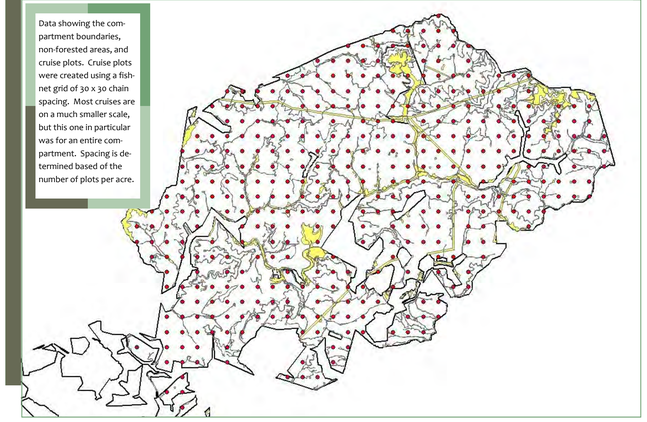
Making GIS Work

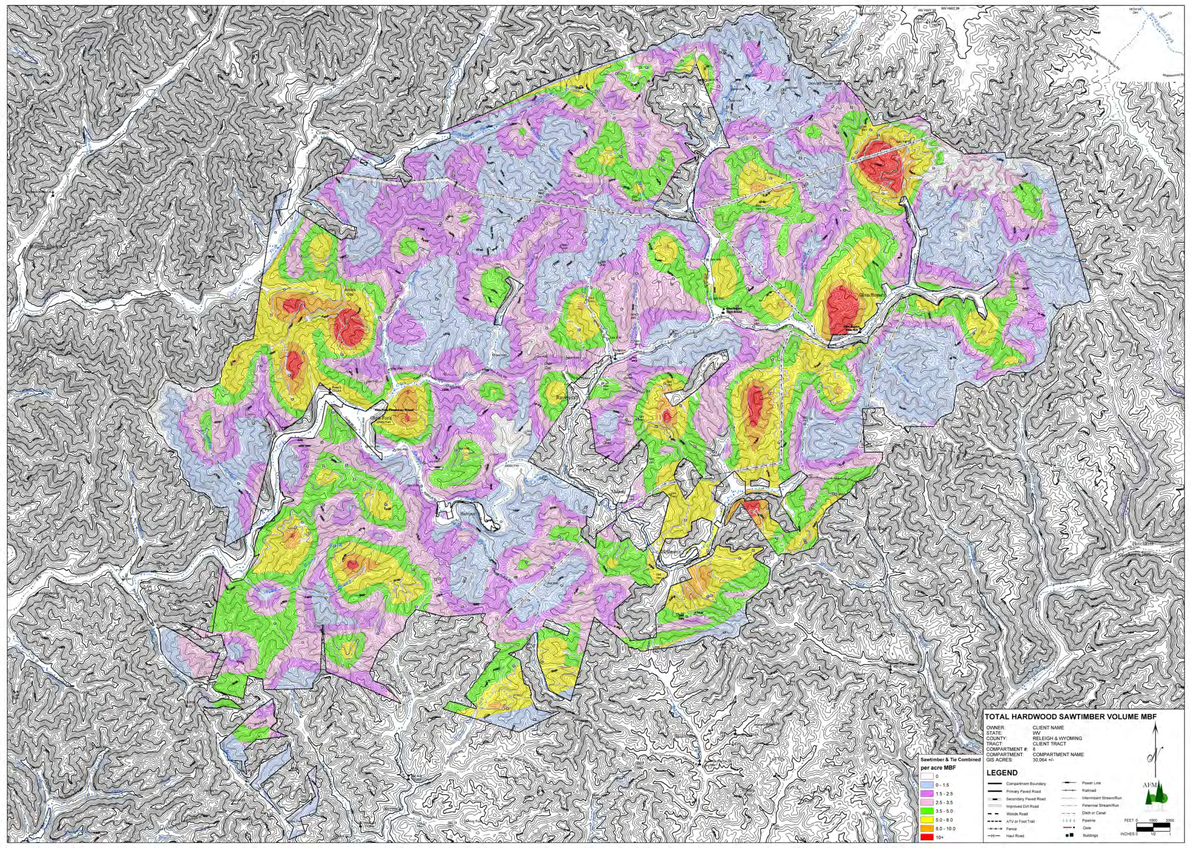
To Help Our Foresters Find Areas of Higher Valued Timber

A look at the database after joining tabular data to the cruise plots created earlier.

