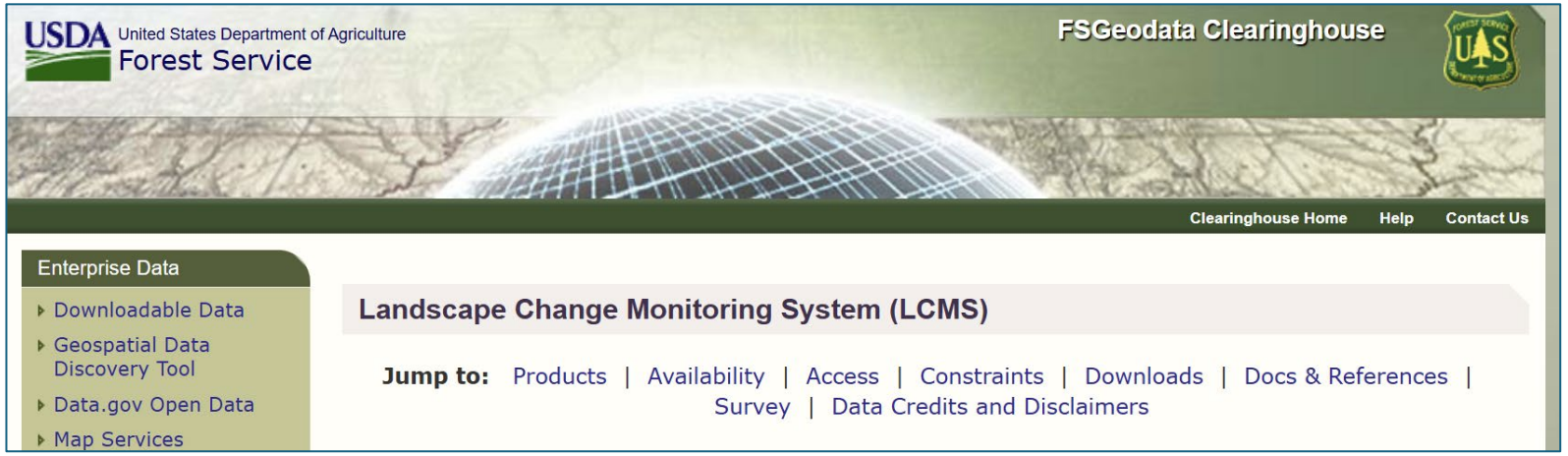
Brian Hall,
BrianHallConservation@gmail.com

Preliminary findings of note:

