Making Sense of High-Res Tree Canopy Change

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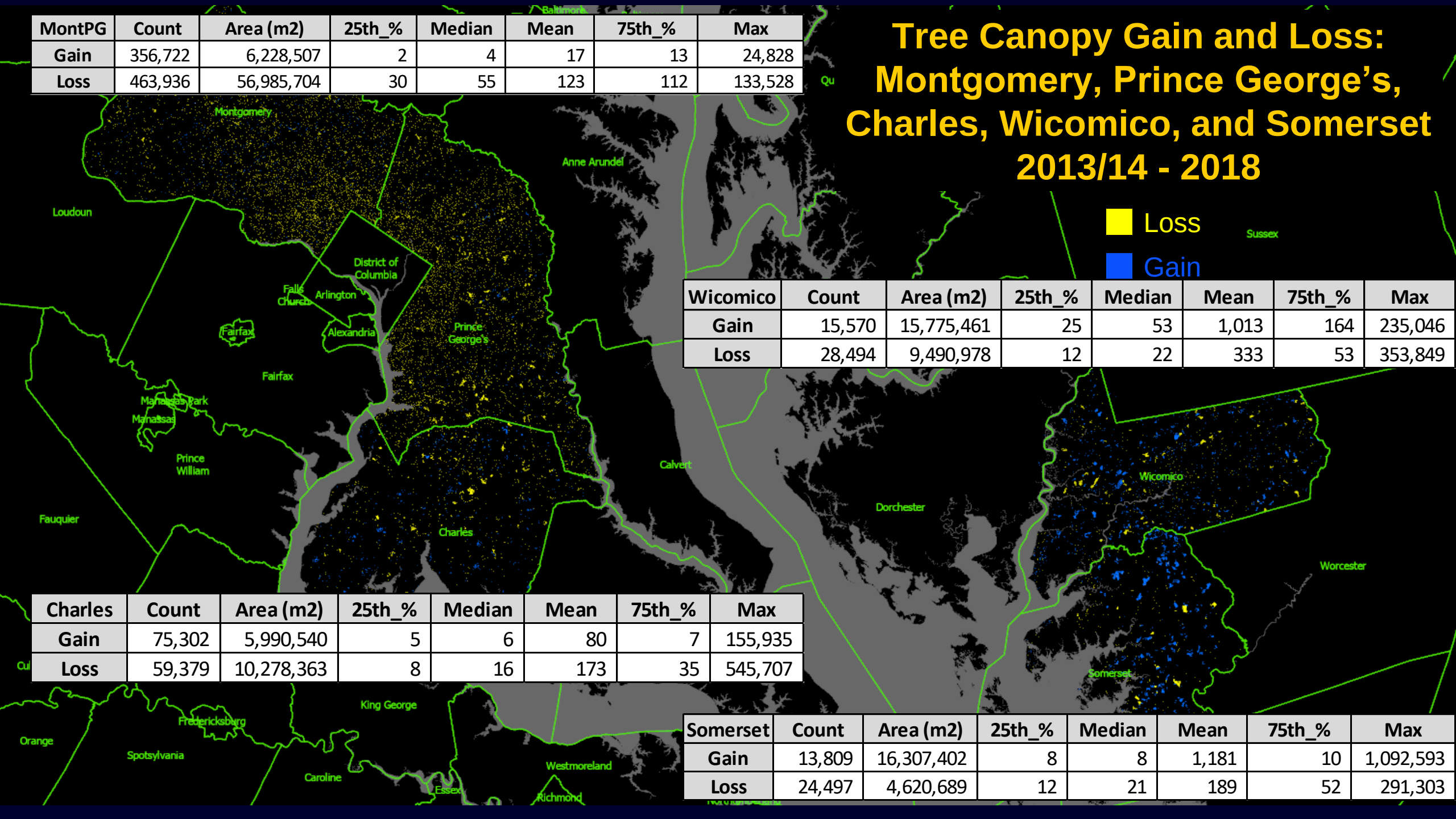
U.S. Department of the Interior
U.S. Geological Survey

