Maryland Tree Canopy Change: Preliminary Results

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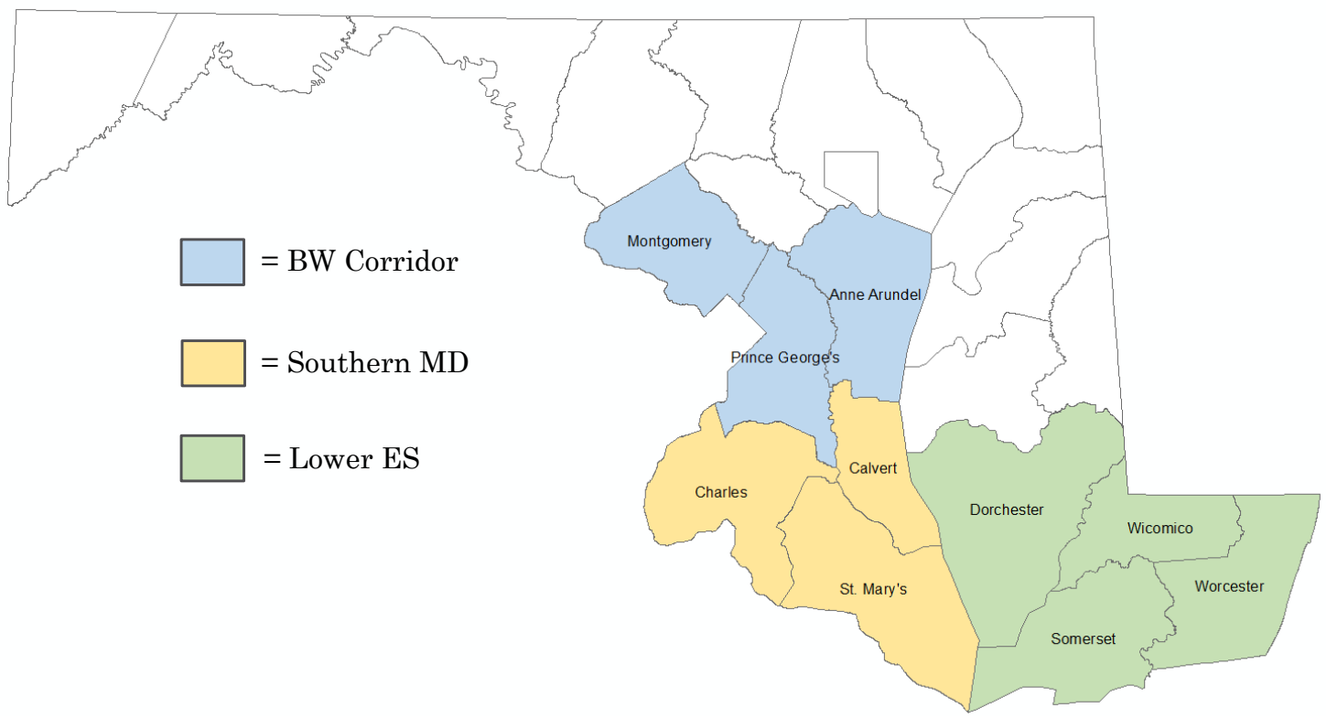
The Data

- Tree canopy gain and loss data from 2013/2014 – 2017/2018
- Derived from 1x1 meter land cover data from Chesapeake Conservancy
- Baltimore Washington Corridor
  - Anne Arundel
  - Montgomery
  - Prince George's
- Southern Maryland
  - Calvert
  - Charles
  - St. Mary's
- Lower Shore
  - Dorchester
  - Somerset
  - Wicomico
  - Worcester



Goals of Project

- Where is the loss happening?
- What are the drivers for loss?
- How do the patterns of loss differ between counties/regions?
- How much of the loss is natural forest dynamics?

Summary of Loss

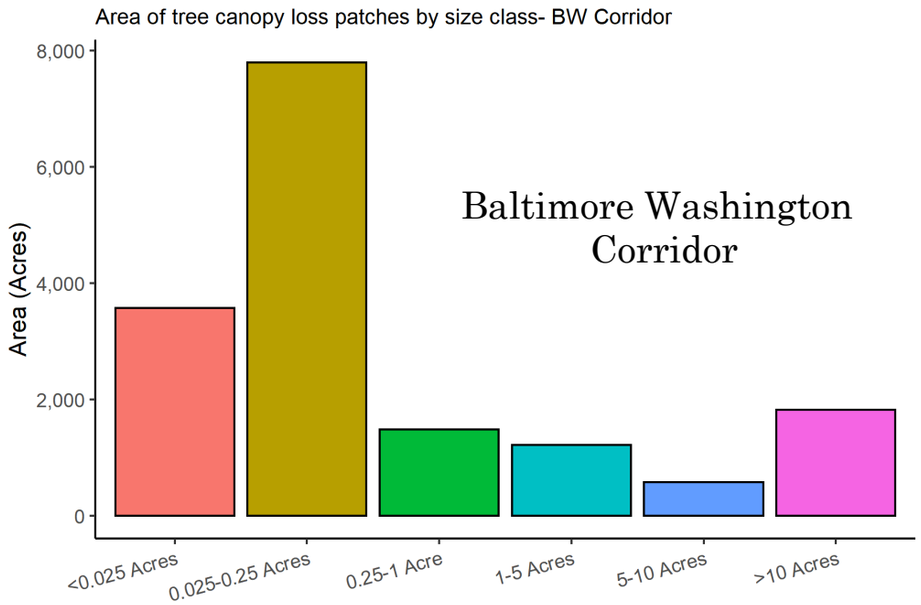
	Tree Canopy Gain (acres)			Tree Canopy Loss (acres)			
County	Total	In 100ft Stream Buffers	In Critical Areas	Total	In Urban Areas	In 100ft Stream Buffers	In Critical Areas
Anne Arundel	188.24	5.33	78.68	2,543.78	1,860.08	83.04	425.51
Montgomery	656.14	52.06	-	6,364.05	4,807.08	666.69	-
Prince George's	518.15	23.42	44.38	7,567.04	5,397.82	649.29	334.24
Calvert	899.24	24.29	117.67	1,566.72	643.00	28.28	134.22
Charles	1,478.35	69.31	65.89	2,529.30	634.85	66.38	87.19
St. Mary's	1,524.98	75.11	266.67	1,897.06	318.22	42.82	208.71
Dorchester	2,111.68	151.91	517.18	1,730.68	26.35	68.92	429.74
Somerset	4,778.99	123.04	626.04	1,258.22	17.18	44.45	123.11
Wicomico	3,703.89	157.95	206.13	2,337.47	288.33	76.60	181.30
Worcester	6,900.44	587.63	350.19	3,514.53	119.08	226.46	193.86
TOTAL	22,760.11	1,270.03	2,272.83	31,308.86	14,111.98	1,952.93	2,117.86

