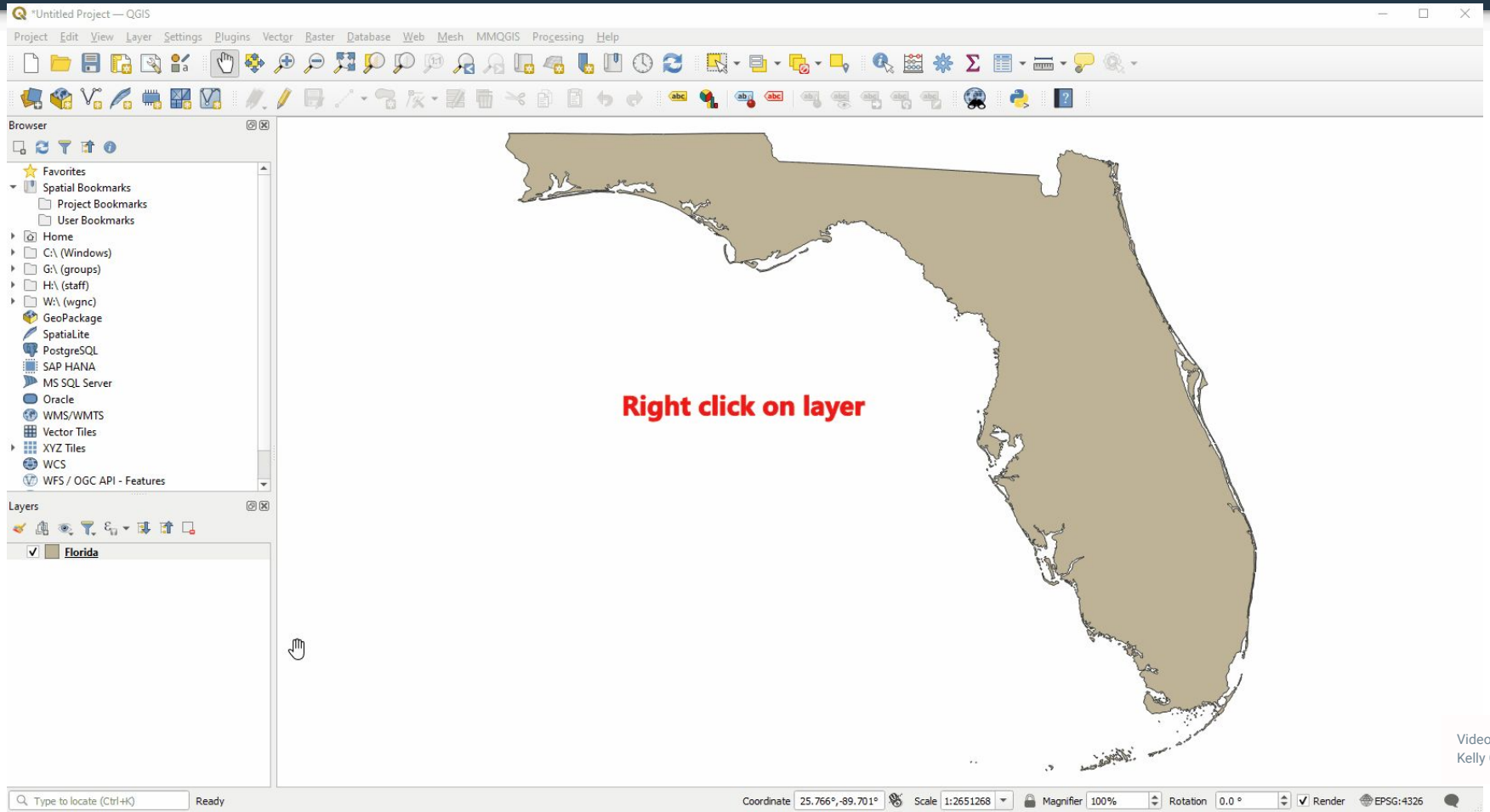
Save Layer in New Projection in QGIS: Example Video



Video credit:
Kelly Grove

ArcGIS Pro

esri

Download/Login Instructions for ArcGIS Pro

1. Check to see if your institution has a license for Esri ArcGIS Pro
   a. If you do not have an account try using QGIS
2. Request an account from the department holding the license
3. Follow the download instructions for the program from Esri