Tree Canopy Gain and Loss: Montgomery, Prince George's, Charles, Wicomico, and Somerset 2013/14 - 2018



MontPG	Count	Area (m2)	25th_%	Median	Mean	75th_%	Max
Gain	356,722	6,228,507	2	4	17	13	24,828
Loss	463,936	56,985,704	30	55	123	112	133,528

Wicomico	Count	Area (m2)	25th_%	Median	Mean	75th_%	Max
Gain	15,570	15,775,461	25	53	1,013	164	235,046
Loss	28,494	9,490,978	12	22	333	53	353,849

Charles	Count	Area (m2)	25th_%	Median	Mean	75th_%	Max
Gain	75,302	5,990,540	5	6	80	7	155,935
Loss	59,379	10,278,363	8	16	173	35	545,707

Somerset	Count	Area (m2)	25th_%	Median	Mean	75th_%	Max
Gain	13,809	16,307,402	8	8	1,181	10	1,092,593
Loss	24,497	4,620,689	12	21	189	52	291,303

Tree Canopy Change in Two Suburban Counties

Prince George's County: 2014 - 2018

TC Loss:

- 59% of loss change occurred within forest or wetlands
- 41% of loss occurred in developed areas

TC Gain:

- 16% of gain occurred within forest or wetlands
  - shrub/scrub; edge of forest
- 54% of gain occurred in developed areas
- 29% of gain occurred on agricultural lands

Anne Arundel County: 2014 - 2018

TC Loss:

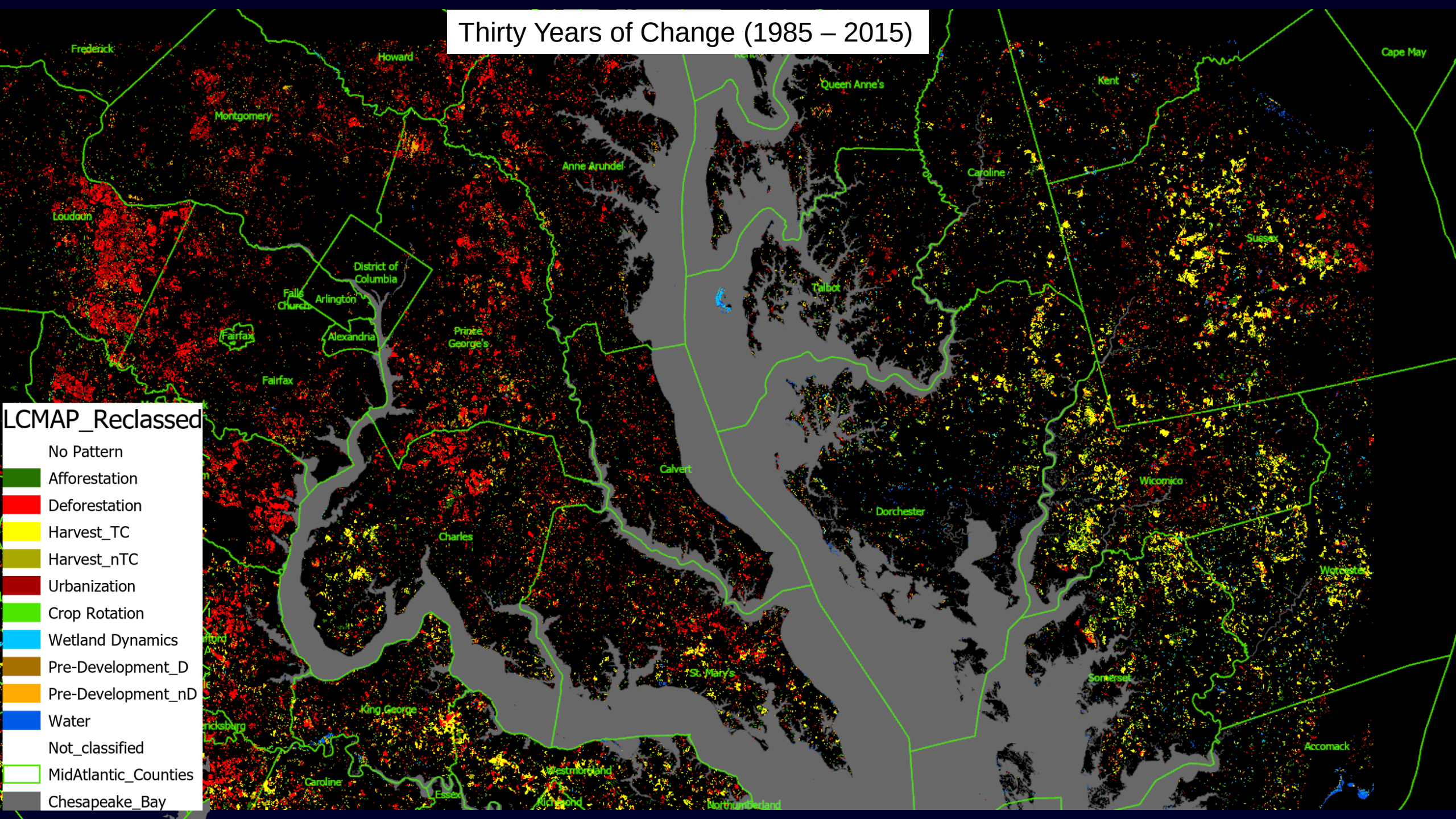
- 57% of loss change occurred within forest or wetlands
- 42% of loss occurred in developed areas