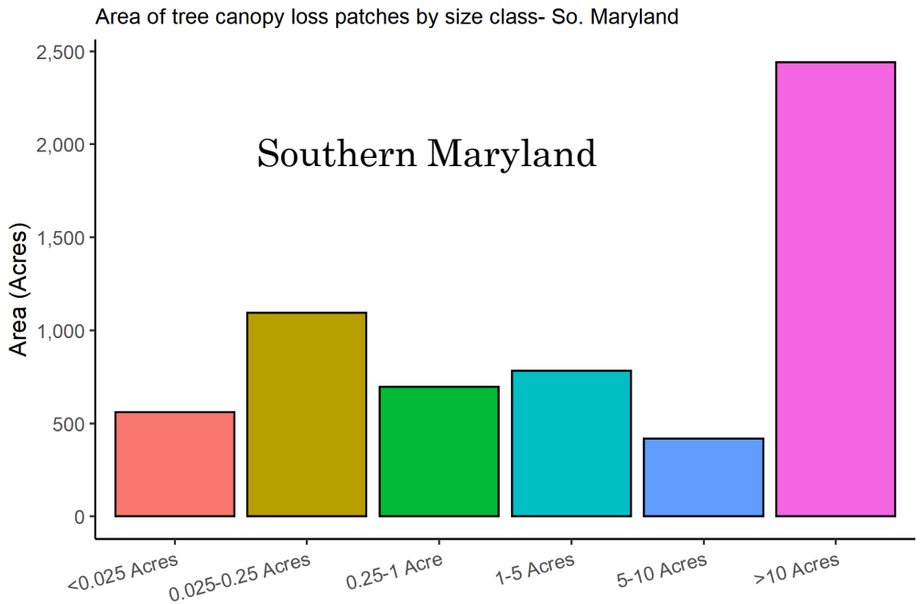
= BW Corridor

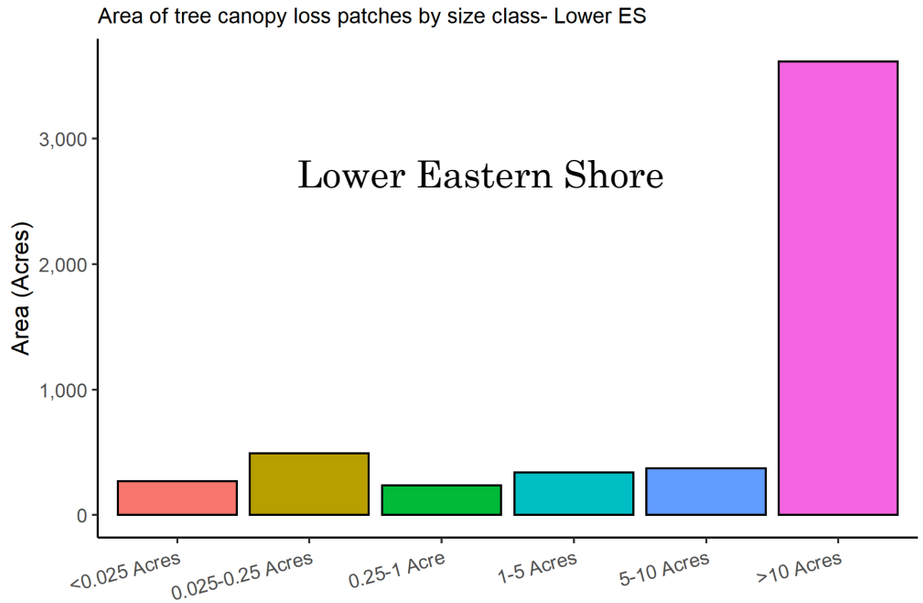
= Southern MD

