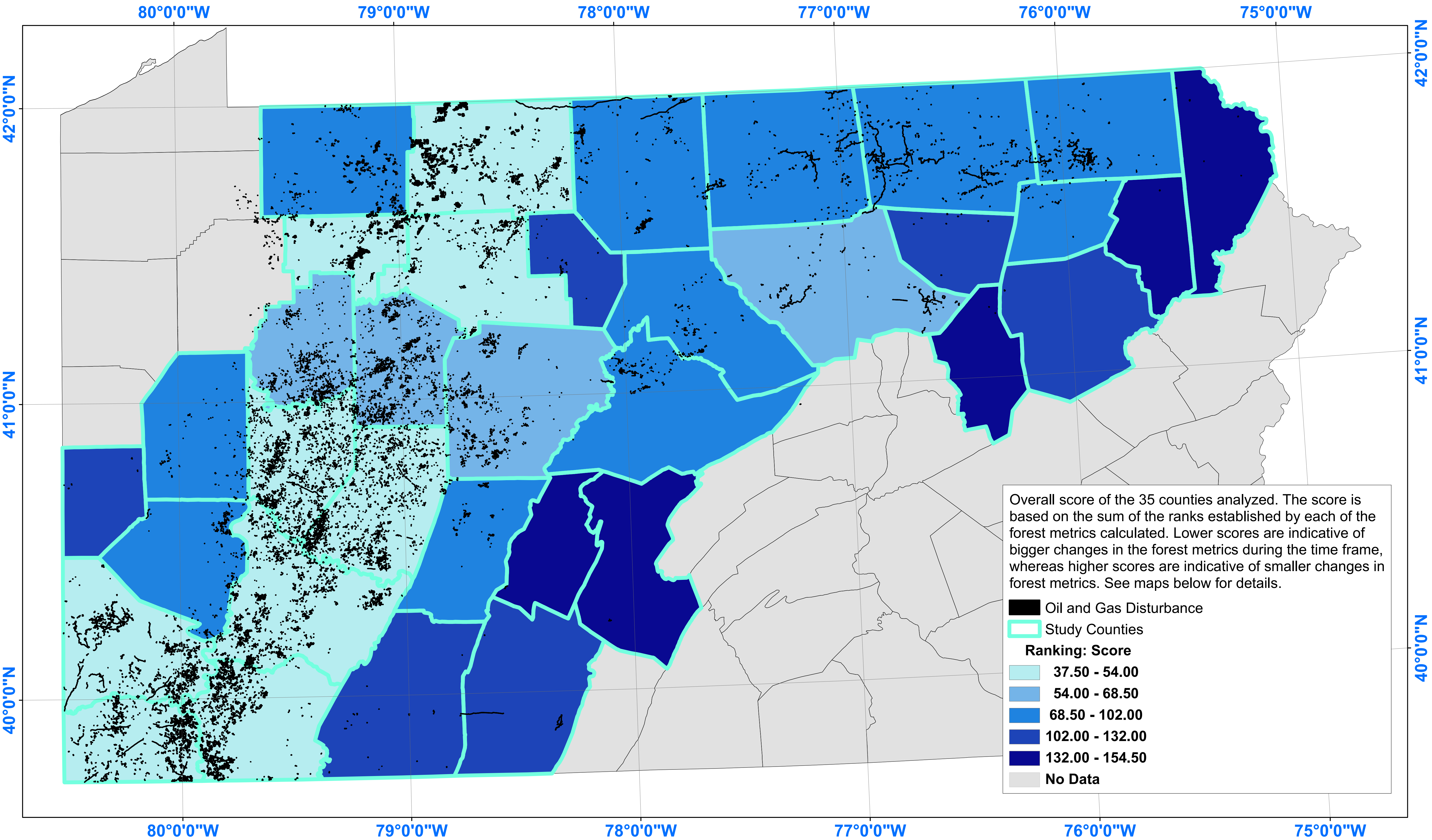


# Landscape Consequences of Hydrocarbon Extraction Disturbance in Central Pennsylvania County Level (2004-2010)

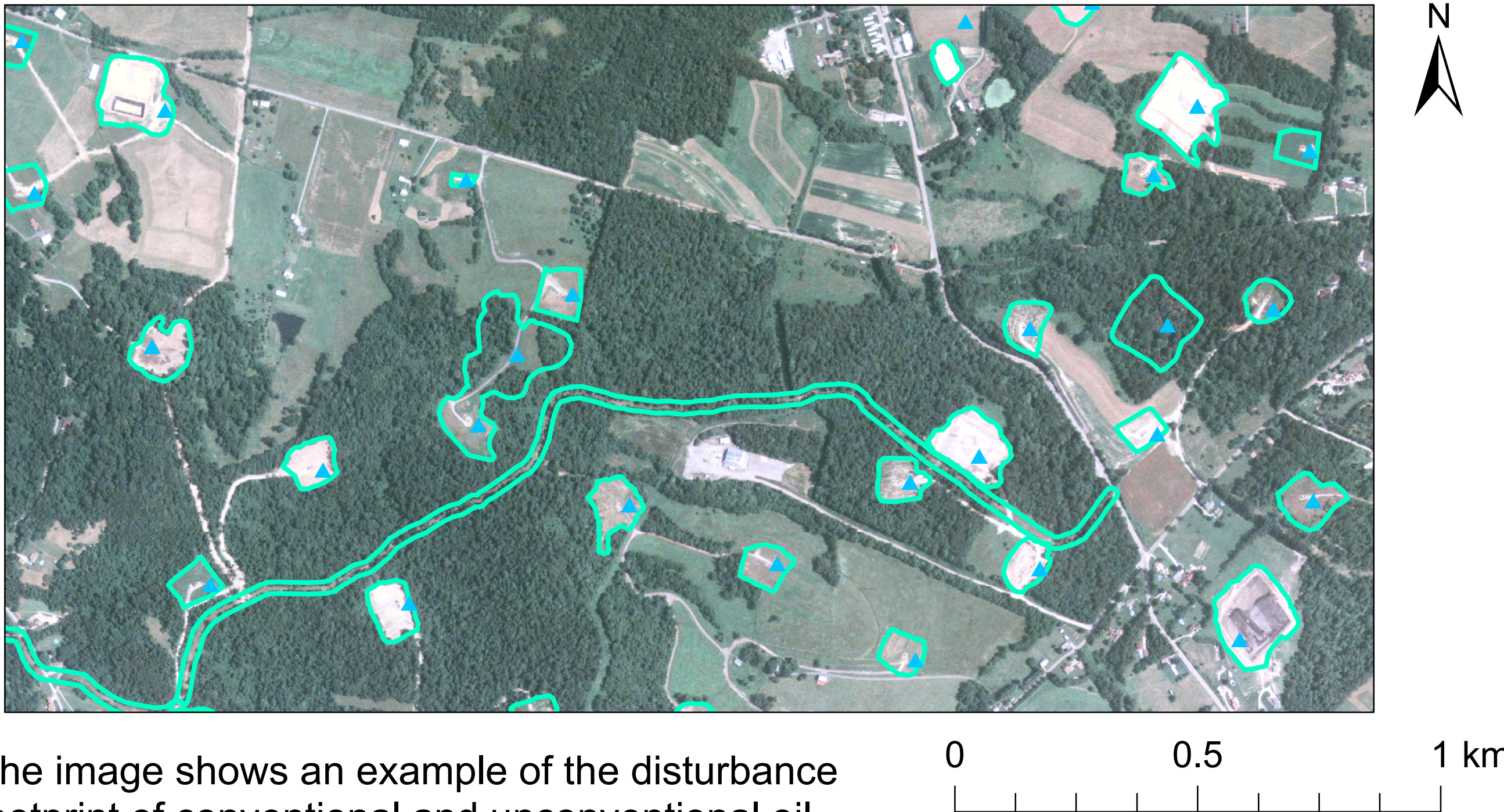
By: Coral M. Roig-Silva, E. Terrence Slonecker, Lesley E. Milheim, Jesse R. Ballew, and S. Gail Winters



**Descriptive Note:** Disturbance footprint of oil and gas extraction activities for the period of 2004-2010 was collected. A series of forest metrics were calculated and the amount of change was used to develop a ranking system where counties were ranked on the basis of the relative impact of forests. A total score was created and is shown in the above map. Maps below show changes in the calculated metrics used to develop the ranking system.