TC Gain:

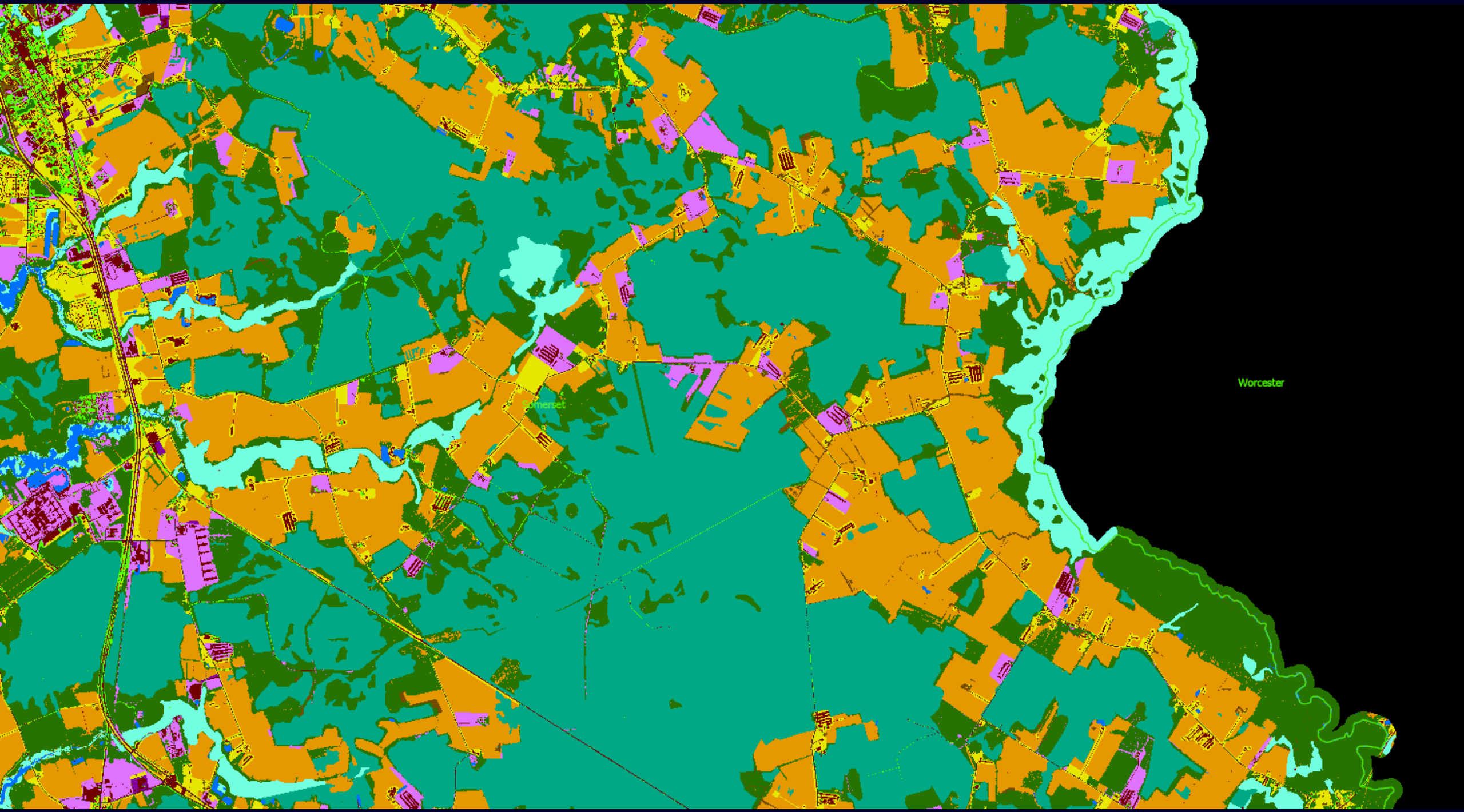
- 9% of gain occurred within forest or wetlands
  - shrub/scrub; edge of forest
- 55% of gain occurred in developed areas
- 35% of gain occurred on agricultural lands