= Lower ES

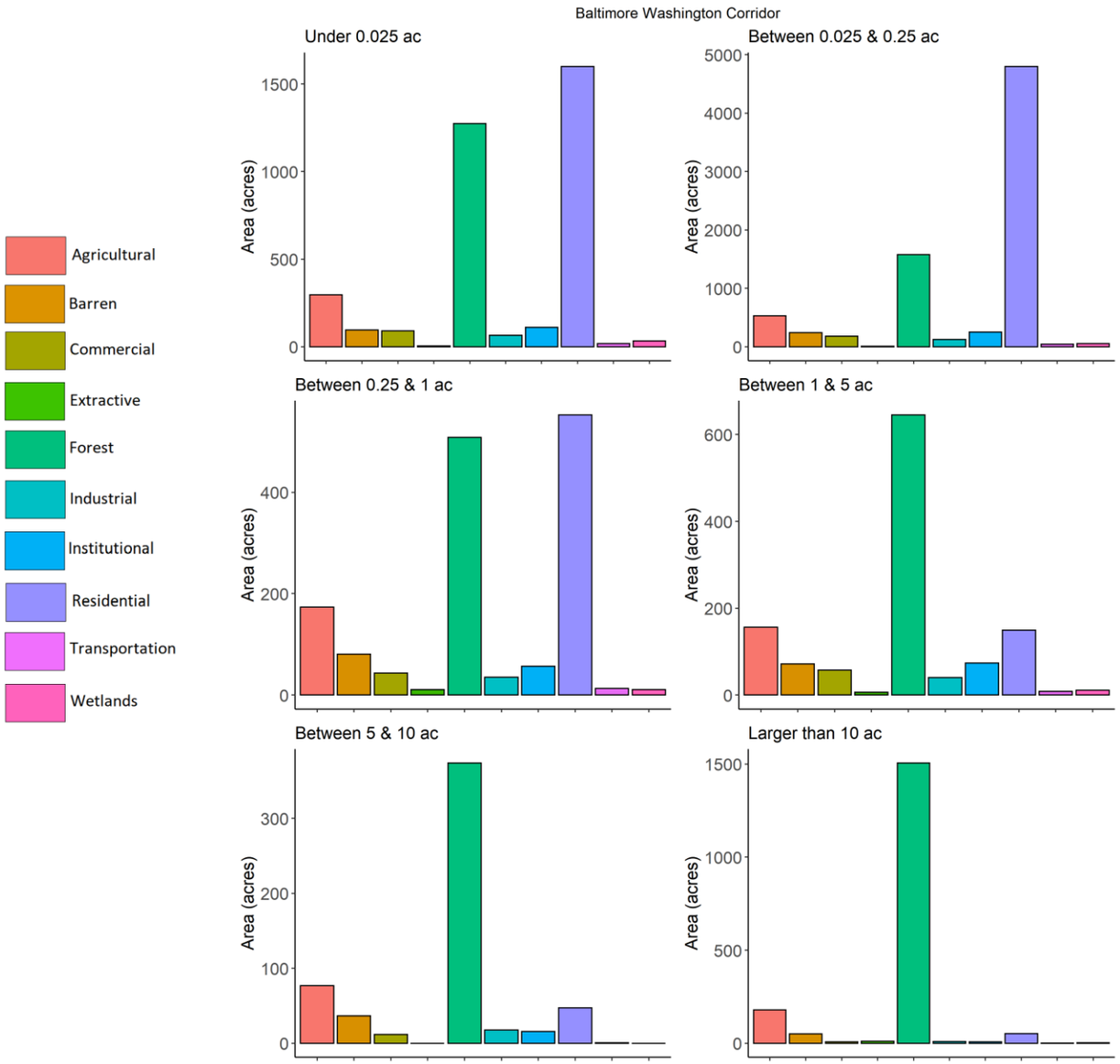
Summary of losses

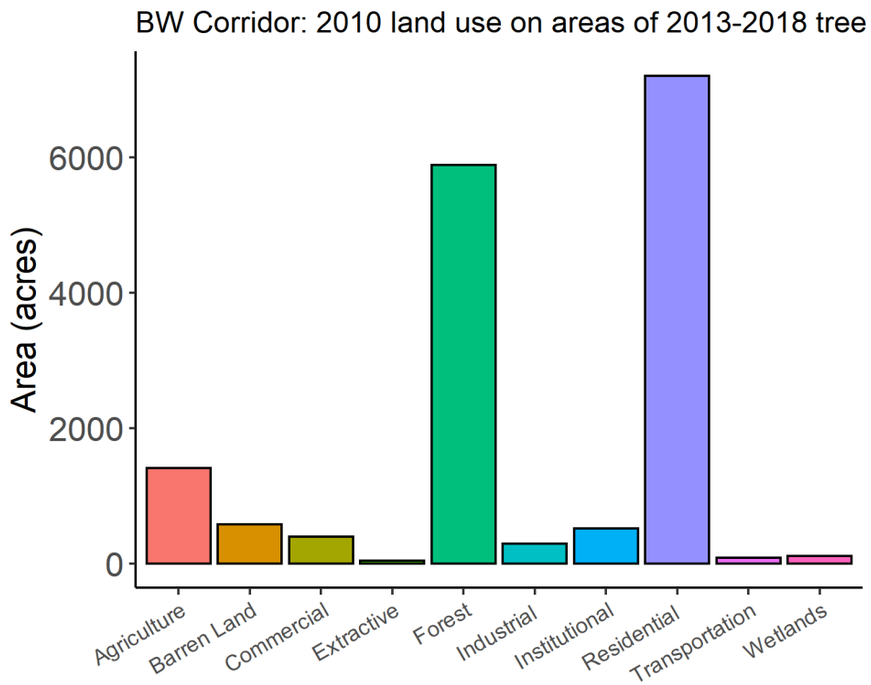