HSTVOL_MBF	TIEVOL_MBF	PEELERVOL_	PSTVOL_MBF	HSTTON	TIETON	PEELERTON_	PSTTON	PIVTON	TOTALWMBV
0	2.75	0	0	0	27.77	0	0	0	
0	0	0	0	0	0	0	0	28.43	
0	2.11	0	0	0	13.1	0	0	26.9	
0	0	0	0	0	0	0	0	0	
3.8	0	0	2.24	28.39	0	0	19.56	17.19	
1.66	2.15	0	0	15.65	18.64	0	0	53.26	
1.66	1.16	0	0	15.52	12.29	0	0	24.79	
3.17	0.9	0.77	0	21.79	9	15.76	0	0	
1.16	3.14	0	0	12.29	25.21	0	0	13.89	
0	0	0	0	0	0	0	0	28.65	
4.66	0	0	0	39.8	0	0	0	62.77	
5.65	0	0	0	49.46	0	0	0	46.46	
0	0	1.09	0	0	0	13.22	0	34.69	
1.4	0	0	0	13.13	0	0	0	12.67	
0	0	0	0	0	0	0	0	18.9	
1.93	0	0	0	18.1	0	0	0	22.65	
0	1.35	0	0	0	12.43	0	0	0	
5.7	0	0.73	0	46.99	0	13.34	0	37.46	
8.45	0	0	0	59.53	0	0	0	11.46	
0	0	0	0	0	0	0	0	0	
1.89	2.75	0	0	18.46	27.77	0	0	0	
0	1.35	0	0	0	12.43	0	0	26.34	
3.62	0	0	0	30.68	0	0	0	13.71	
4.2	0	1.22	0	35.32	0	15.65	0	36.56	
2.43	1.87	0	0	17.61	12.86	0	0	9.37	
0	0	0	0	0	0	0	0	45.16	
4.39	2.36	3.01	0	29.93	16.06	23.12	0	28.65	
1.4	2.89	0	0	13.13	24.79	0	0	7.11	
3.54	0	0	0	30.04	0	0	0	11.46	
0	0	0	0	0	0	0	0	38.9	
1.93	0	1.96	0	22.17	0	28.99	0	0	
0	1.35	0	0	0	12.43	0	0	26.9	
4.29	2.11	0	0	34.45	13.1	0	0	0	
7.1	0	0	0	45.35	0	0	0	33.65	
7.62	0	0	0	60.39	0	0	0	26.87	
0	0	0.73	0	0	0	13.34	0	28.87	
3.17	0	1.09	1.49	21.79	0	13.22	13.07	16.64	
2.39	1.65	0	0	19.81	12.66	0	0	14.76	
2.43	1.4	0	0	17.61	15.35	0	0	6.77	
5.83	0	0	0	44.65	0	0	0	0	
10.77	0	1.16	0	70.49	0	10.58	0	31.73	
3.37	0	0	0	33.53	0	0	0	58.95	
0	0	0	0	0	0	0	0	0	
1.16	1.66	0	0	12.29	15.52	0	0	0	
1.59	7.16	0	0	10.46	48.28	0	0	8.16	
13.61	0	0	0	92.39	0	0	0	29.96	
2.06	3.93	0	0	12.9	26.69	0	0	55.55	

Data showing the compartment boundaries, non-forested areas, and cruise plots. Cruise plots were created using a fish-net grid of 30 x 30 chain spacing. Most cruises are on a much smaller scale, but this one in particular was for an entire compartment. Spacing is determined based of the number of plots per acre.





Process for Creating Volume Maps

Step 1—Joining the Tabular Data to Spatial Data.

Join the point data to the data sheet using a join in Arc Map.

Columns needed in data sheet for each of the species are as follows:

Black_Oak_mbf

Red_Oak_mbf

Red_Soft_Maple_mbf

Sugar_Hard_Maple_mbf

White_Oak_mbf

Yellow_Poplar_mbf

TotalHwdVol

Step 2—Grid Creation

- Begin the process of creating grids for each species using Spatial Analyst in ArcGIS.
- Set environments in Arc Toolbox for the Scratch workspace created earlier. Under Raster Analyst settings set cell size to 30 or 15, depending on desired smoothness of the output.
- Natural Neighbor Tool - Interpolation method select natural neighbor.
  Input column as specified above. Run this for each species of hardwood and do one for the total hardwood.
- Output is a Raster with the values from the points that show the average values between each plot or point. Each cell has a value in in.