ArcGIS Pro Interface

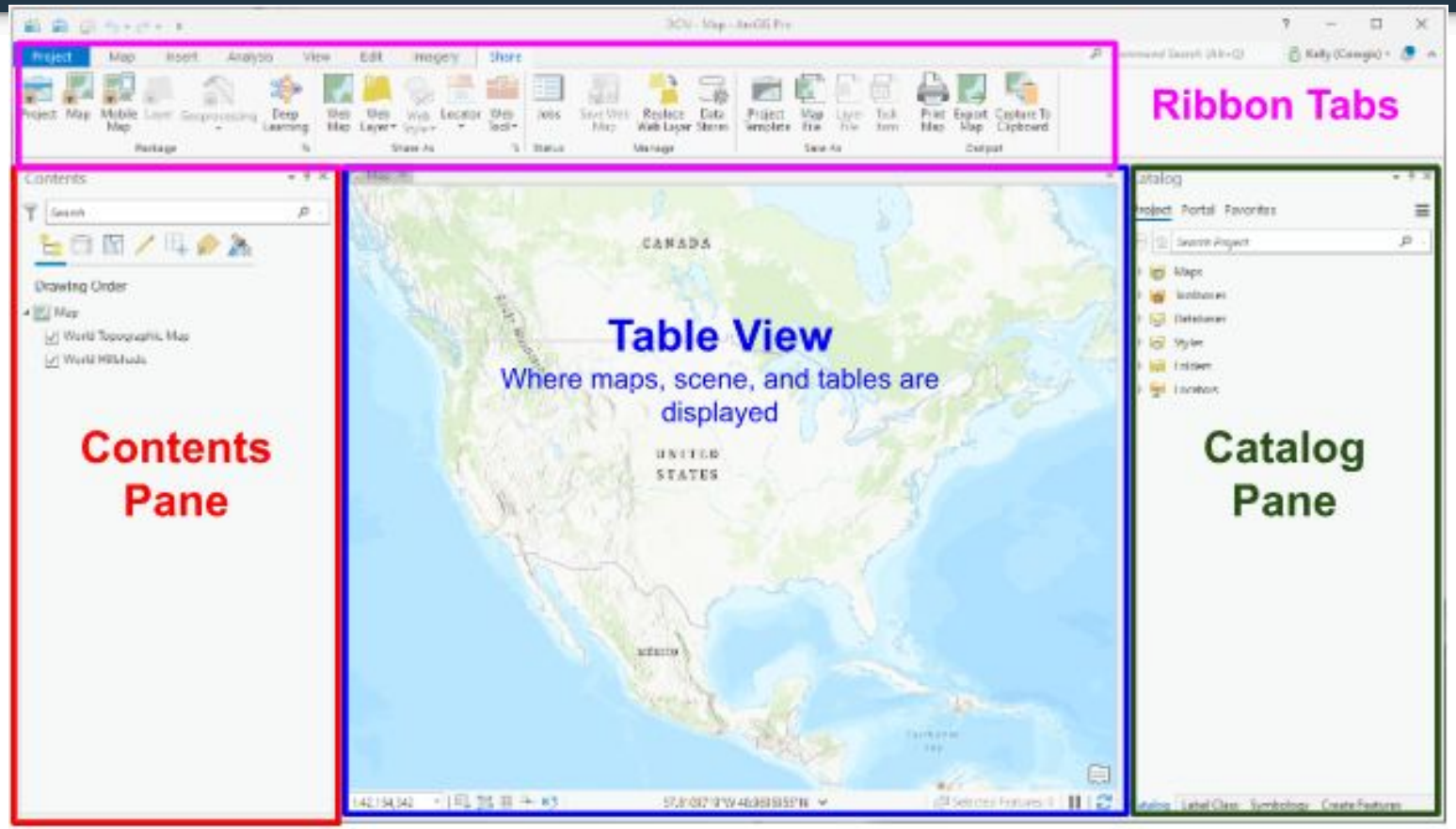
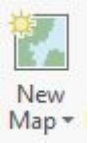


Image credit: Kelly Grove

Important Toolbar Icons in ArcGIS Pro

Add Data



New Map

Explore (pan around)

Zoom In

Zoom Out

Zoom to Full Extent

Open Attribute Table

Select Feature

Export Map

Adding Vector Data in ArcGIS Pro

1. Click on the “Add Data” icon
2. Click on “Data - Add Data to Map”
3. Locate where the data layers are saved and select the correct file type
    a. Add the vector file *0_study_area_cover_type.shp*