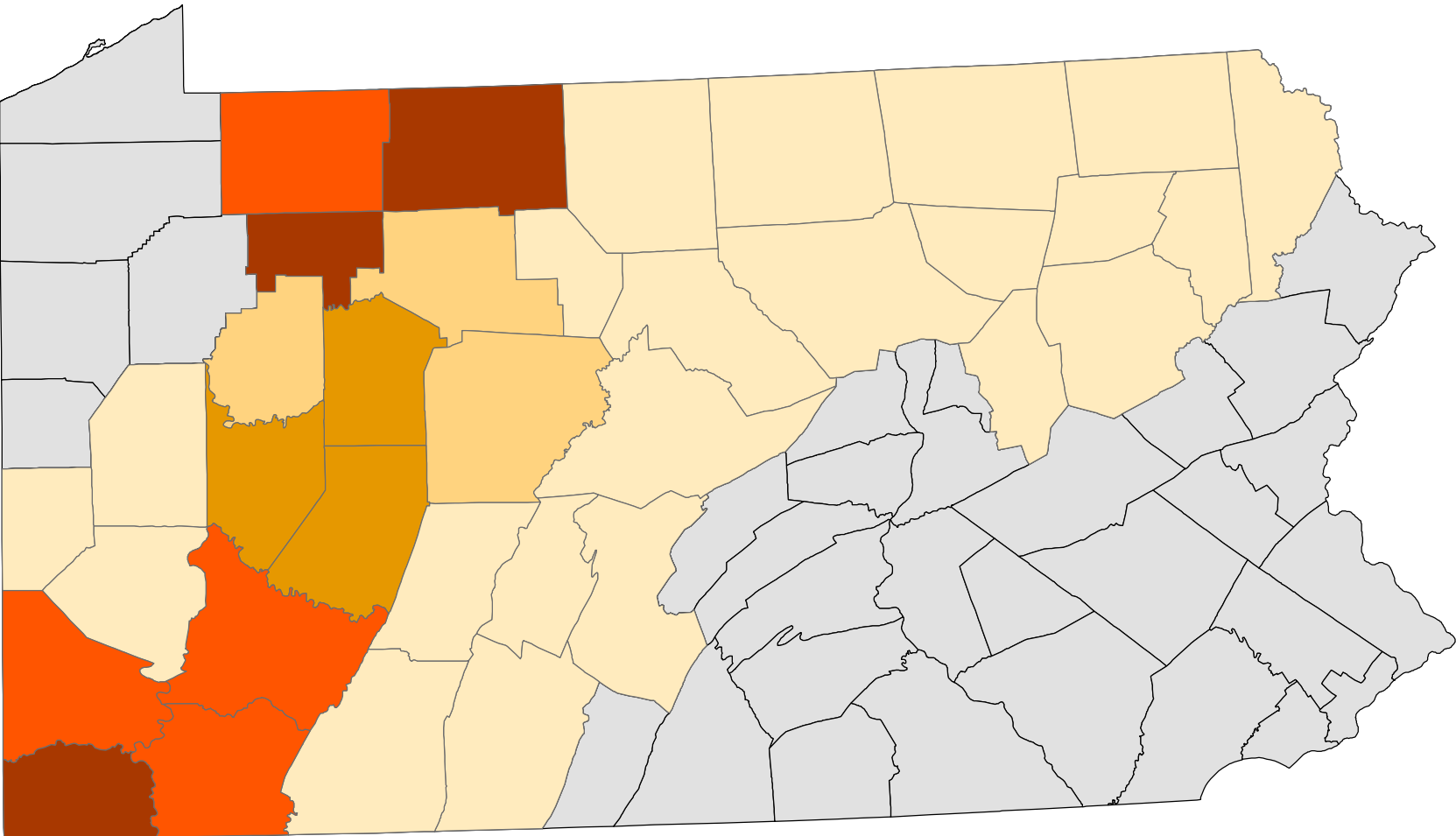
**Projected Coordinate System:** NAD 1983 UTM Zone17N  
**Projection:** Transverse Mercator  
**GCS:** North American 1983  
**Datum:** D North American 1983

Disturbance footprint in Greene County, overlaid on the 2008 NAIP imagery.

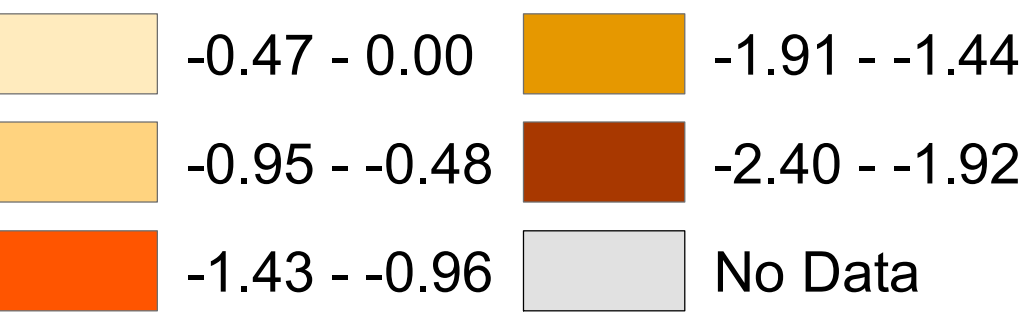


The image shows an example of the disturbance footprint of conventional and unconventional oil and gas activities in Greene County, southwest Pennsylvania. This disturbance footprint is displayed overlaying 2008 NAIP imagery (National Agriculture Imagery Program: [http://www.fsa.usda.gov/Internet/FSA\\_File/naip\\_info\\_sheet\\_2013.pdf](http://www.fsa.usda.gov/Internet/FSA_File/naip_info_sheet_2013.pdf)). As shown in the image, some of the roads were not included in the disturbance footprint because they existed prior to the study time frame. Some of the footprint is shown as forest in the image because the extraction activities occurred after 2008 and they appear on the 2010 imagery (not shown).