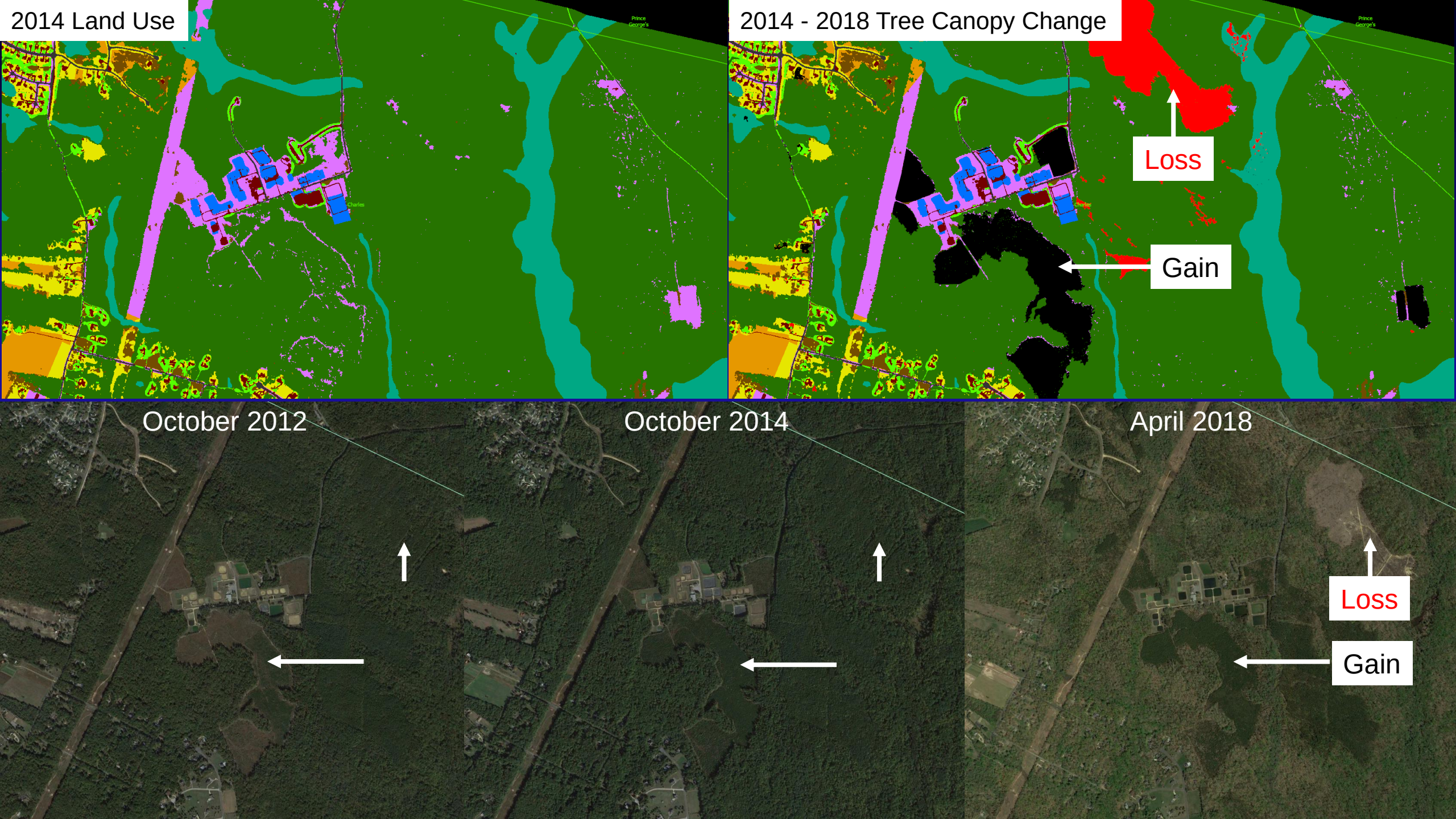
USGS