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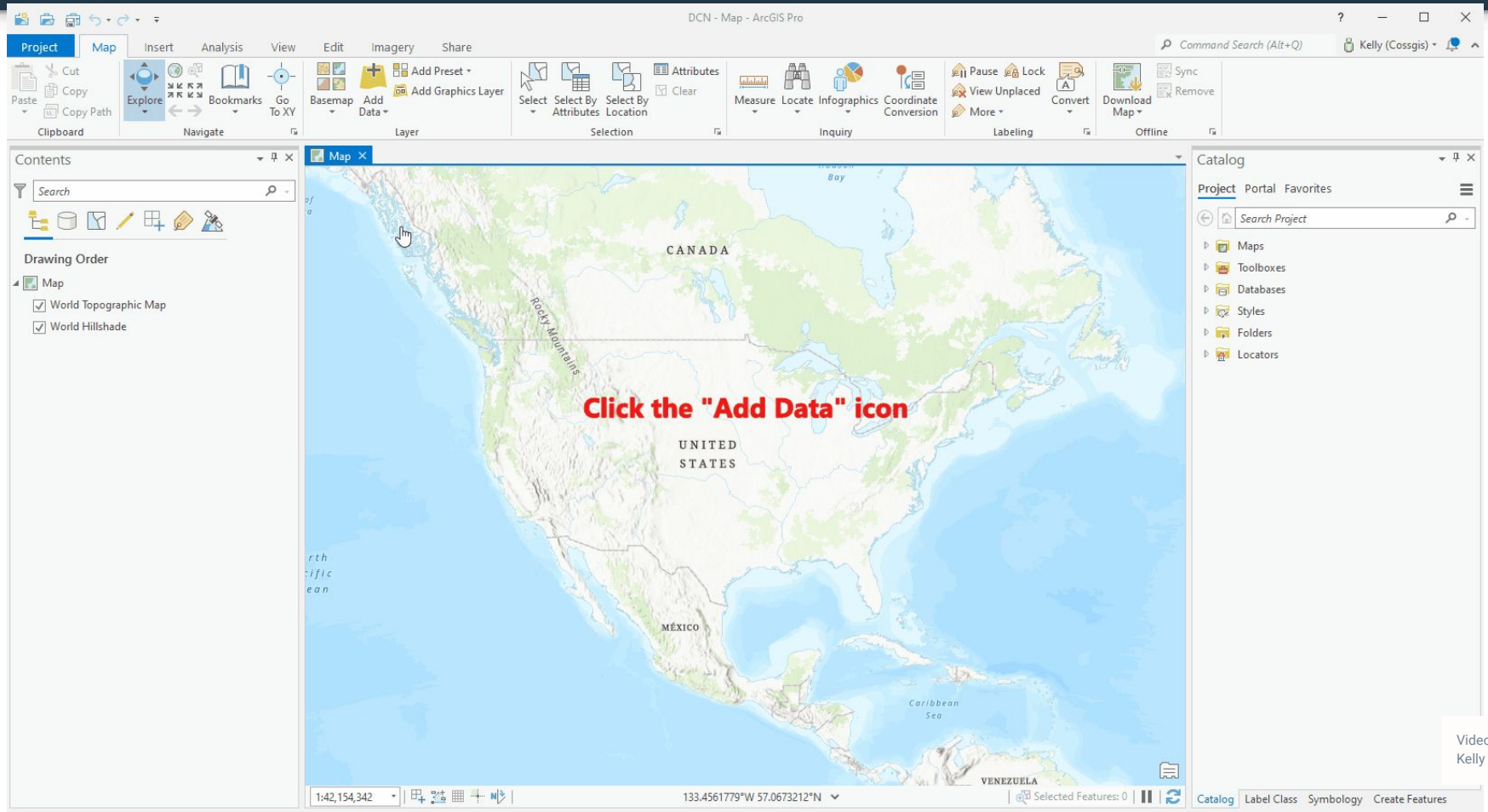
Adding Vector Data in ArcGIS Pro: Example Video



Video credit: Kelly Grove

Adding Raster Data in ArcGIS Pro

1. Click on the “Add Data” icon
2. Click on “Data - Add Data to Map”
3. Locate where the data layers are saved and select the correct file type
    a. Add the Raster files *0_warblerProductivity.tif* and *0_woodcockProductivity.tif*