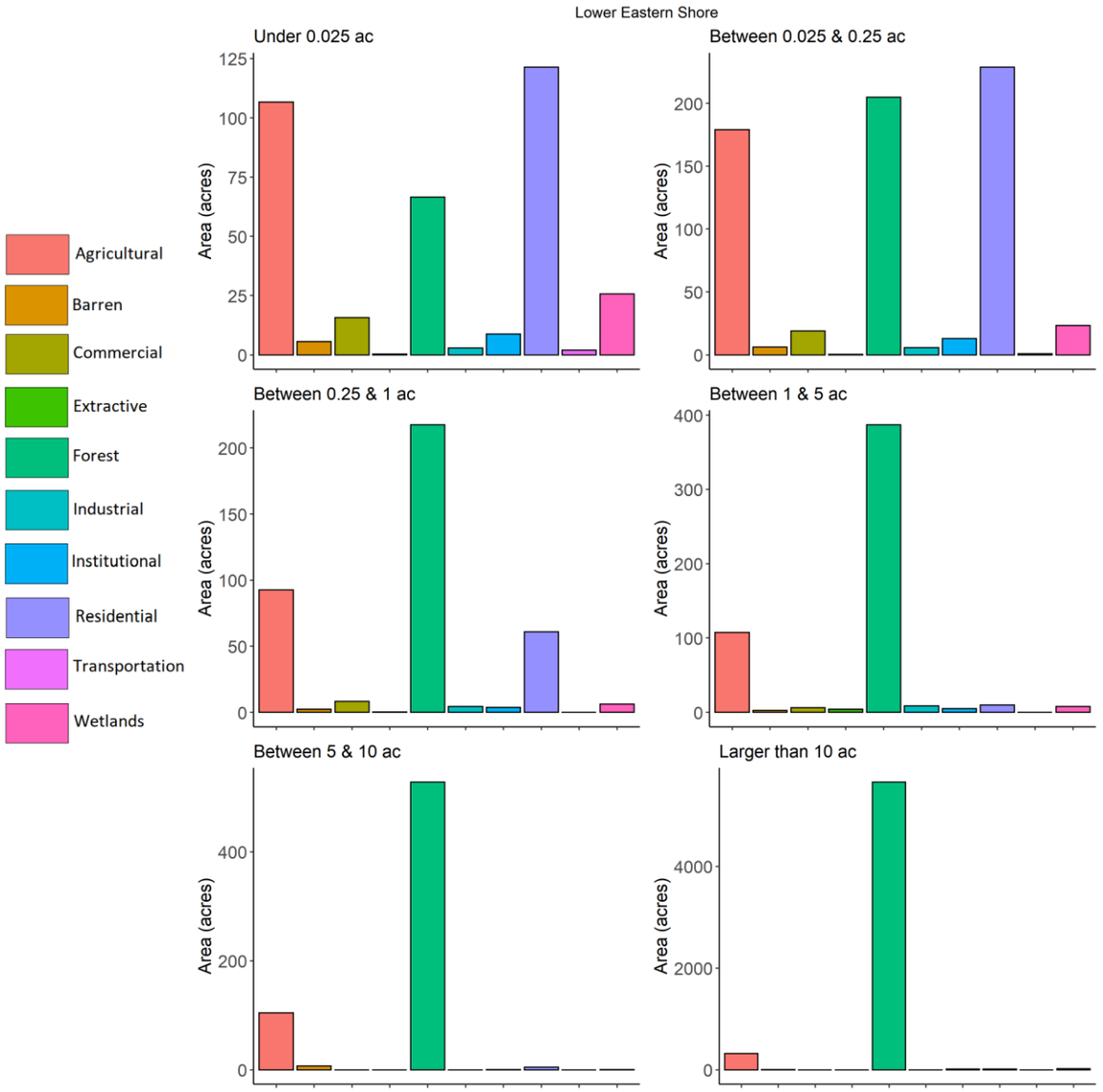
2010 Land use on areas of TC loss - BW

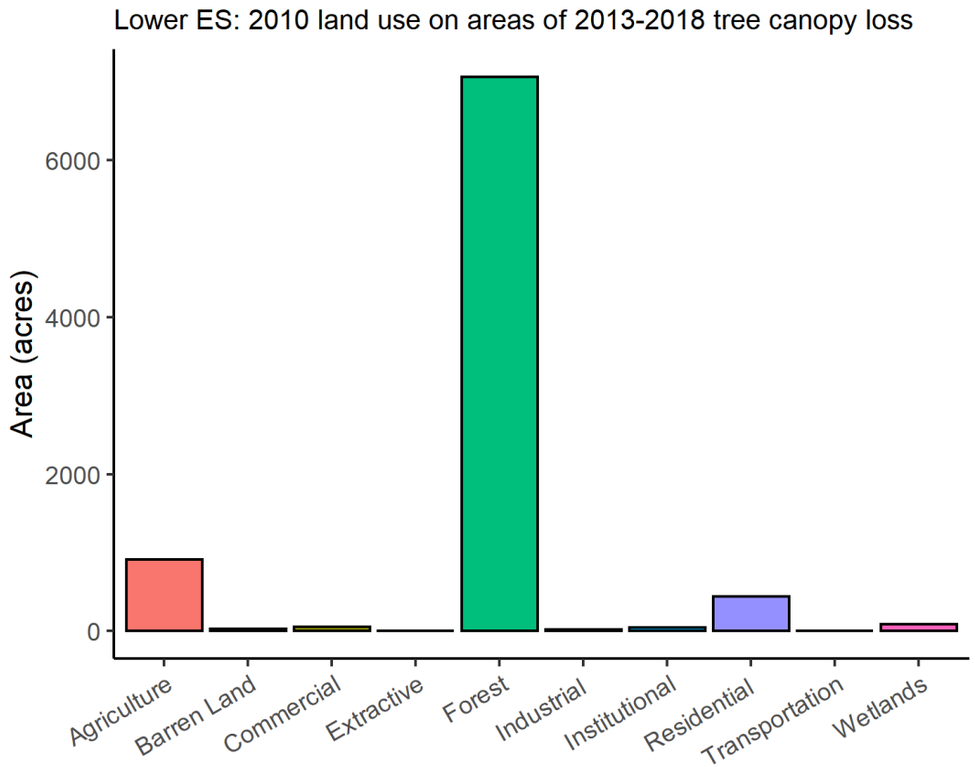