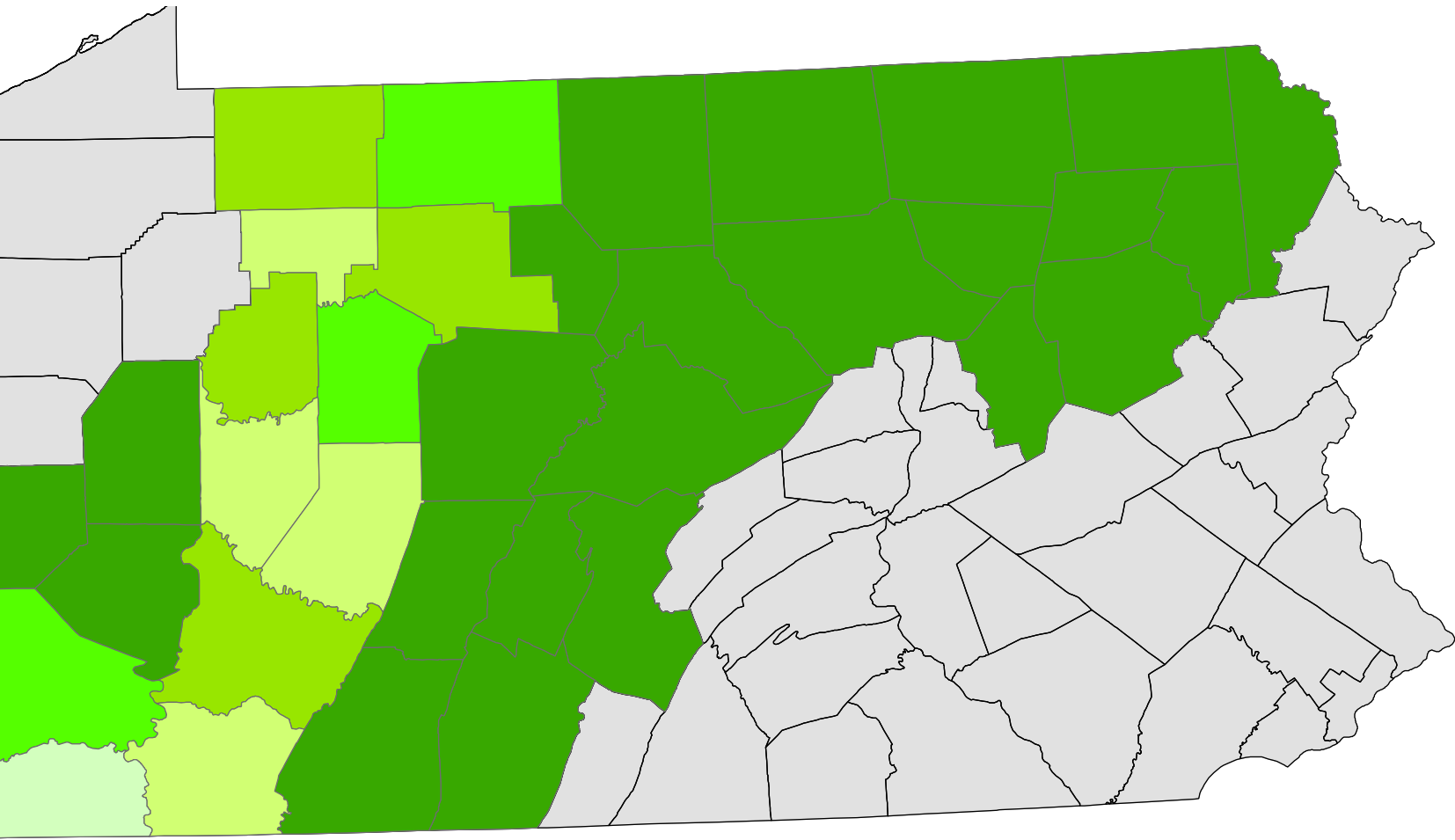
Change in Percent Interior Forest



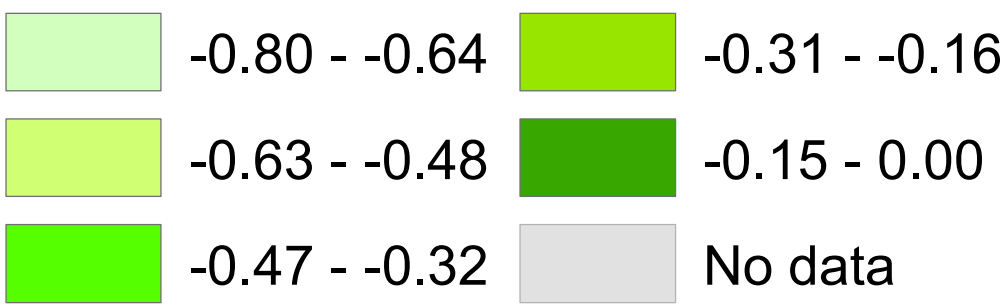
Decrease in Percent of Forest Interior



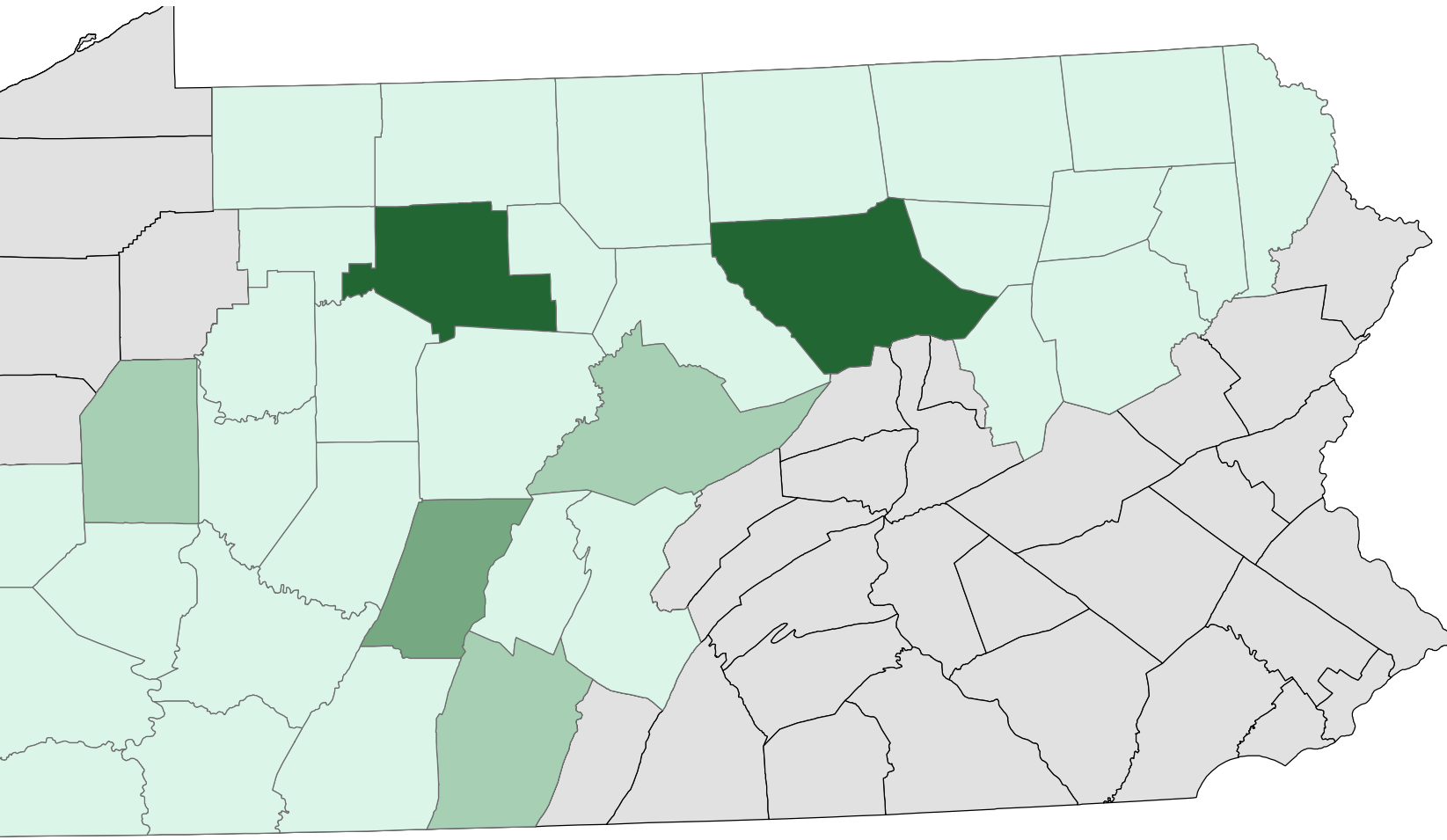
Change in Percent Forest



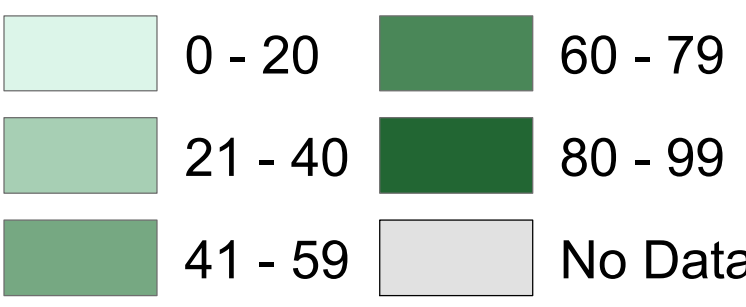
Decrease in Forest Change



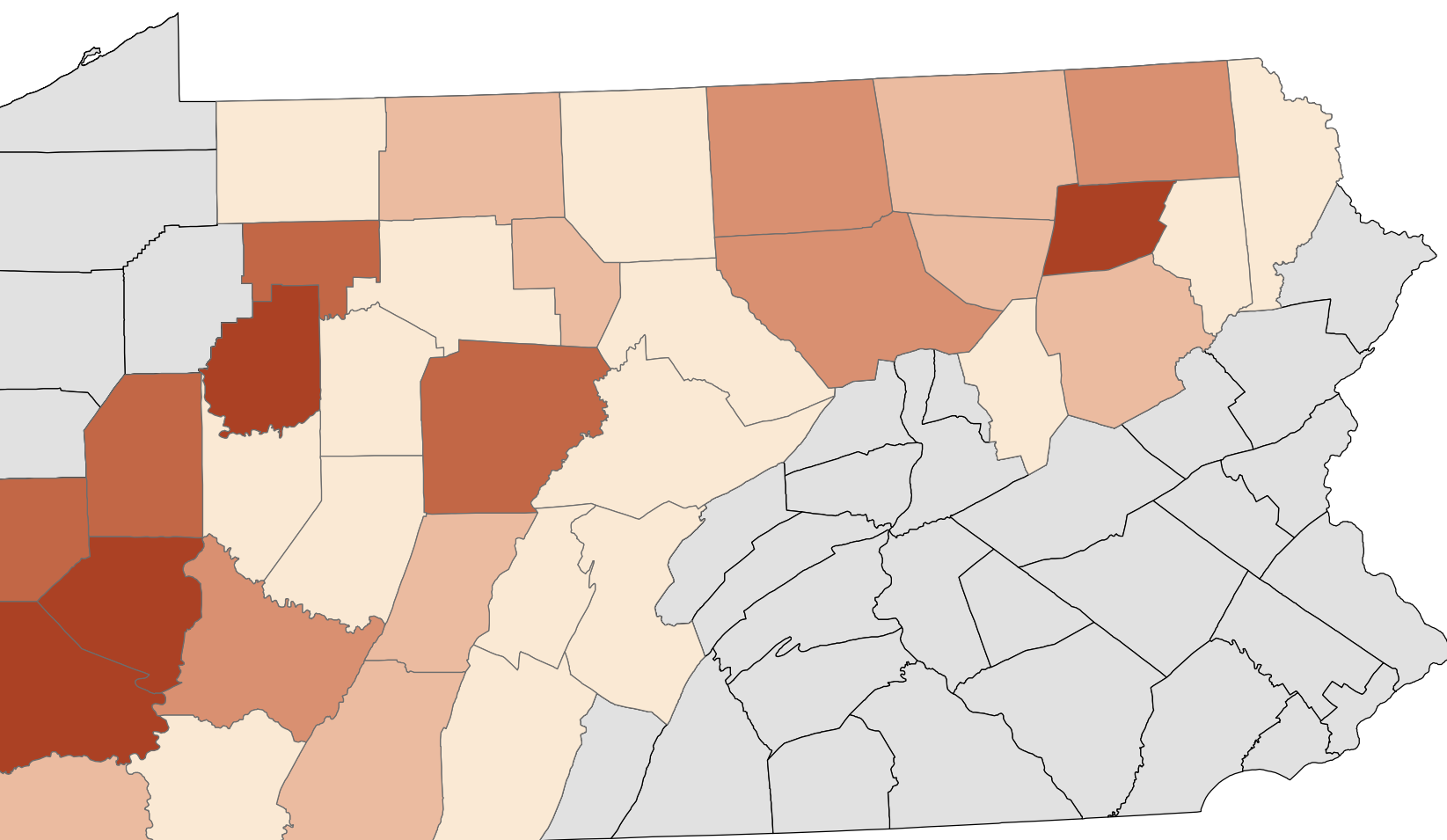