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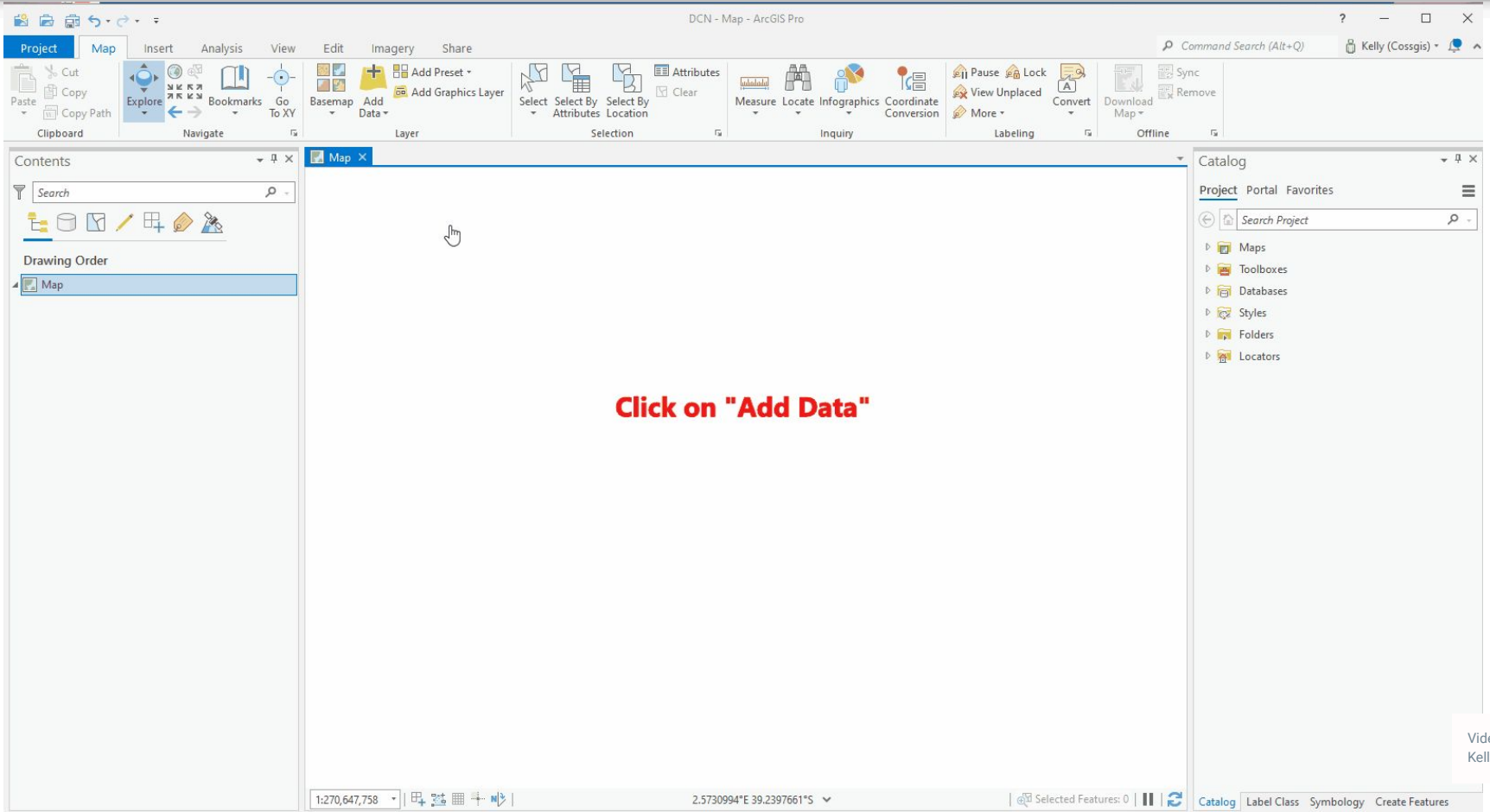
Adding Raster Data in ArcGIS Pro: Example Video