1) Land Use/Land Cover

2) Protected Open Space

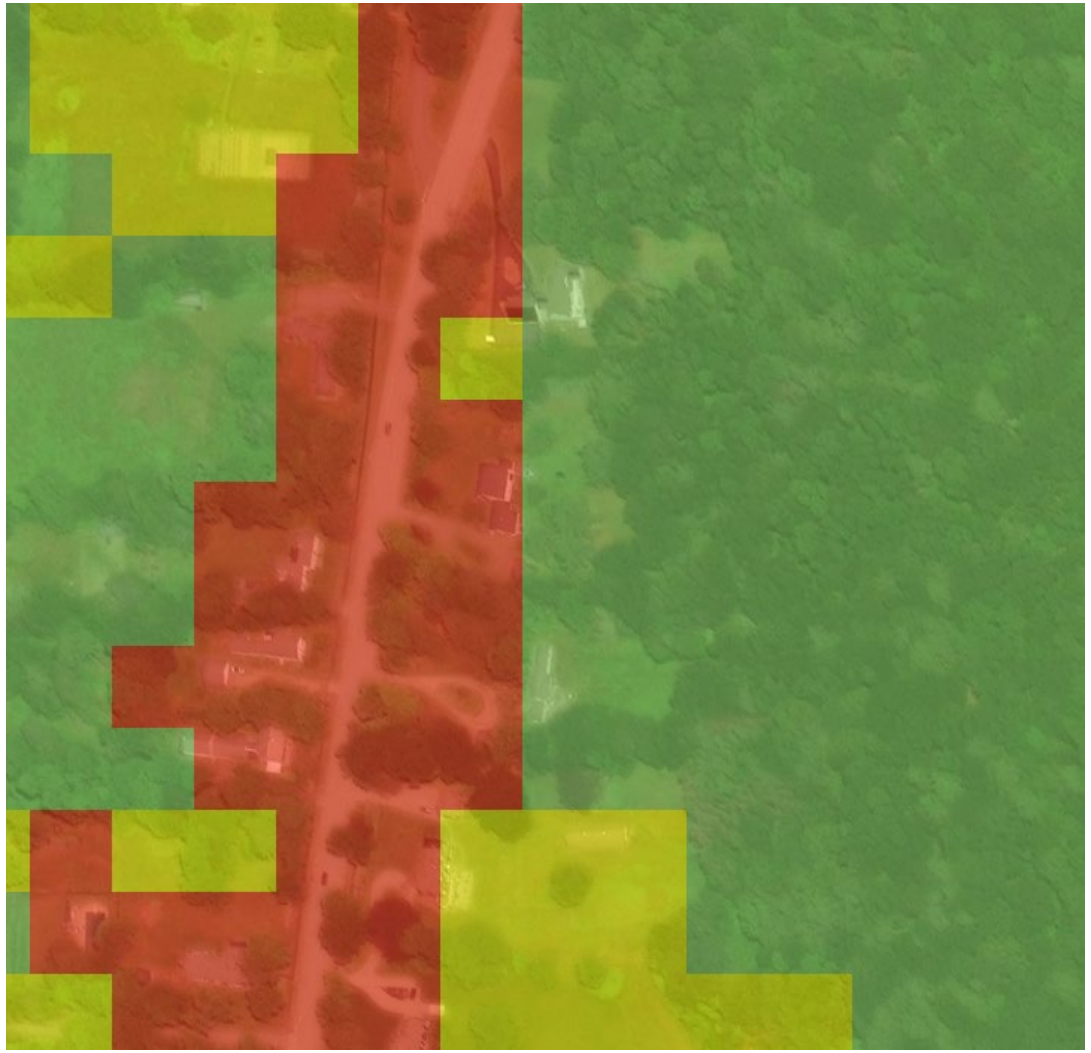
Combined two data sources: LCMAP and LCMS



Forest loss = forest converted to developed or agricultural – <u>not</u> forest harvests