Prince George's County

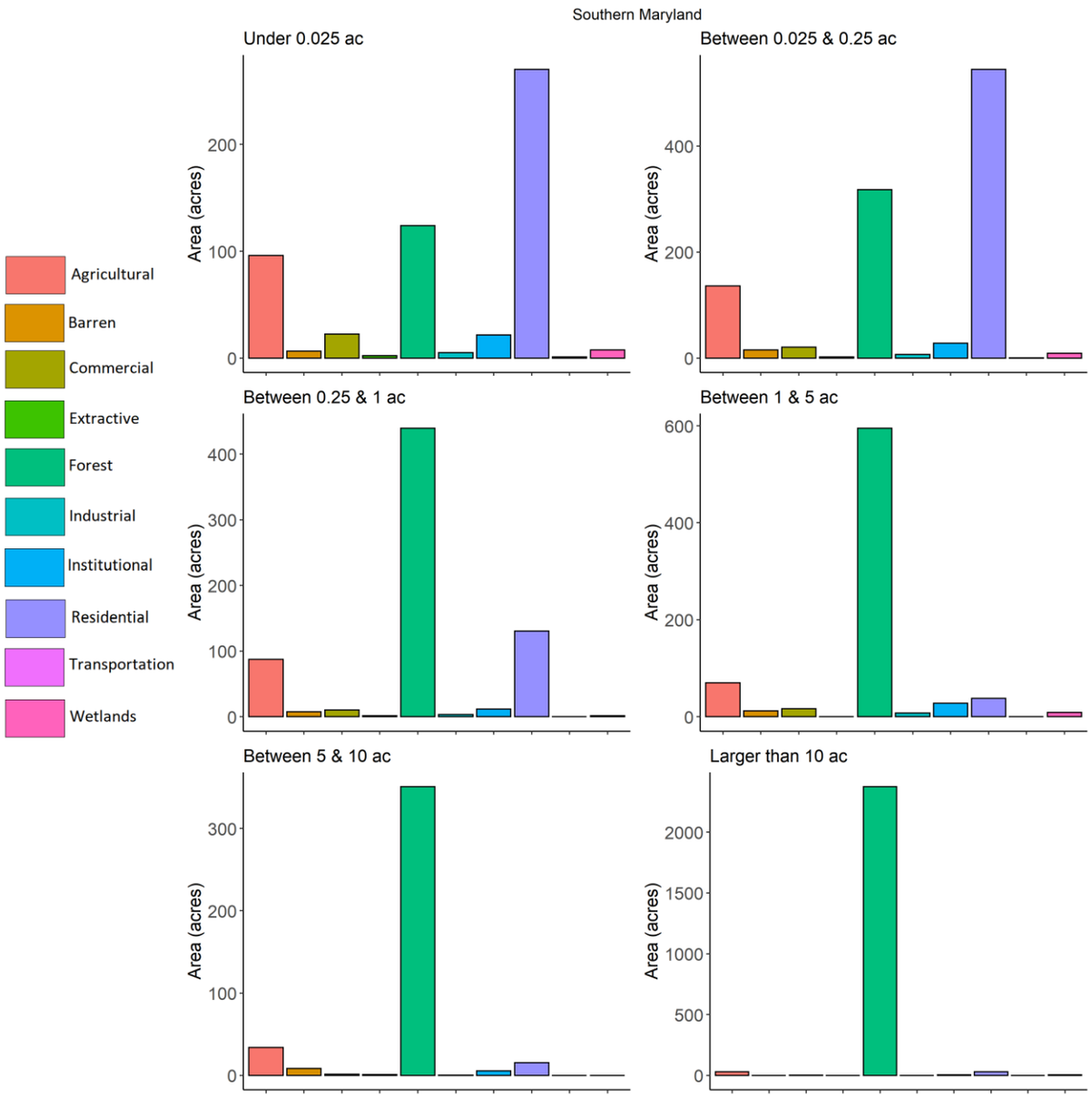
2010 Land use on areas of TC loss- Lower ES