Video credit: Kelly Grove

Checking Layer Properties in ArcGIS Pro

1. Right click on the layer
2. Select “Properties” from the pop-up menu

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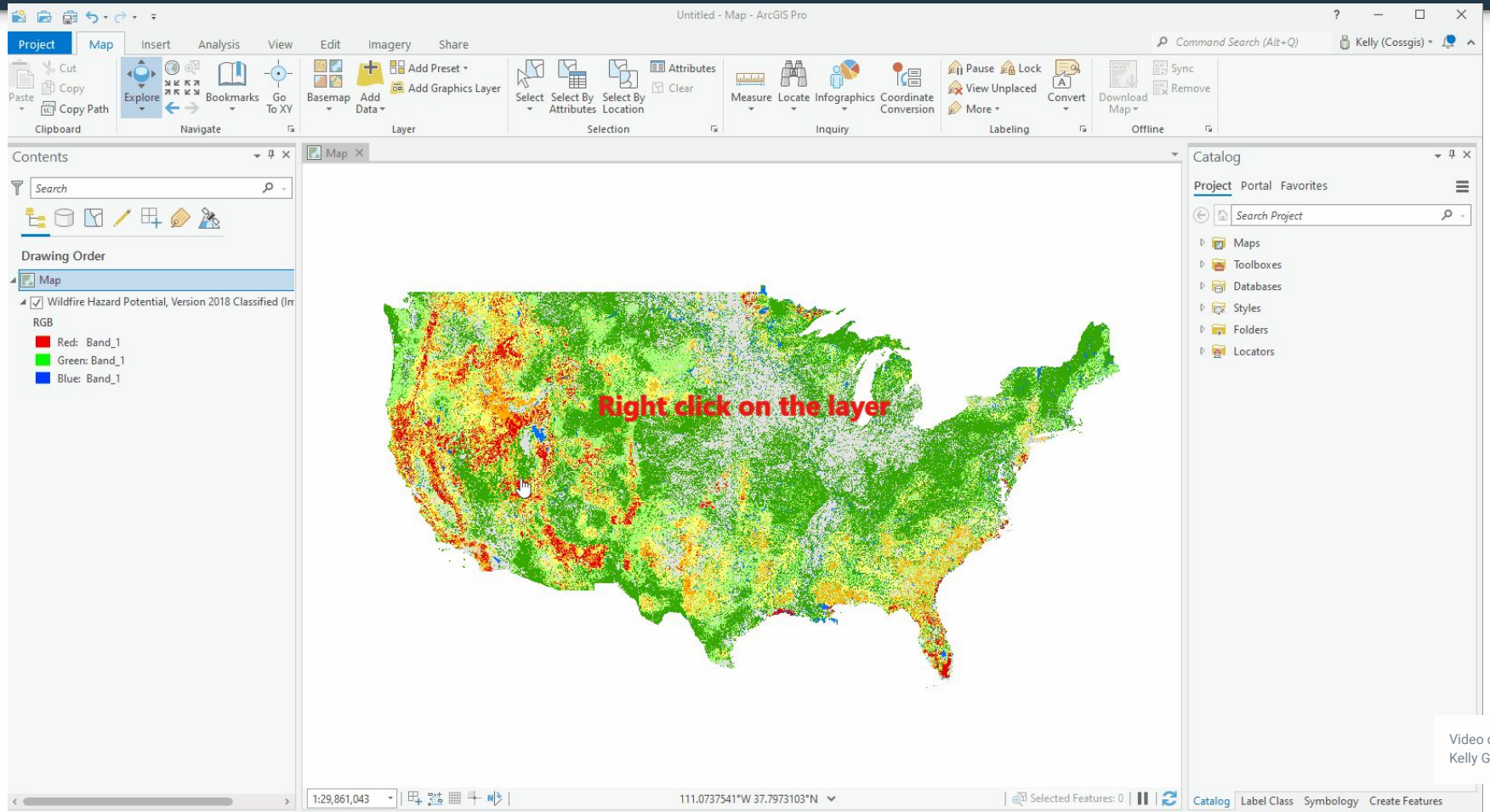
Checking Layer Properties in ArcGIS Pro: Example Video



Video credit: Kelly Grove

Looking at Attribute Table in ArcGIS Pro

1. Right click on the layer
    a. Select the file
        0_study_area_cover_type layer
2. Select “Attribute Table” from the pop-up menu