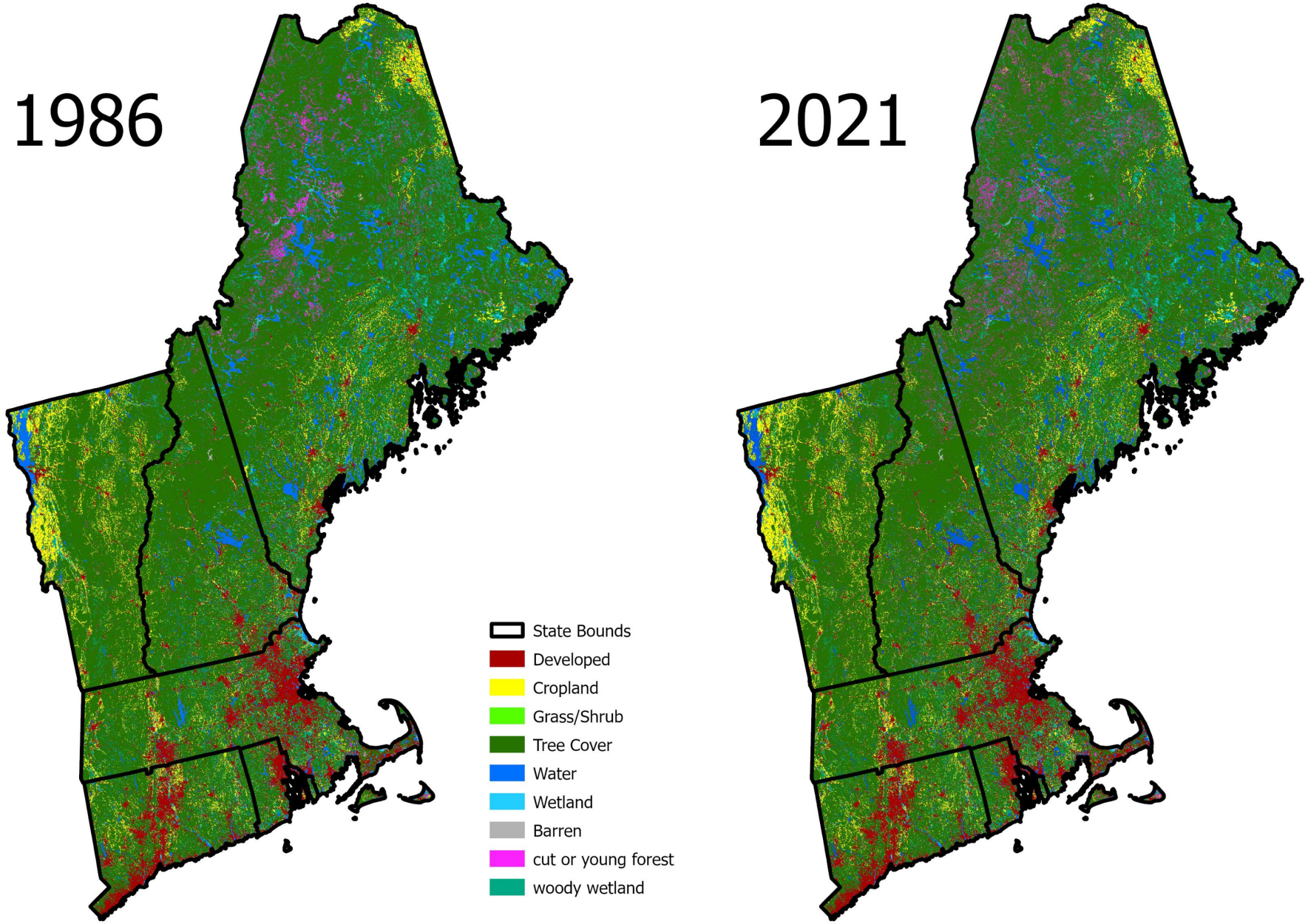
Data Characteristics:

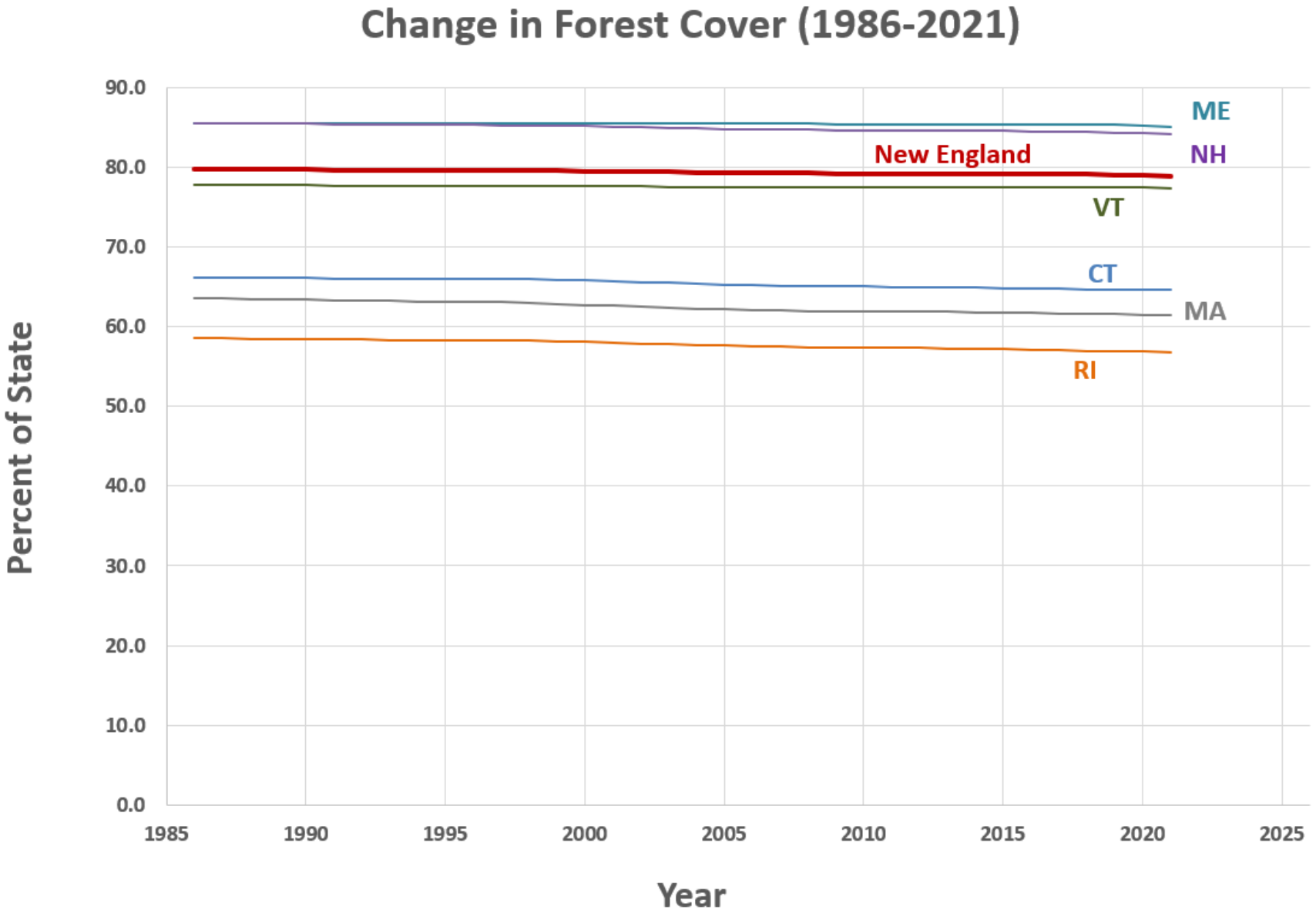
- Derived from LANDSAT satellites
- 30m pixels (~0.25 acres)
- misses smaller areas of landcover, so may under-report forest loss.



Advantages vs. finer-resolution state data:

- available for many years (1986 – 2021), not just single snapshots in time.
- consistent methodology over time allows comparisons.
- same methods used between all states
- spatial data (vs. tabular) allows multiple scales of study, and analysis


1986
2021
State Bounds
Developed
Cropland
Grass/Shrub
Tree Cover
Water
Wetland
Barren
cut or young forest
woody wetland

