Choosing Sites

*Making a Geodatabase*

* When receiving data (shapefiles, rasters, etc.) from collaborators or online resources put them in a folder called “Incoming Data” that is a subfolder of your project folder on File Explorer
  + Project (i.e., “Seasonally Disconnected Habitats”) > “GIS” > “Incoming Data”
* Open ArcGIS Pro and add data to your map for the project (.mxd project file)
  + You may need to create a folder connection to the “Incoming Data” folder
* They will show up in your contents panel on the left side of ArcGIS Pro
* Open the Catalog by going to the View tab and clicking “Catalog Pane”
* Go to your “GIS” subfolder within your project folder and right click then select New > New File Geodatabase
* Name the geodatabase something like “Seasonal\_Habitats\_Sites.gdb” or “REM\_Sites.gdb”
  + Think of the geodatabase as a filing cabinet and feature datasets as drawers
* If you want to organize the data in your dataset even more you can right click on your geodatabase > New > Feature Dataset
* Name your feature dataset something appropriate for the type of data that you will put in it (e.g., Seasonal\_Habitat\_Water for hydroline data or watershed boundaries)
  + You don’t need to make feature datasets but it may be helpful if you can organize data by categories
* Right click on each item in your catalog (other than basemaps) and select Data > Export Features
* Name the feature class something appropriate and select the geodatabase or feature dataset within that geodatabase as the Output Feature Class location and click “Run”
* It will me added to your map so you can delete the old duplicate which is sourced to the “Incoming Data” folder
  + This way everything in your map is sourced from the same geodatabase
  + Data is converted from a shapefile to a feature class within a geodatabase
    - Better for storage space and organization
* If someone wants a specific feature class from your map you can export it as a shapefile, zip the folder, and send it to them

*Classifying REM*

* Use the raster file “Middle\_Skagit\_REM\_2016.tif” created by Kate Ramsden who is the GIS Analyst at SRSC
  + Any GIS files that are being used for a specific project should go in a database made just for the project (i.e., “REM\_Sites.gdb”)
    - See “*Making a Geodatabase*”
  + The ArcGIS Pro file (i.e., “REM\_Site\_Personal.mxd”) cannot go in the geodatabase but should go in a subfolder with the geodatabase so if you want to send it to someone else you can zip the whole subfolder containing the geodatabase and .mxd
    - The .mxd contains symbology so if you want the symbology to stay the way that it is in your map you have to include the .mxd in the zipped folder
* Import into ArcGIS Pro

Text

Description automatically generated with medium confidence

* It will look like a gradient of gray when you import it
* Right click on the file and click on “Symbology” > “Classify” (drop down menu)
* Click on the drop down menu “Method” and click “Manual Interval” then go into the table and manually change the values for the color breaks
  + You can also change the “Color Scheme” to whatever you want
    - If you wanted to change the actual values of the raster (i.e., 1, 2, 3 instead of -5.215011 – 0, 0.000001 – 0.5, 0.500001 – 1 then you would use the “Reclassify” tool in the Spatial Analyst Toolbox
* The resulting change in symbology will allow you to see potential pinch points at site outlets
  + Use this raster file in conjunction with aerial imagery and hydroline shapefile

A picture containing bar chart

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*Selecting Outlets*

* Using the REM, aerial imagery, and hydroline shapefile find potential outlets of seasonally disconnected sites
* Create a new point feature class in your .mxd by opening the Catalog > Right click on the geodatabase that you made for the project (i.e., “REM\_Site.gdb”) > Create Feature Class
* Name the new feature class (i.e., “Placemarks\_Final\_WGS”) and then go through the six pages making sure that you select the feature type (point) and appropriate projection (WGS 1984)
  + If you want to calculate the latitude and longitude in decimal degrees the projection must be in WGS 1984
* Click on Edit > the feature class that you created (i.e., “Placemarks\_Final\_WGS”)
* Place points at site outlets and select the box with the green check mark when you’re done so that it is saved

A picture containing diagram

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*Calculating Latitude and Longitude of a New Point Feature*

* Once points have been placed in the new feature class you can name and calculate the latitude and longitude in decimal degrees of each point
* After making any edits make sure to press the “Save” button in the Edits tab
  + You will not be able to add a field (i.e., “Name”) unless all edits have been saved

A picture containing graphical user interface

Description automatically generated 

* Add two new fields called Latitude and Longitude with a Data Type of “Text” and a Length of 50
  + Make sure to save once the new field has been created
* Right click on the field Latitude and click “Calculate Field” then enter Python code into the “Latitude =” box
  + !shape.extent.YMax!
* Right click on the field Longitude and click “Calculate Field” then enter Python code into the “Latitude =” box
  + !shape.extent.XMax!
    - There is an easier way to do this in ArcMap but this is the most straightforward way to do it in ArcGIS Pro

Graphical user interface, application

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Fieldwork – Reconnaissance

*Uploading Coordinates Onto GPS*

* Choose the feature class that you want to upload to the GPS in ArcGISPro and right click > Data > Export Features
* Choose the folder location for your shapefile to be created
  + Make sure that it is in a normal folder (i.e., “Seasonally Disconnected Habitats” > “GIS” > “Exported Shapefiles”)
    - It won’t be saved as a shapefile if it’s in a geodatabase
* Click Run and the new copy which is now sourced to the “Exported Shapefiles” folder will show up on the map
  + Go ahead and delete it because you want to keep the feature class that is sourced to the geodatabase
* Open DNRGPS and click File > Load From > File
  + Make sure ESRI Shapefile (2D) is the file type and select the shapefile that you just exported form ArcGIS Pro
* Choose the column that you want to be IDENT
  + This will be what shows up on the GPS in the field so choose that “Site Name” column
  + You can also edit columns in DNRGPS
* Upload to the GPS

Organizing Fieldwork Data

* Make sure “DO\_Data” file and HOBO output files are saved as Excel Workbooks so able to highlight active time periods as green
* Once retrieve level logger and temperature logger from sites, add a new folder to each site for temporal data
  + Also use take each site from “DO\_Data” file and put in respective site folders with other temporal data

*Assigning Coordinates to Survey Waypoints*

* If using more than one GPS unit (e.g., “Estuary” and “Floodplain”) that have overlapping WPT numbers, create a new column with the GPS Unit and WPT combined in Excel so that each is a unique identifier (“GPSUnitWPT”) for both the snorkel and e-fishing dataset (“Seasonal\_Habitat\_Survey\_Data”) and the waypoint with coordinates dataset (“Seasonal\_Habitat\_Survey\_Data\_Waypoints”)
  + =[GPS Unit cell]&[WPT cell]
  + =A2&B2
    - “Estuary” and “184” 🡪 “Estuary184”
* Open both the snorkel and e-fishing dataset (“Seasonal\_Habitat\_Survey\_Data”) and the waypoint with coordinates dataset (“Seasonal\_Habitat\_Survey\_Data\_Waypoints”)
* In the empty “Latitude” cell that you want to fill with a coordinate in the snorkel and e-fishing dataset use VLOOKUP()
  + =VLOOKUP([GPSUnitWPT cell in snorkel and e-fishing dataset],[range of cells including GPSUnitWPT, Latitude, and Longitude in the waypoint with coordinates dataset], column number within that range that corresponds to Latitude (i.e., 2)], FALSE)
  + Repeat this step with Longitude changing the second to last variable to 3
* Once you have finished, copy and paste the Latitude and Longitude columns as plain text and delete the GPSUnitWPT column to clean up the data
* Save a “READ\_ONLY” version of your data after doing any manual cleanup and before starting any analysis