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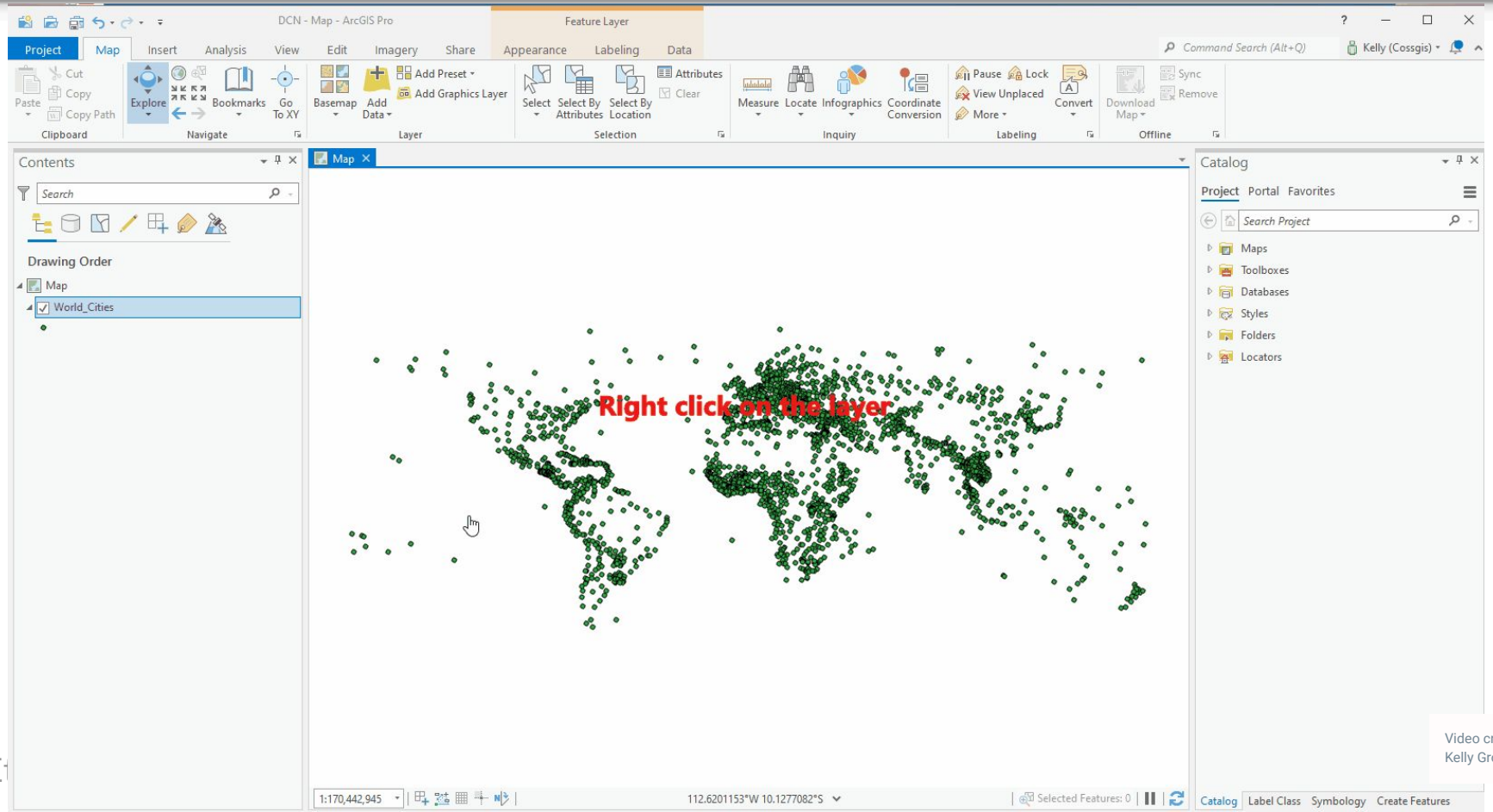
Looking at Attribute Table in ArcGIS Pro: Example Video



Video credit: Kelly Grove

On the Fly Projection Change in ArcGIS Pro

1. Right click on the “Map” and select “Properties”
    a. For this example we will change the projection of all three layers
2. Choose the “Coordinate Systems” Tab
3. Search for the coordinate system
    a. For this example search for EPSG:26915 - NAD/UTM zone 15N
4. Click “OK”