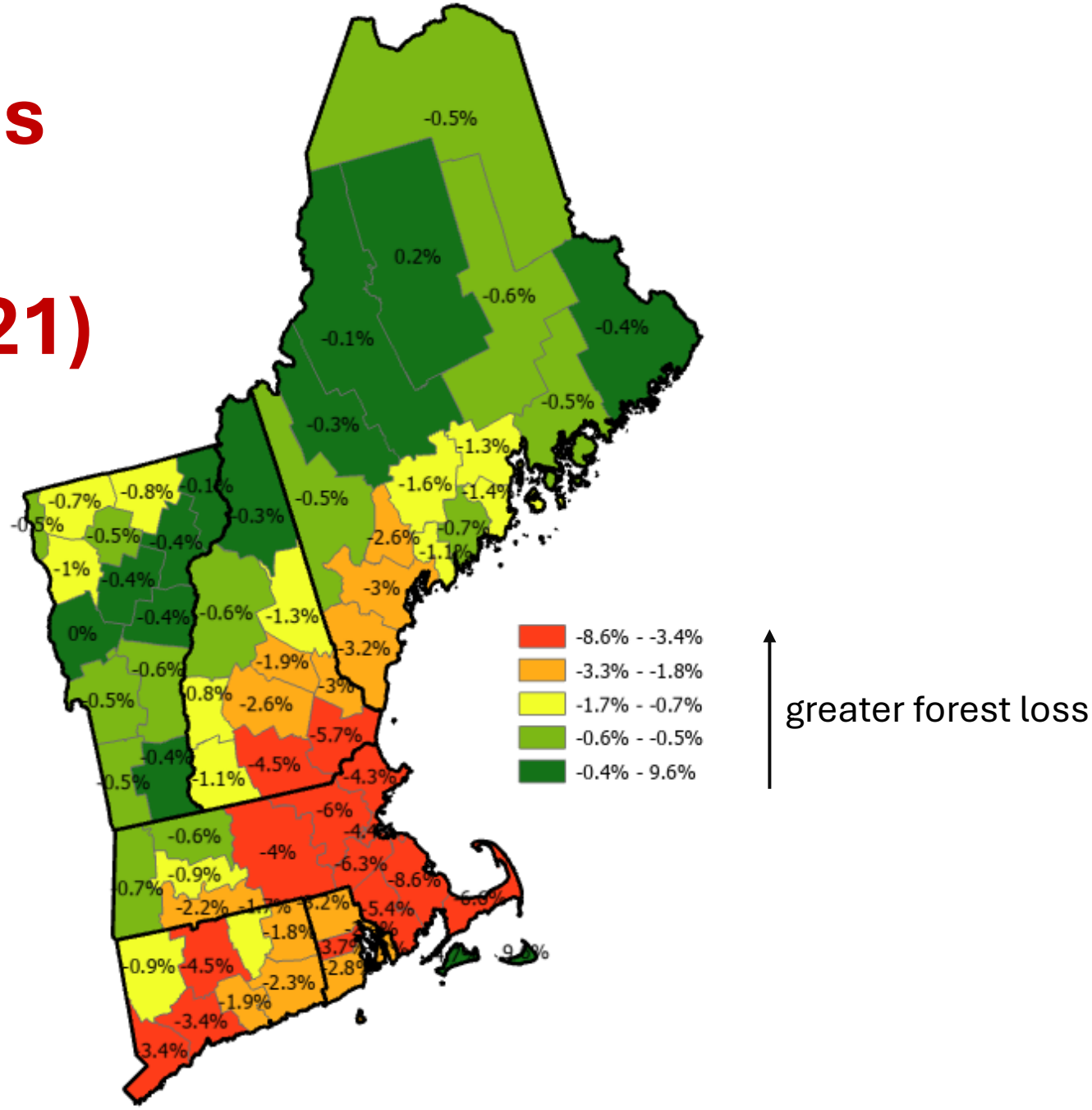


378,820 acres lost

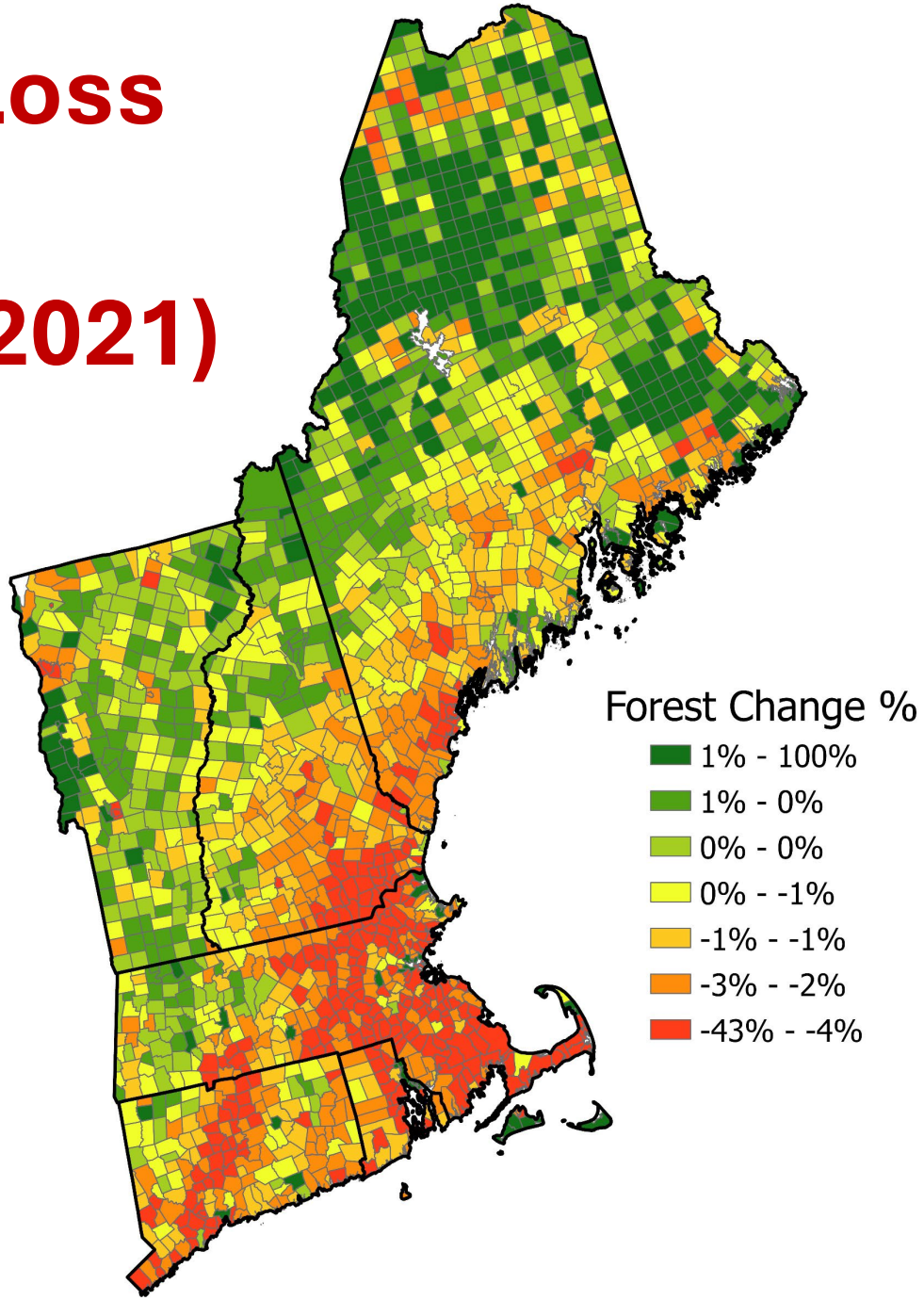
~10,500 acres per year

	1986 Acres	2021 Acres	Acres Lost	% of 1986 Acres Lost	1986 % of State	2021 % of State	Percentage Points Lost
New England	33,667,960	33,289,141	378,820	1.1%	79.7	78.8	0.9
Maine	17,939,332	17,838,646	100,686	0.6%	85.5	85.0	0.5
New Hampshire	5,080,540	4,997,185	83,355	1.6%	85.5	84.1	1.4
Vermont	4,784,231	4,761,909	22,321	0.5%	77.8	77.4	0.4
Connecticut	2,111,920	2,063,798	48,122	2.3%	66.1	64.6	1.5
Massachusetts	3,339,556	3,228,178	111,377	3.3%	63.6	61.5	2.1
Rhode Island	412,382	399,425	12,957	3.1%	58.6	56.8	1.8