Change in Number of Forest Patches



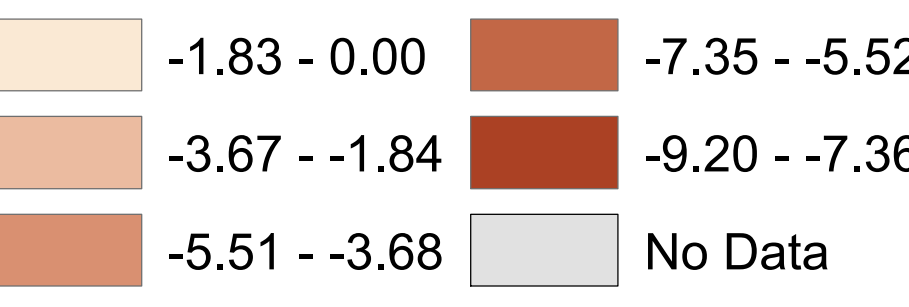
Increase in Number of Forest Patches



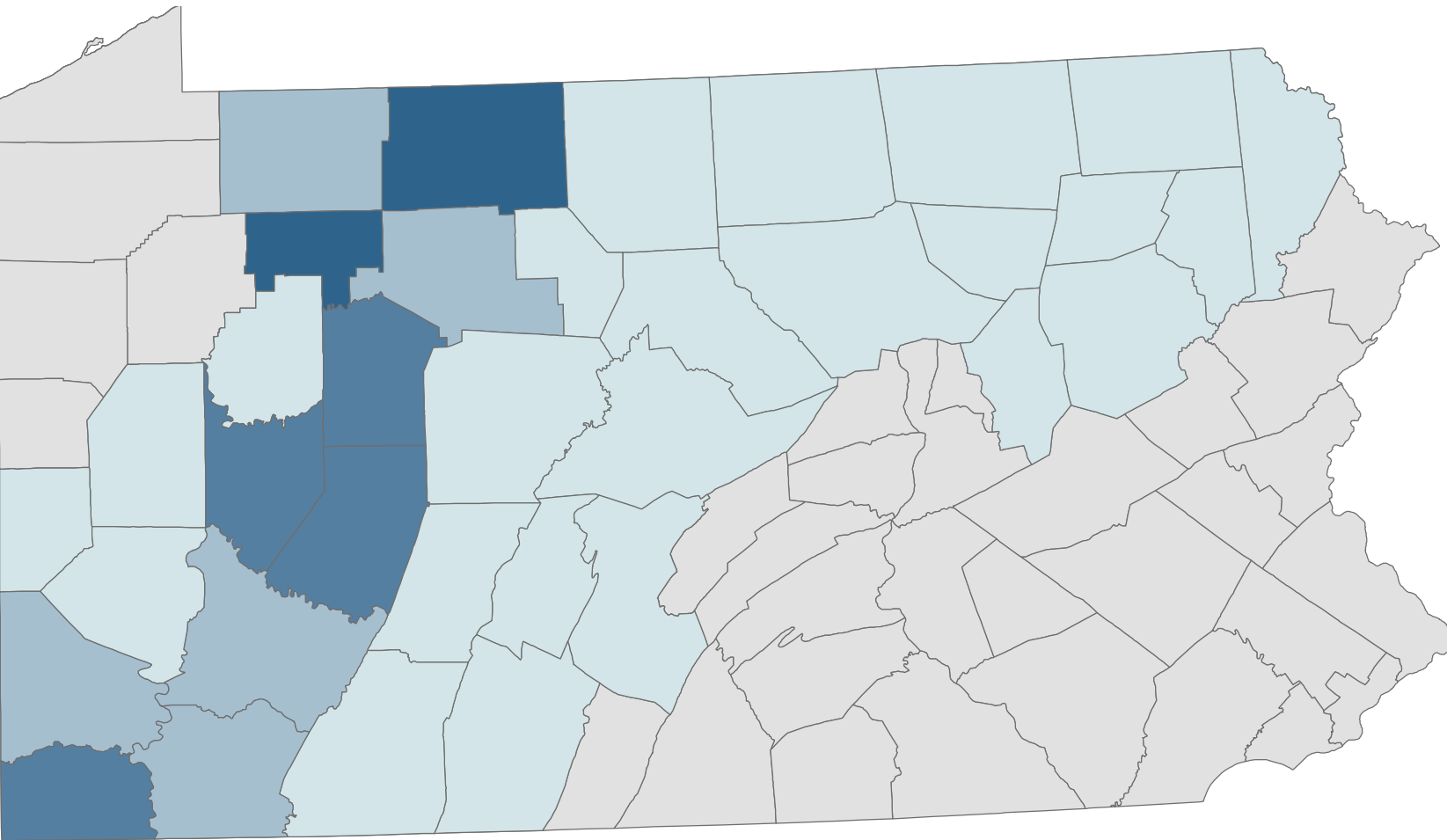
Change in Forest Patch Average Size



Decrease in Forest Patch Average Size



Change in Percent of Forest Edge



Increase in Percent of Forest Edge