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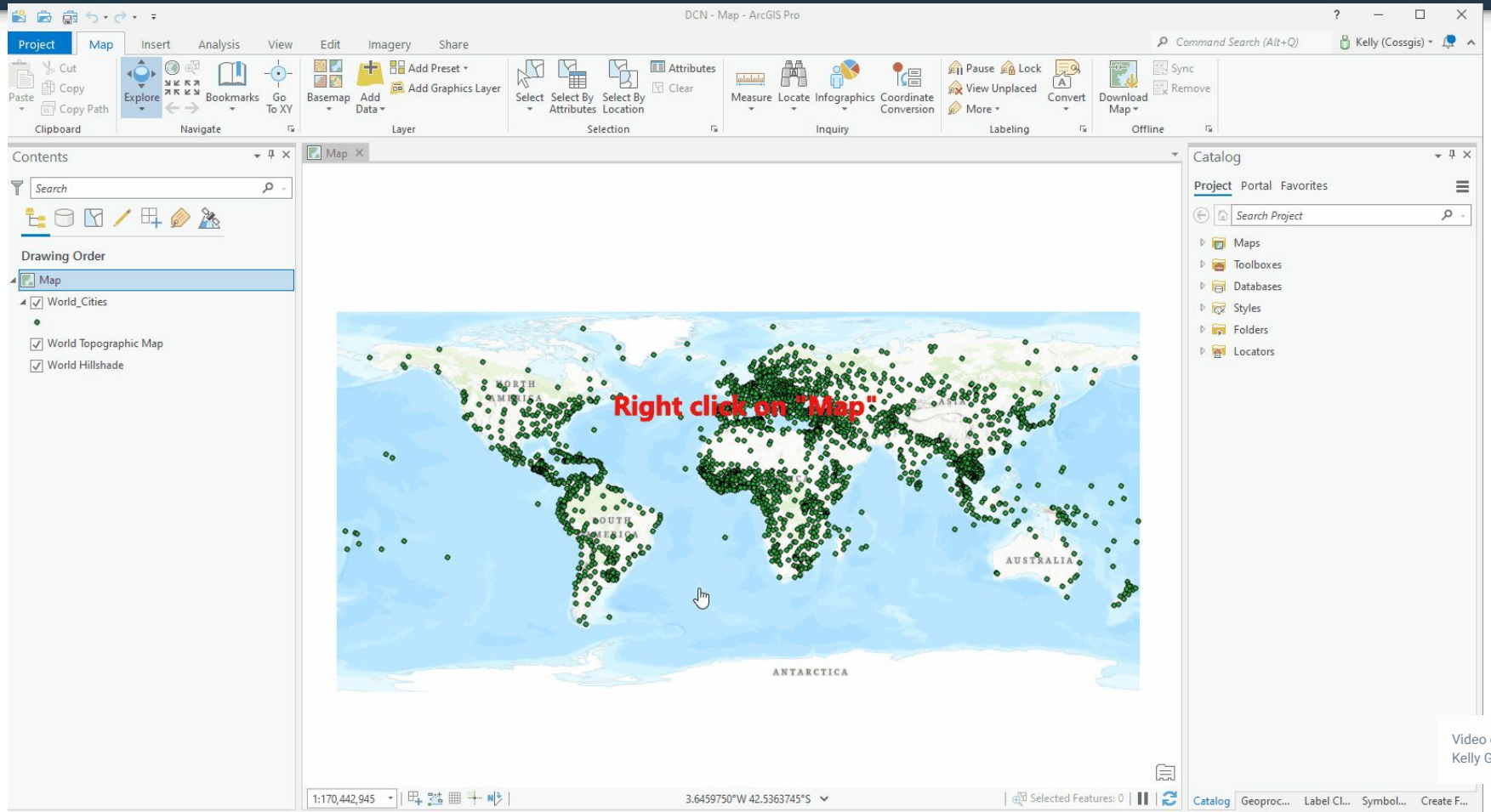
On the Fly Projection Change in ArcGIS Pro: Example Video



Video credit: Kelly Grove

Save Layer in New Projection in ArcGIS Pro: 01

1. Under “Analysis” tab select “Tools”, in the catalog pane a Geoprocessing pane will open
2. Search for “project” in the search bar and select the correct tool
3. A form will appear, put the existing layer in the “Input Dataset or Feature Class box”
4. In the “Output Dataset or Feature Class” use the button to navigate to the folder you wish to save the new layer too and give the file a unique and descriptive name
    a. We suggest using same naming convention and adding the new projection name at the end of the file name (example: 0_study_area_cover_type_UTM15N)

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Save Layer in New Projection in ArcGIS Pro: 02