Step 3—Reclassification

- Reclassify each raster in order to create a polygon feature class from it. This is done under layer properties, classify raster before using the Reclassify tool in Arc Catalog. Depending on the type of information or range the user is interested in. Any number of classes can be shown.
  Example: Saw timber and Tie Combined - showing 8 Separate Classes

MBF	
0	Reclassify raster under Spatial Analyst > reclass > reclassify
0 -1.5	(change cell size under environments to 15 for a smoother polygon)
1.5 – 2.5	
2.5 – 3.5	
3.5 – 5.0	
5.0 – 8.0	
8.0 – 12.0	
12.0 - 15.0	
15+	

Step 4— Create polygon feature class for use in final maps.

- **Use the models created**

  Volume Tools to Run First Model

  Add reclassified raster, stands, and boundary file

  Output file name deletmembf

Step 5— Clean up polygon data

- Change the value of the gridcode to 0 for those stands with no timber. These stands have no cover type value in them.

  Delete everything outside of the compartment boundary that will have a -1 value in one of the fields. Join the remaining polygons to the lowest value in the grid.

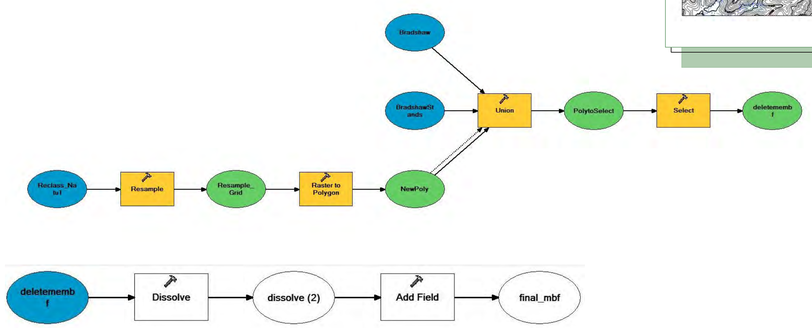
- Use the dissolve model, Input data: deletmembf, Output Data: finalmbf

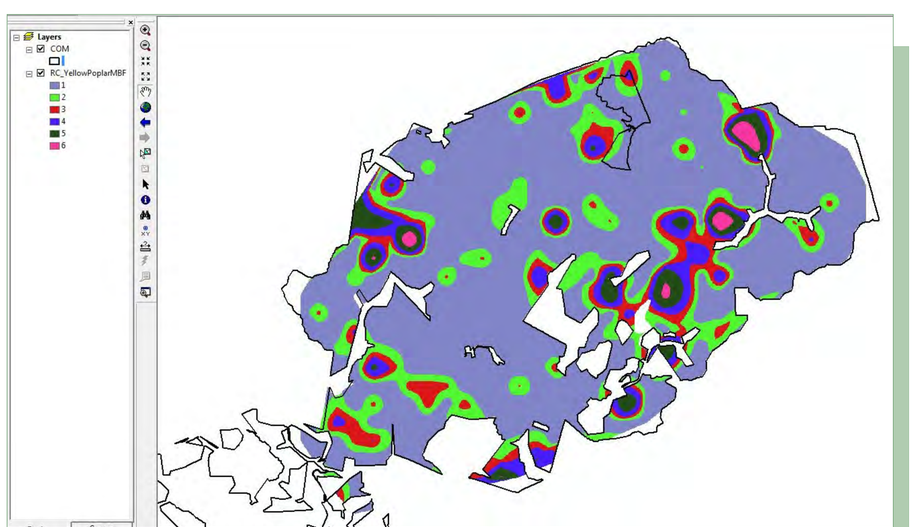
Finally

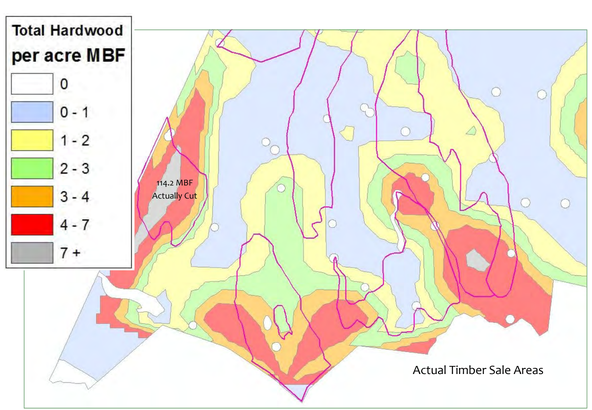
Rename finalmbf to the species from which the grid was originally created. Add column rangembf

and put ranges in that were created with the reclassification (this step is not really necessary but is a good practice so you have the range values instead of a single number.

Run this process for each of the different classes of each type of timber shown in each of the columns in the database.







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