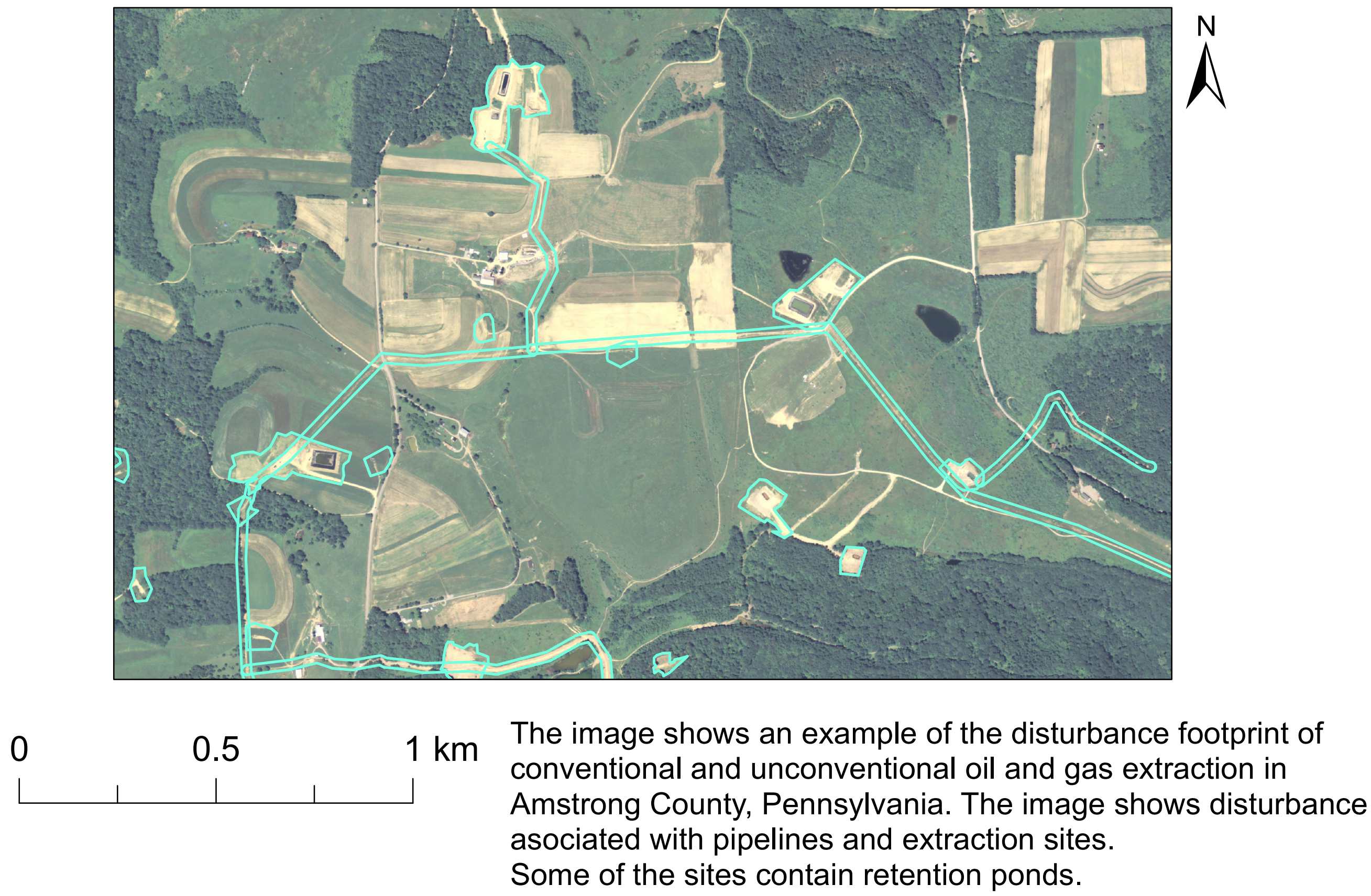




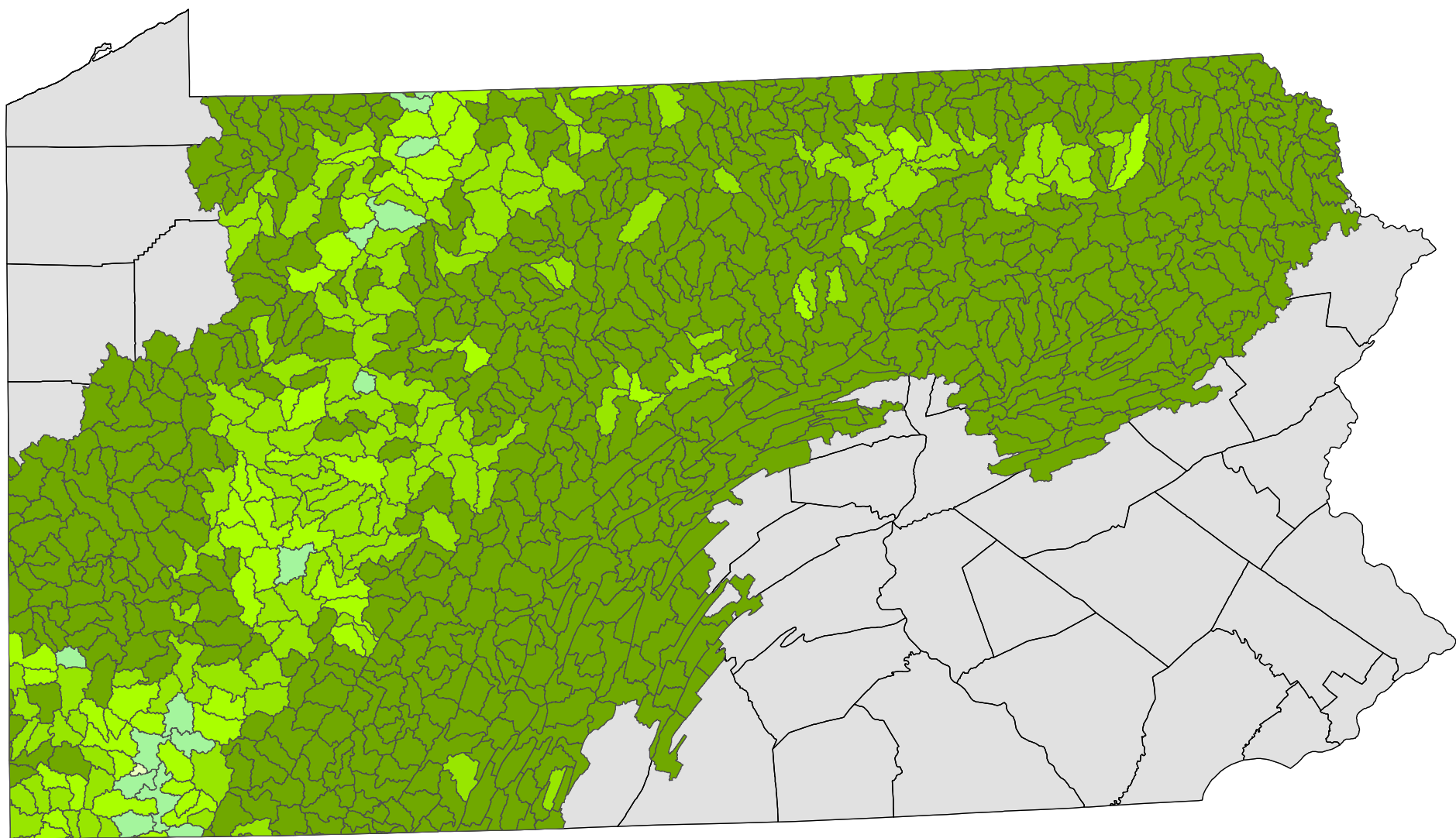
Forest Cover Changes due to Hydrocarbon Extraction Disturbance in Central Pennsylvania Sub-watershed (HUC-12) Level (2004-2010)

By: Coral M. Roig-Silva, E. Terrence Slonecker, Lesley E. Milheim, Jesse R. Ballew, and S. Gail Winters