5. Click on the button and search for the new coordinate system/projection

    a. For this example search for EPSG:26915 - NAD/UTM zone 15N

6. Click Run

7. Check new layer is in the correct projection under “Properties”

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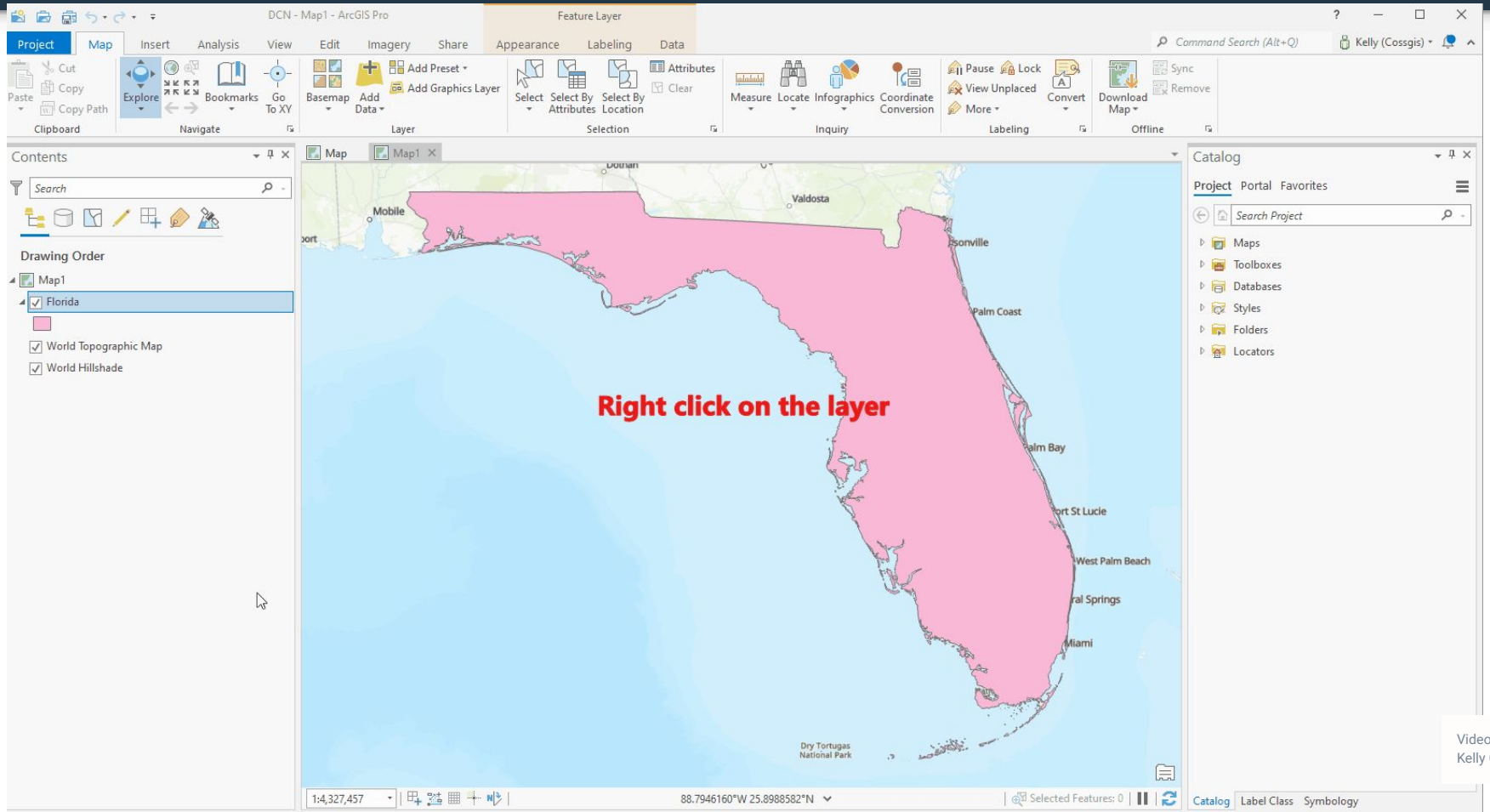
Save Layer in New Projection in ArcGIS Pro: Example Video



Video credit: Kelly Grove

Module Objectives Review: Environment Setup

Send the instructor a screenshot of the following:

1. A picture of QGIS (and ArcGIS Pro if applicable) downloaded to your computer
2. A picture of one of the vector datasets (.shp file) from the example dataset loaded and displayed in QGIS (and ArcGIS Pro if applicable)
3. A picture of one of the raster datasets (.tif file) from the example dataset loaded and displayed in QGIS (and ArcGIS Pro if applicable)