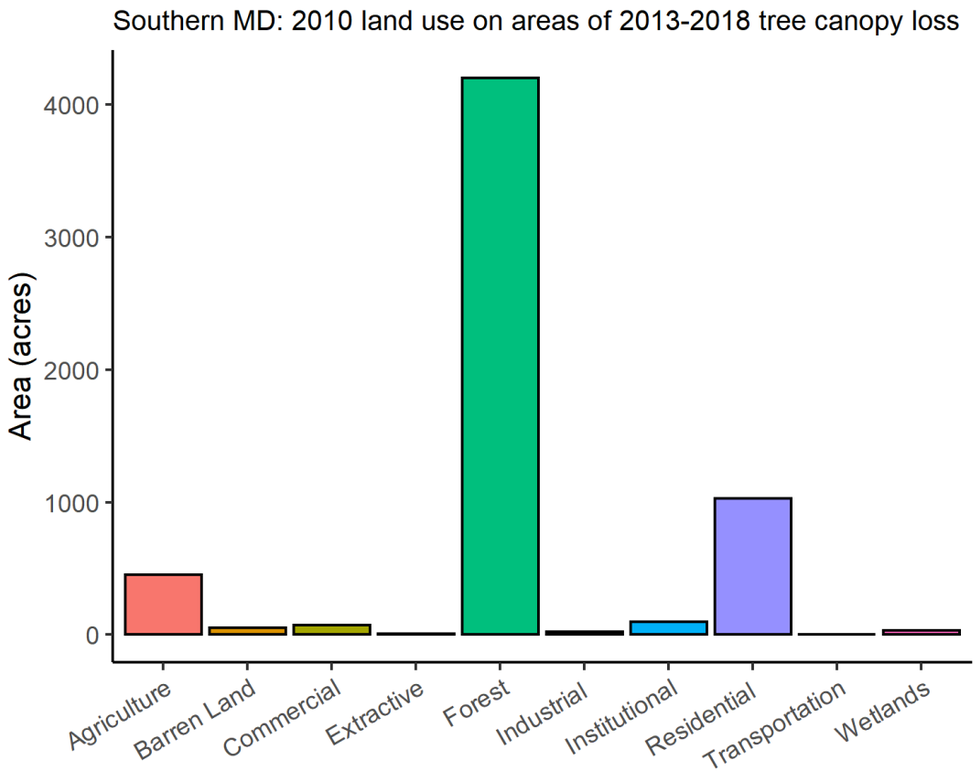




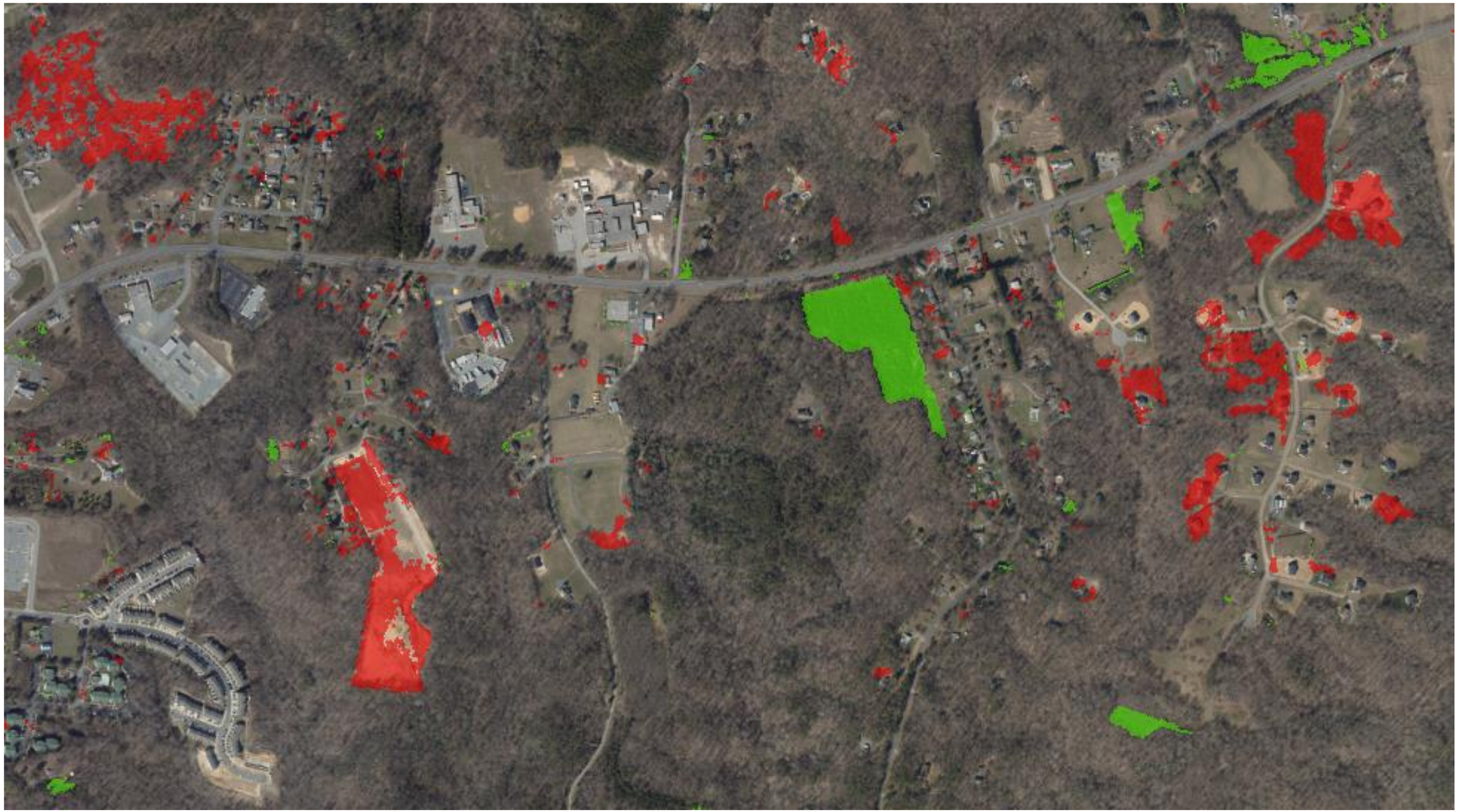
Wicomico County

2010 Land use on areas of TC loss- So. MD

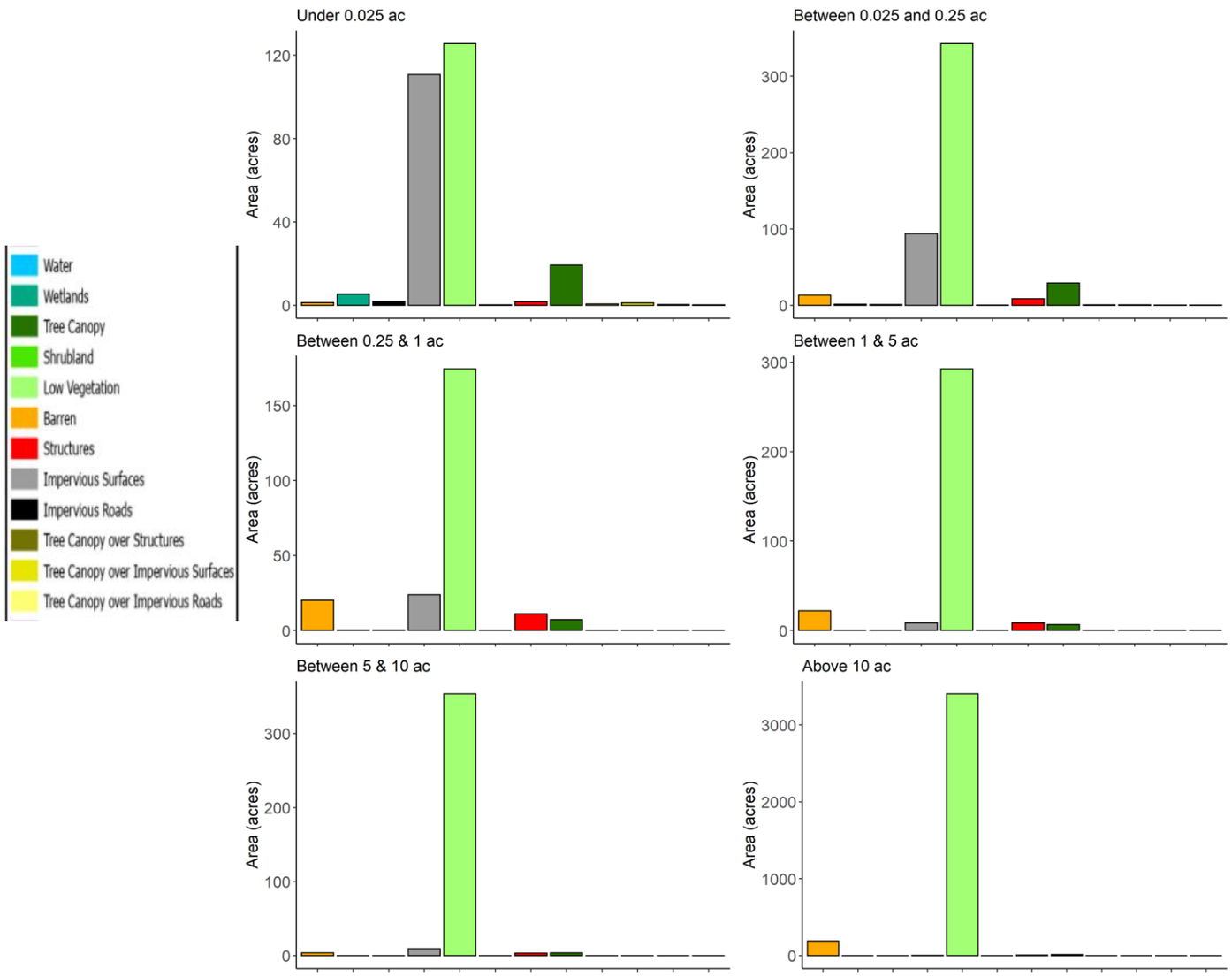


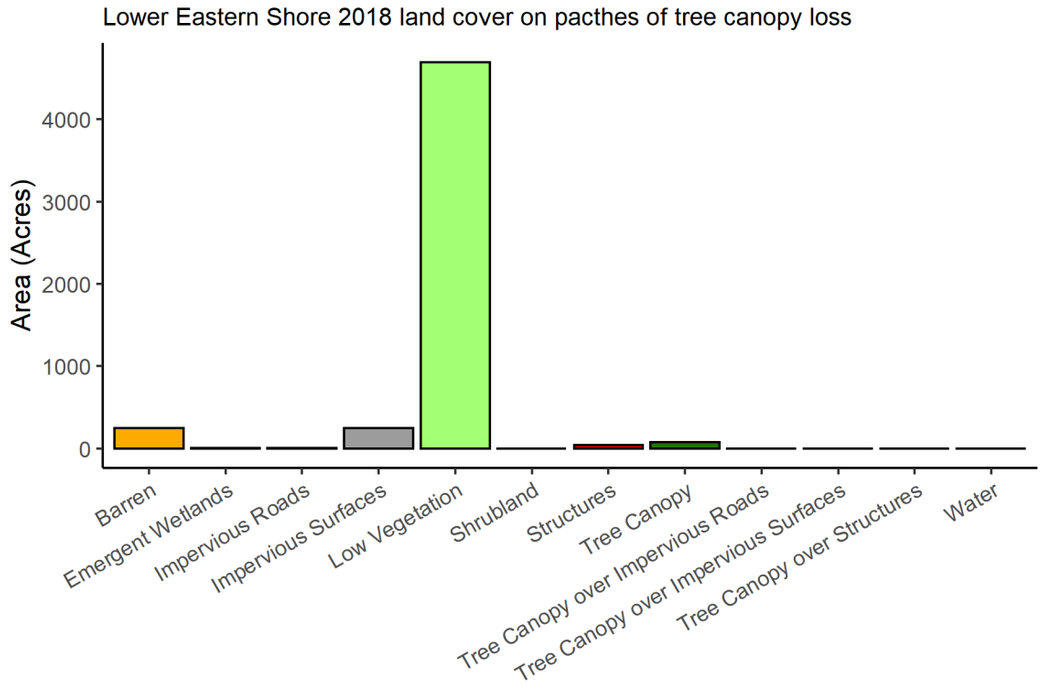


Calvert County



2018 land cover on areas of TC loss





Natural Canopy Gaps

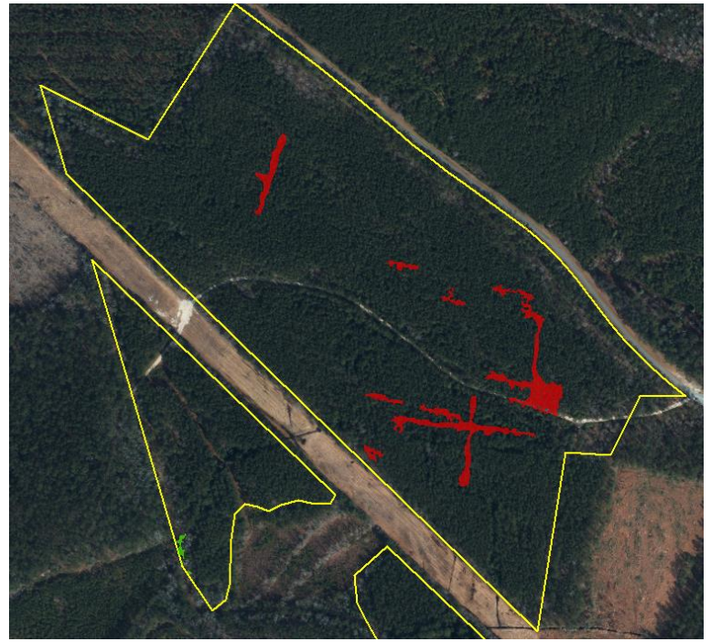
County	Area of Natural Canopy Gap (acres)		Total Area of TC Loss (acres)
	Edge	Interior	
Anne Arundel	252.70	29.42	2,543.78
Montgomery	1,360.30	404.56	6,364.05
Prince George's	1,608.96	542.63	7,567.04
Calvert	262.86	13.56	1,566.72
Charles	225.66	48.32	2,529.30
St. Mary's	163.34	16.80	1,897.06
Dorchester	67.44	3.98	1,730.68
Somerset	45.18	3.30	1,258.22
Wicomico	114.25	11.62	2,337.47
Worcester	73.54	12.17	3,514.53
TOTAL	4,174.22	1,086.34	31,308.86

County	Healthy			Unhealthy		
