**Final Project Workflow**

Start New Project and Define Workspace

* Open ArcGIS Pro and start new Map Template project named Geog\_Final\_Project.
* Set distance units to meters and area units to square meters.
* Add roads, studyareas, landuse, habitat, ownership, and elevation layers to map as well as speciesrich table.

Format Vector Data and Convert to Raster

* Less than 10% of each study area occupied by buffered roads, highways, and interstates & Greater than 70 bird and mammalian species combined
  + Add buffer field to roads (BuffDist) and calculate field
    - Roads – 20-meter buffer
    - Highway – 50-meter buffer
    - Interstate – 100-meter buffer
  + Buffer Roads, Highways, and Interstates
    - Create new polygon layer (roads\_Buffer)
  + Remove roads layer from map
  + Erase roads\_Buffer form studyareas (new layer studyareas\_noroads)
    - Input feature = studyareas
    - Erase Feature = roads\_Buffer
  + Remove roads\_Buffer from map
  + Add Percent\_Road\_Coverage Field to studyareas\_noroads
    - Calculate Field = 100 – ((Shape\_Area/Area) \* 100)
  + Perform Join of studyareas\_noroads with speciesrich table using BLOCK\_ID as join field
  + Export data to new feature class (speciesrich\_studyareas\_noroads)
  + Add field (allspecies)
    - Calculate field = birds + mammals
  + Add Field Suitability\_Value
    - Perform selection by attribute
      * Allspecies > 70 AND Percent\_Road\_Coverage < 10
      * Assign selected features value of 1 for Suitability\_Value
      * Switch selection
      * Assign all other feature value of 0 for Suitability Value
  + Convert polygon feature layer to raster layer (studyareas\_raster) w/ cell size 50
    - Input feature = speciesrich\_studyareas\_noroads
    - Value Field = Suitability Value
    - Output Raster = studyareas\_raster
* High habitat potential
  + Add Field Suitability\_Value to habitat feature layer
    - Perform selection by attribute
      * HABITATPOT = High
      * Assign selected features value of 1 for Suitability\_Value
      * Switch selection
      * Assign all other feature value of 0 for Suitability Value
  + Convert habitat polygon layer to raster layer (cell size 50)
    - Input feature = habitat
    - Value Field = Suitability Value
* Publicly owned land
  + Add Field Suitability\_Value to ownership feature layer
    - Perform selection by attribute
      * HABITATPOT = High
      * Assign selected features value of 1 for Suitability\_Value
      * Switch selection
      * Assign all other feature value of 0 for Suitability Value
  + Convert ownership polygon to raster layer (cell size 50)
    - Input feature = ownership
    - Value Field = Suitability Value

Format Raster and Reclassify Layers

* Forested areas
  + Reclassify landuse raster
    - Forested = 1
    - All other values = 0
* Slope less than 10%
  + Use elevation raster to create slope raster (cell size 50)
  + Reclassify slope raster
    - Slope <= 9.99999 value = 1
    - All other values = 0

Perform Map Algebra

* Use Raster Calculator to multiply raster layers together and find suitable areas
  + slope x landuse x ownership\_raster x habitat\_raster x studyareas\_raster
    - Cells that return value of 1 = suitable

Format Symbology and Create Layout

* Symbolize map and create layout for presentation in final report.