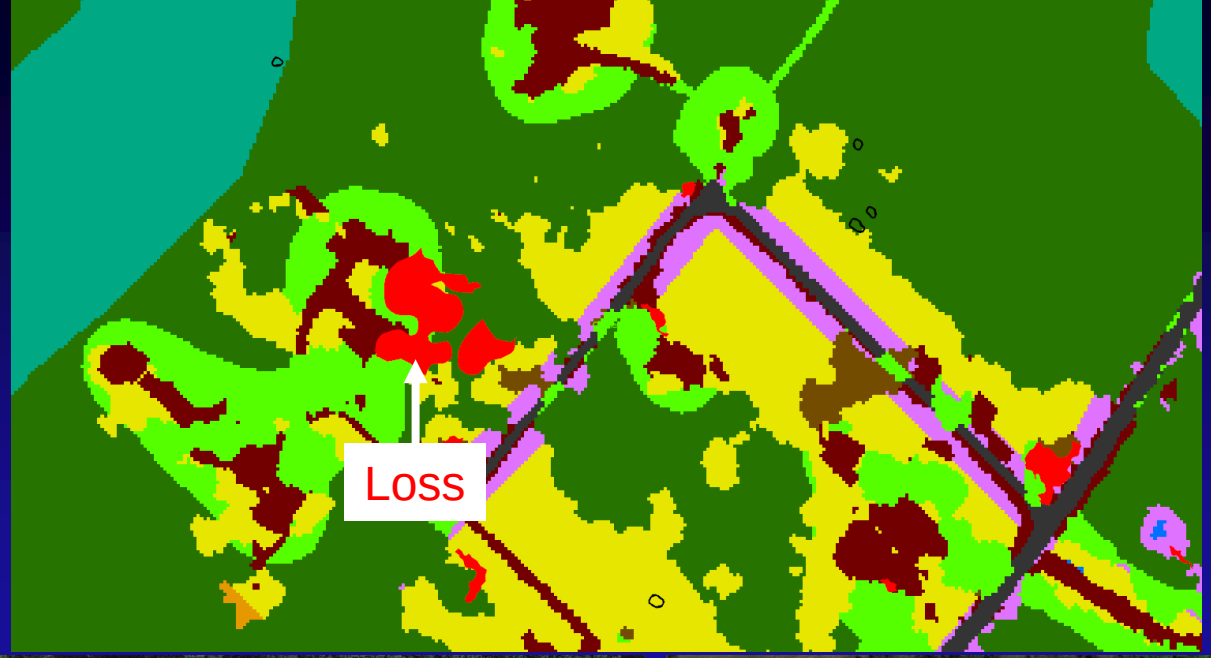
Thirty Years of Change (1985 – 2015)