	Sample Size	% TC Loss	% TC Gain	Sample Size	% TC Loss	% TC Gain
Anne Arundel	7	0	0.0005	19	5.7845	0
Prince George's	4	0.7554	0.0001	2	2.5995	0
Calvert	3	0.3412	0.1228	2	1.0649	1.0836
Charles	9	0.2094	0.8945	2	0.0654	0.0100
St. Mary's	2	0.2625	0.0048	2	2.7741	0.9098
Dorchester	2	0.0912	10.5140	6	0.0492	8.1895
Somerset	3	0	0.1078	3	0.0968	18.2604
Wicomico	2	0.0765	0.2745	6	0.0006	4.8432
Worcester	3	0	27.2065	0	NA	NA
Average		0.1940	3.1986		2.9405	3.2615

= BW Corridor = Southern MD = Lower ES

Harvest on State Forests

		Area on State Forest Harvests (acres)	
County	State Forest	TC Gain	TC Loss
Dorchester	Chesapeake Forest Lands	2.20	12.26
Somerset	Chesapeake Forest Lands	1.27	33.82
Wicomico	Chesapeake Forest Lands	16.68	47.98
Worcester	Chesapeake Forest Lands	1.83	153.63
Worcester	Pocomoke State Forest	18.10	109.97
TOTAL		40.08	357.66



Conclusions

- Urban counties (BW corridor) experiencing more TC loss
  - Majority is happening in small patches in residential areas and forests
- Majority of the loss on the eastern shore and southern MD is from larger sections of forest being cleared
  - Mainly converted to low vegetation (Timber harvest? Ag? Something else?)
- Around 1/5 of TC loss seems to be “natural mortality events” in forests, but 4/5 of natural mortality in forest edge
- Timber harvests are showing up as TC loss
  - The type of harvest matters

Planned Work

- Try out other method of identifying natural canopy gaps
- Determine TC loss and gain rates for all forest patches
- Identify reason for TC loss and current land use for areas in Anne Arundel
- Send harvest data to CC
- Collect more data on healthy vs unhealthy forests


Questions?