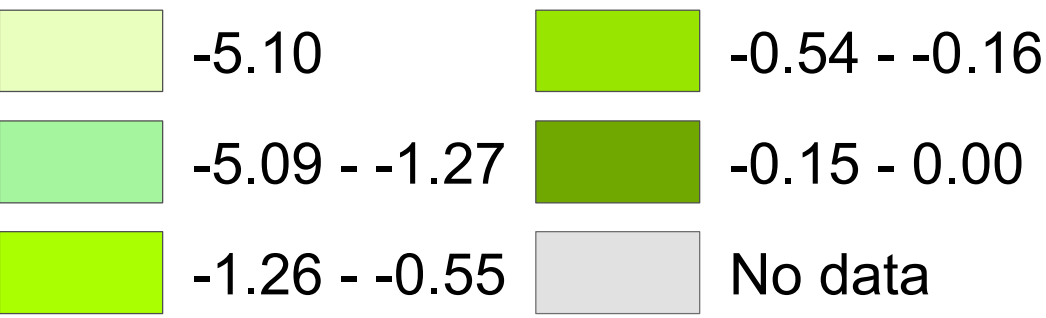
Disturbance footprint in Armstrong County, overlaid on the 2010 NAIP imagery.



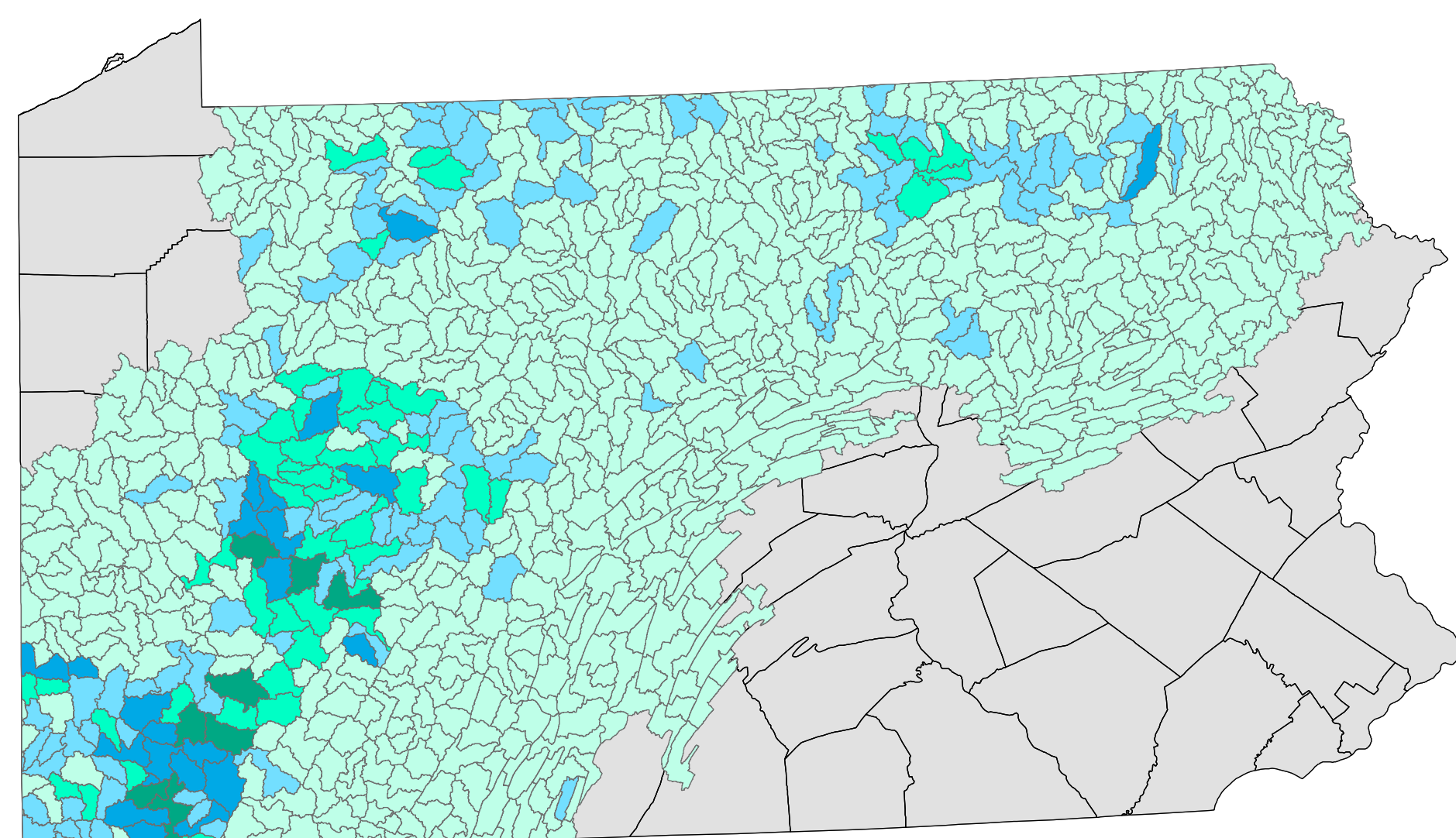
Change in Forest Percent



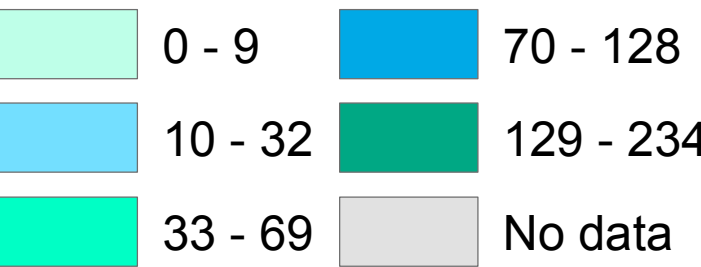
Change in Forest Percent



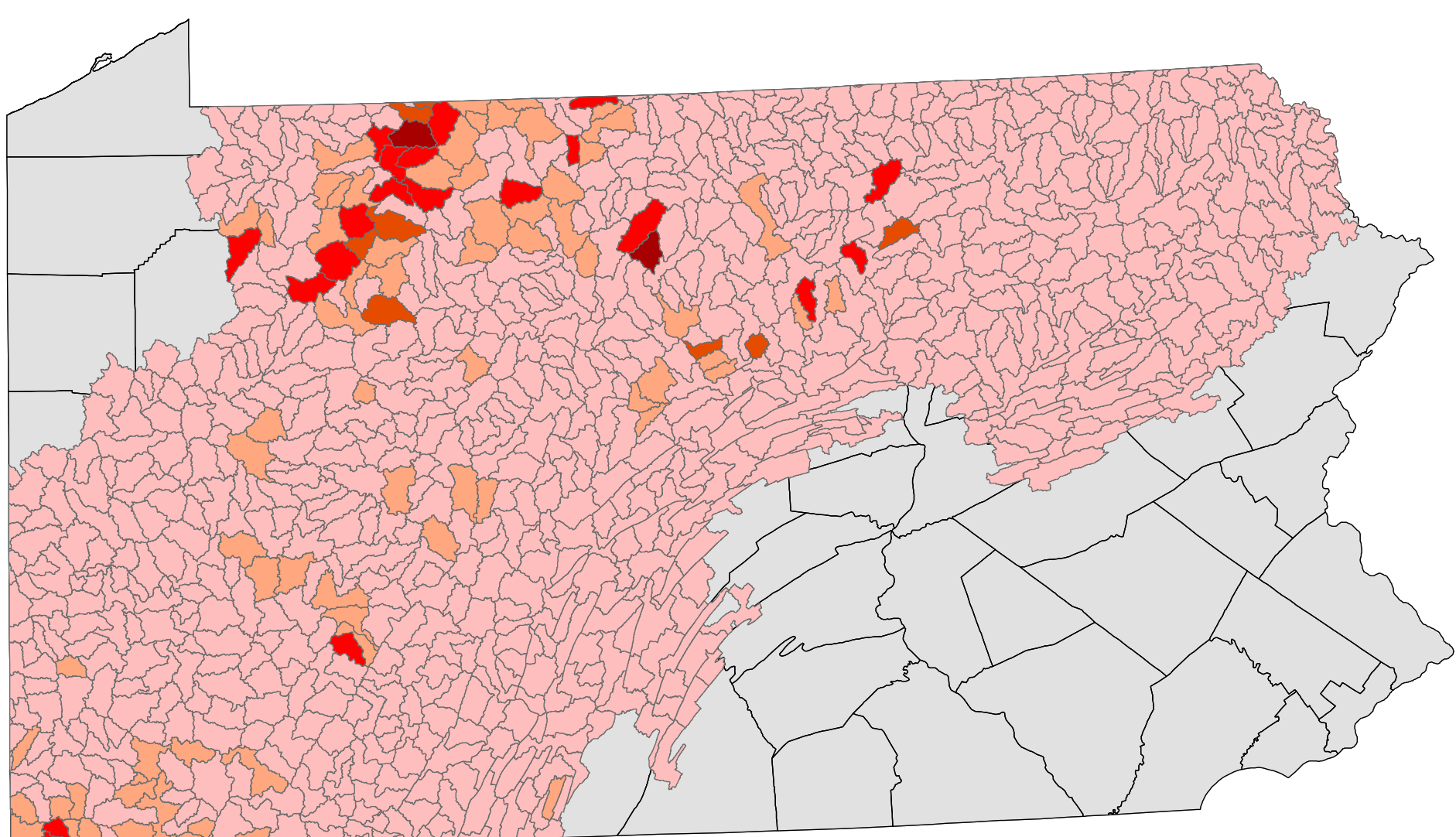