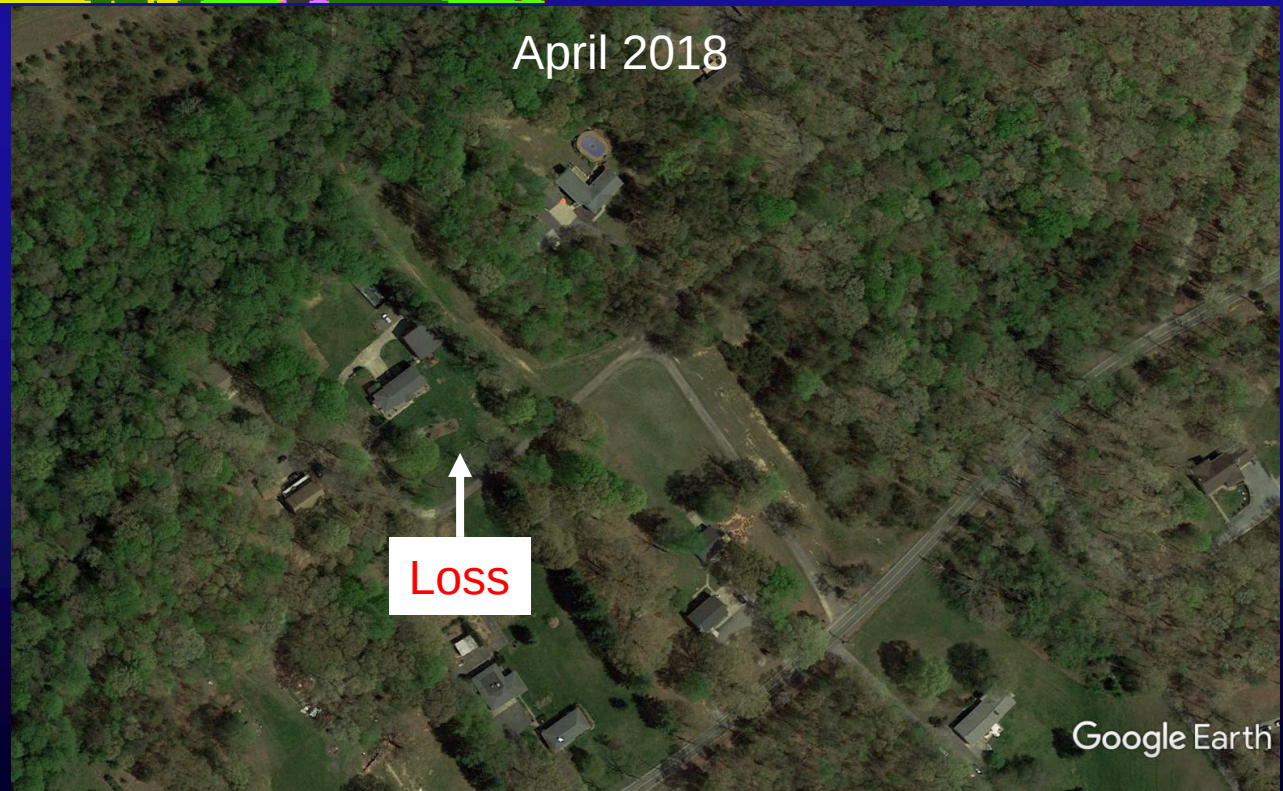

Cokesbury
Google Earth


Worcester
Somerset


2014 Land Use
2014 - 2018 Tree Canopy Change
Loss
Gain
October 2012
October 2014
April 2018
Loss
Gain


Loss

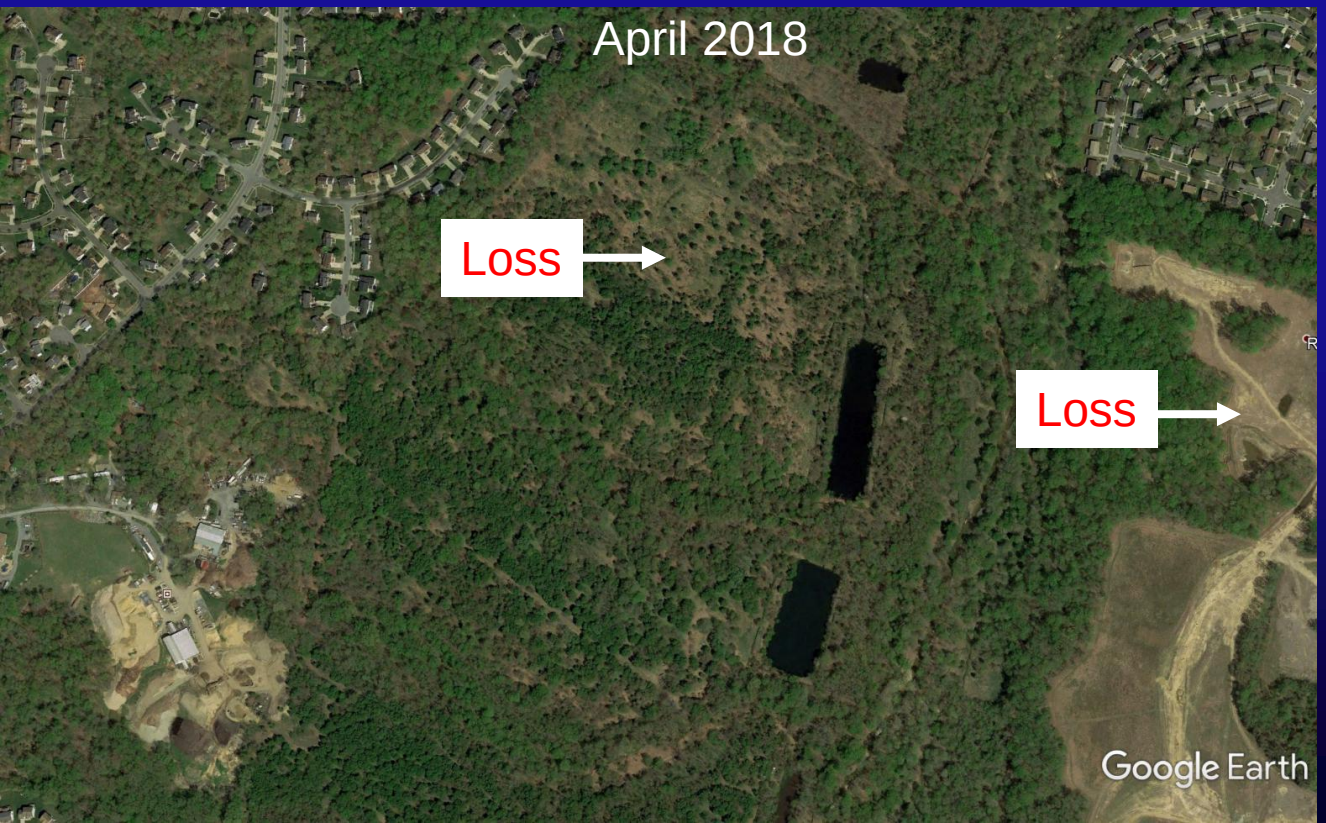

October 2014
Google Earth

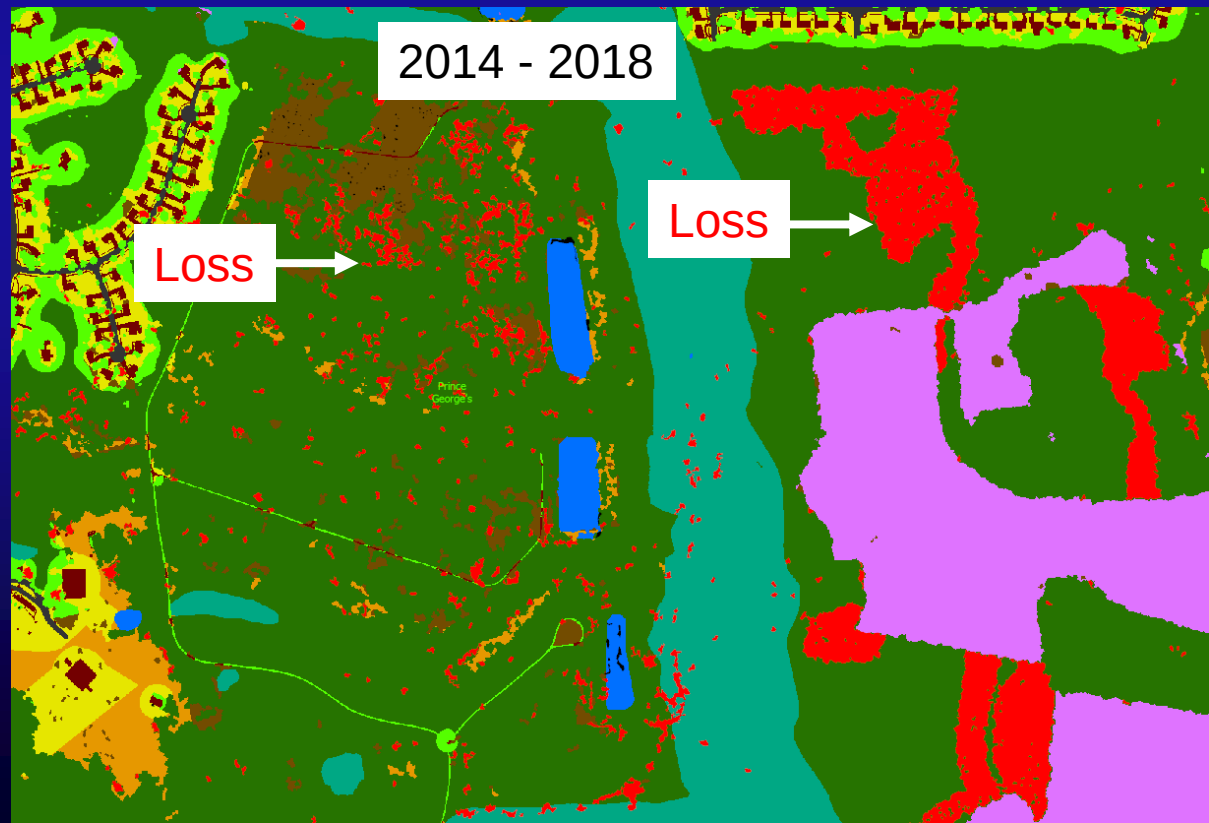

April 2018
Loss
Google Earth


April 1988
Google Earth


September 2001
Google Earth


October 2012
Google Earth


April 2018
Loss
Loss
Google Earth


2014 - 2018
Loss
Loss

Preliminary Observations

1. In Montgomery and Prince George's counties, tree canopy loss is dominant with most of the loss occurring in small patches associated with development activities.

2. Timber harvest activities are the dominant cause of tree canopy change in Wicomico and Somerset counties with gain outpacing loss.

3. Speckled patterns of small patch change within large areas of natural cover are indicative of natural forest dynamics or selective clearing.

4. Speckled patterns of small patch change within developed areas indicate the removal and/or planting of trees along roads and in yards.

Preliminary Observations (cont.)

5. Tree canopy loss can be easily detected in multi-date imagery because it represents an instantaneous and significant change in vegetation height (and spectral signature). Tree canopy gain associated with planting, stump sprouting, and natural succession is a gradual process that may take several years to reliably detect.

6. Rates of tree canopy loss and gain vary over time and therefore communicating net change in canopy to the public and policymakers warrants longer-term monitoring coupled with a better understanding of successional stages, regeneration rates, and dominant process of change.

7. The 2013/14 land cover and land use data will need to be revised to ensure consistency with the 2017/18 data and land change products (this was expected).