Change in Number of Forest Patches



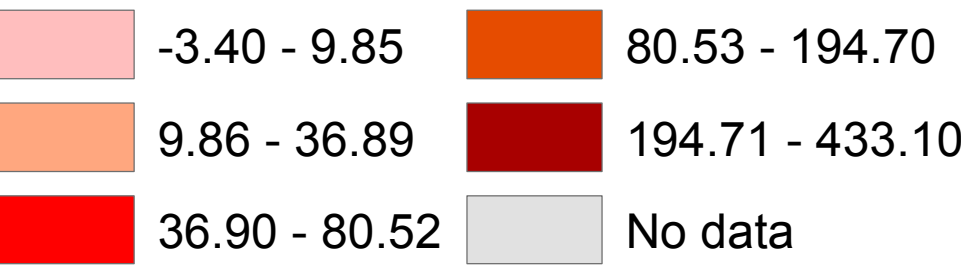
Increase in Number of Forest Patches



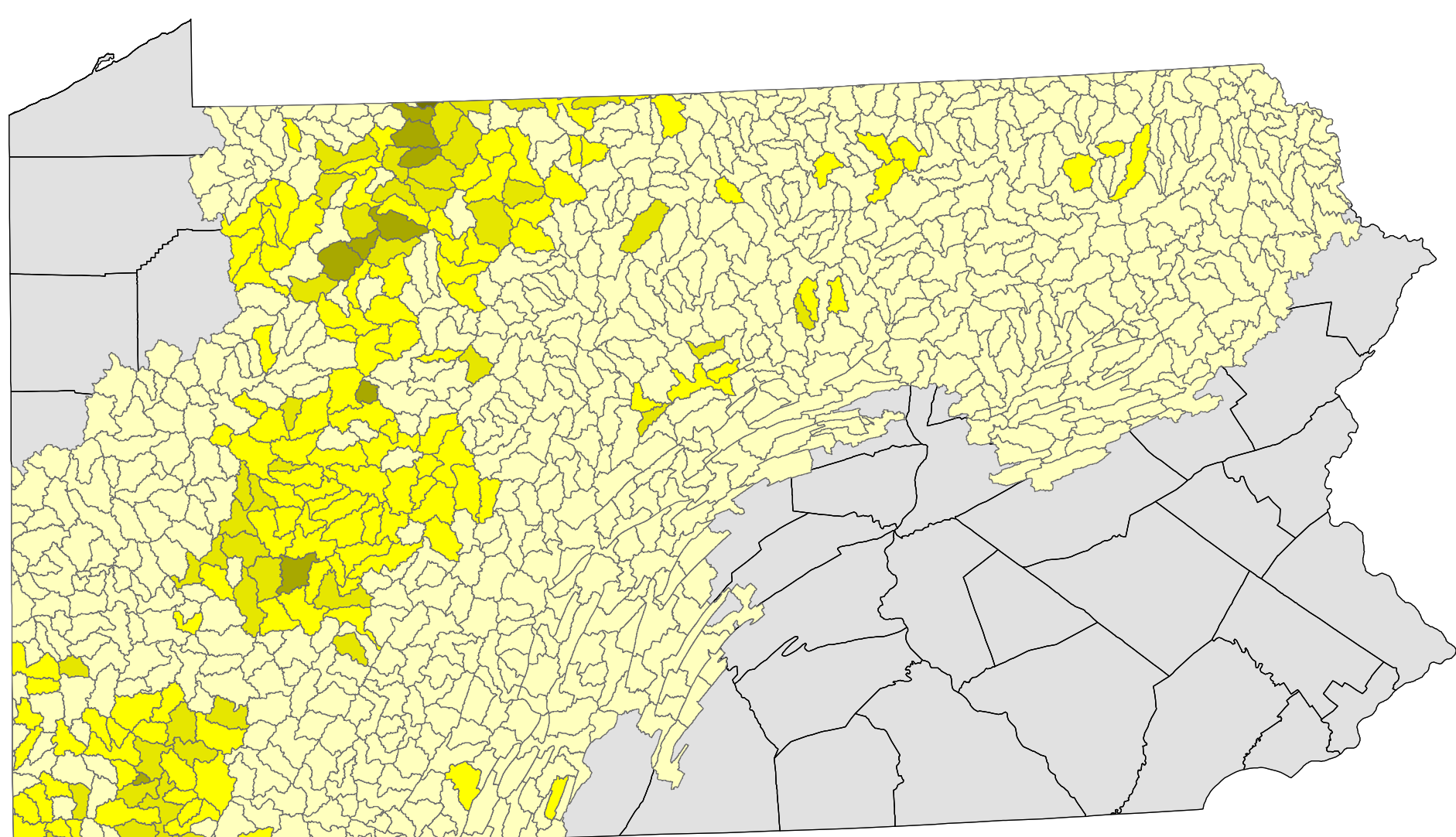
Change in Forest Average Patch Size



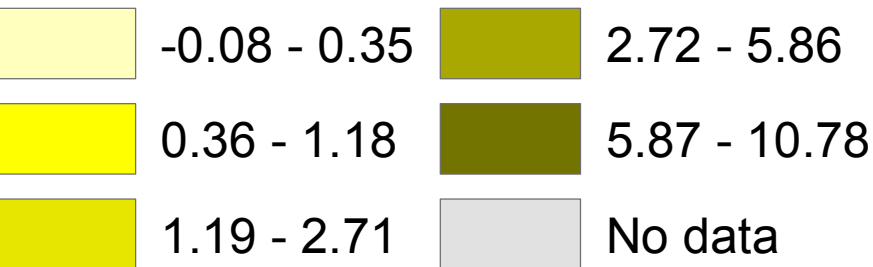
Change in Forest Average Patch Size (hectares)



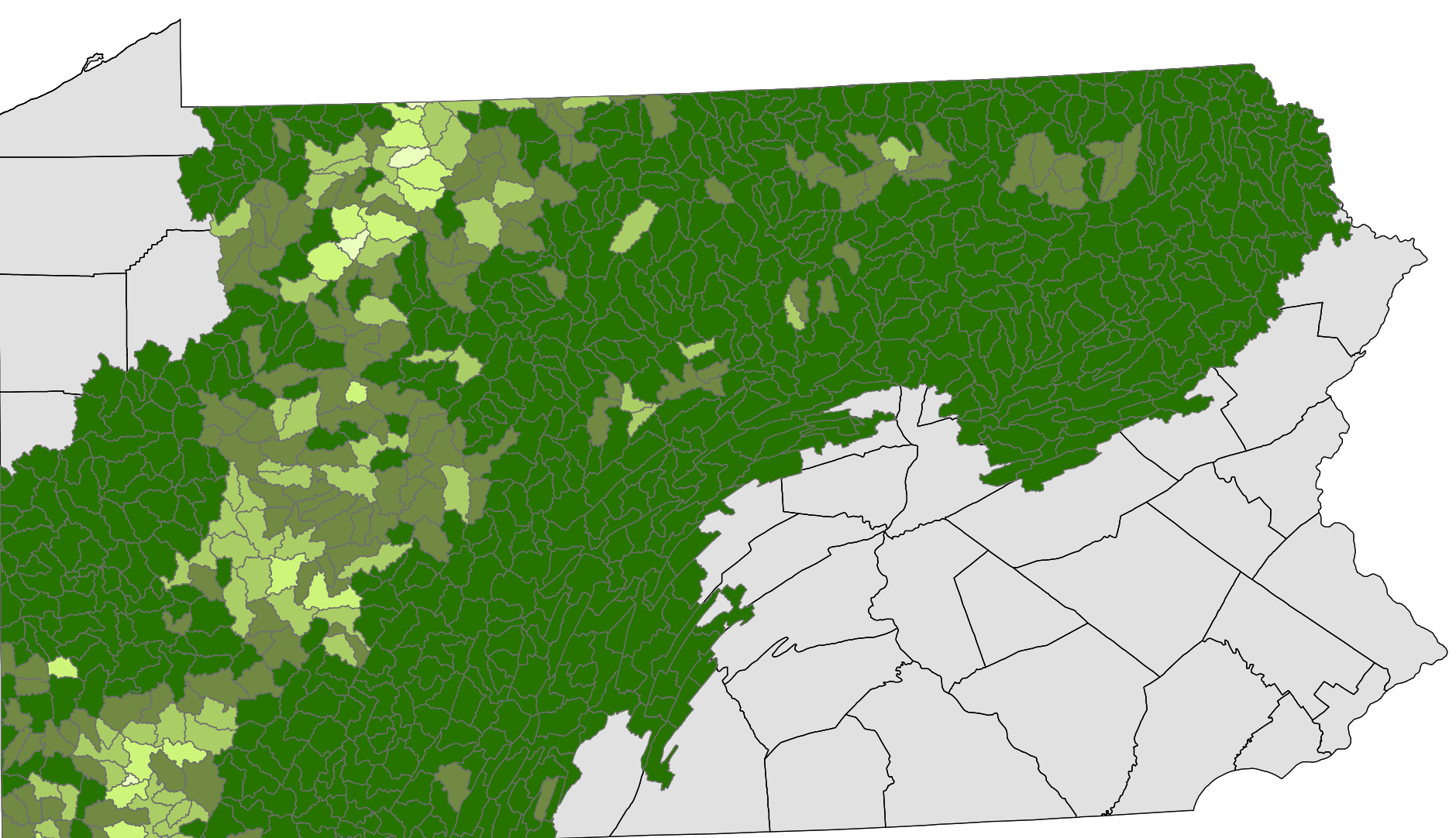
Change in Percent of Forest Edge



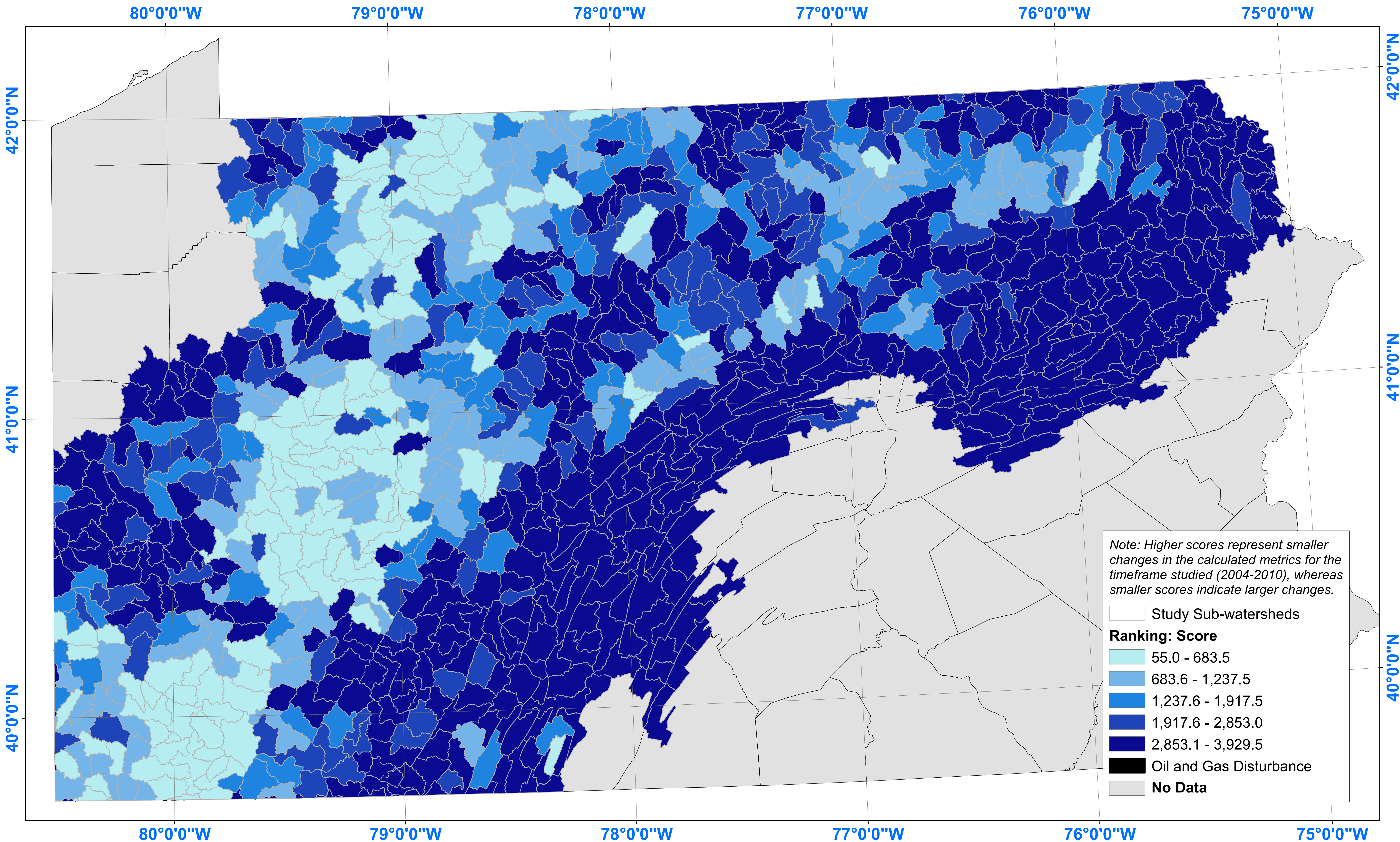
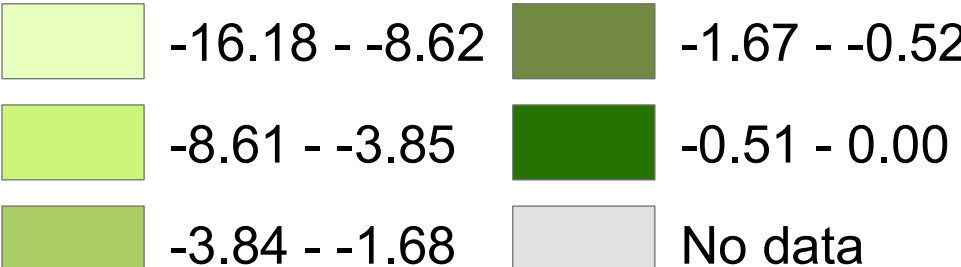
Change in Percent Forest Edge



Change in Percent of Forest Interior



Change in Percent Forest Interior



**Descriptive Note:** Disturbance footprint of oil and gas extraction activities for the period of 2004-2010 was collected. A series of forest metrics were calculated and the amount of change was used to develop a ranking system where counties were ranked on the basis of the relative impact of forests. A total score was created and is shown in the above map. Maps below show changes in the calculated metrics used to develop the ranking system.

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