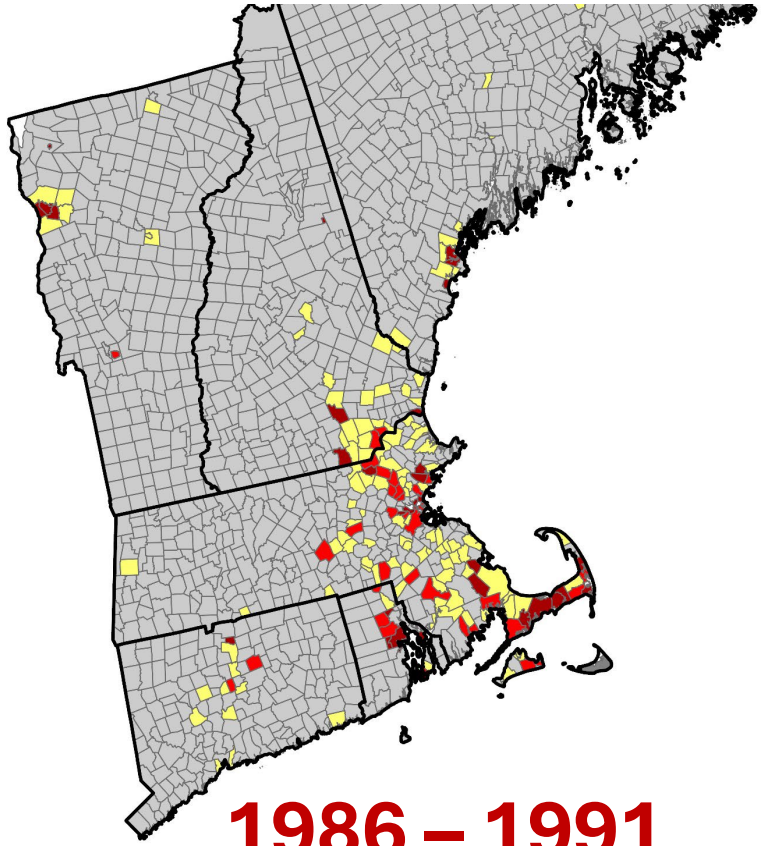
Forest Loss by County (1986 – 2021)



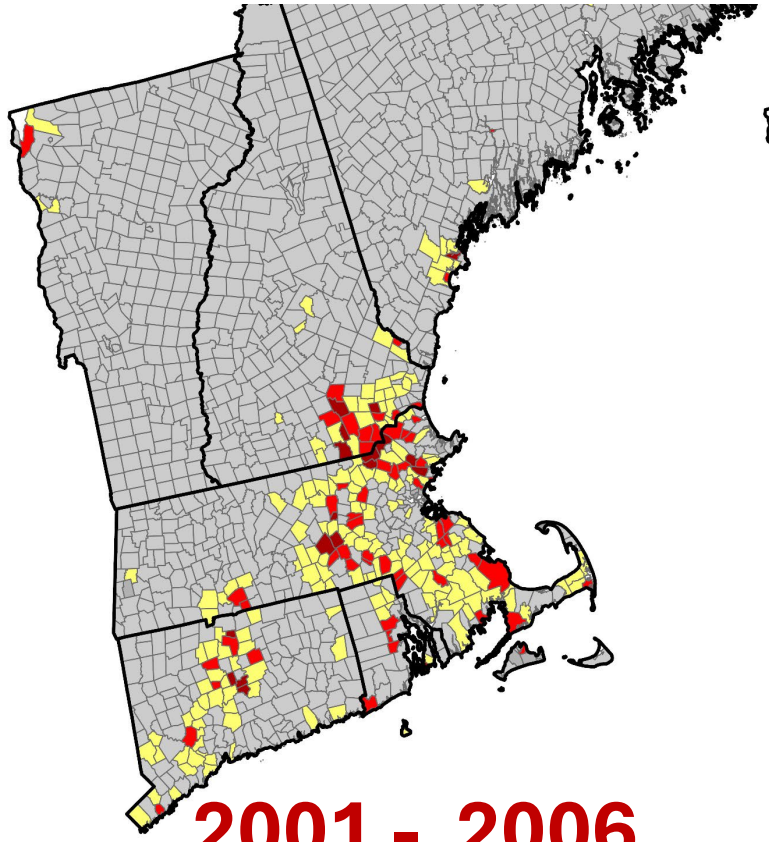
Forest Loss by Town (1986 – 2021)



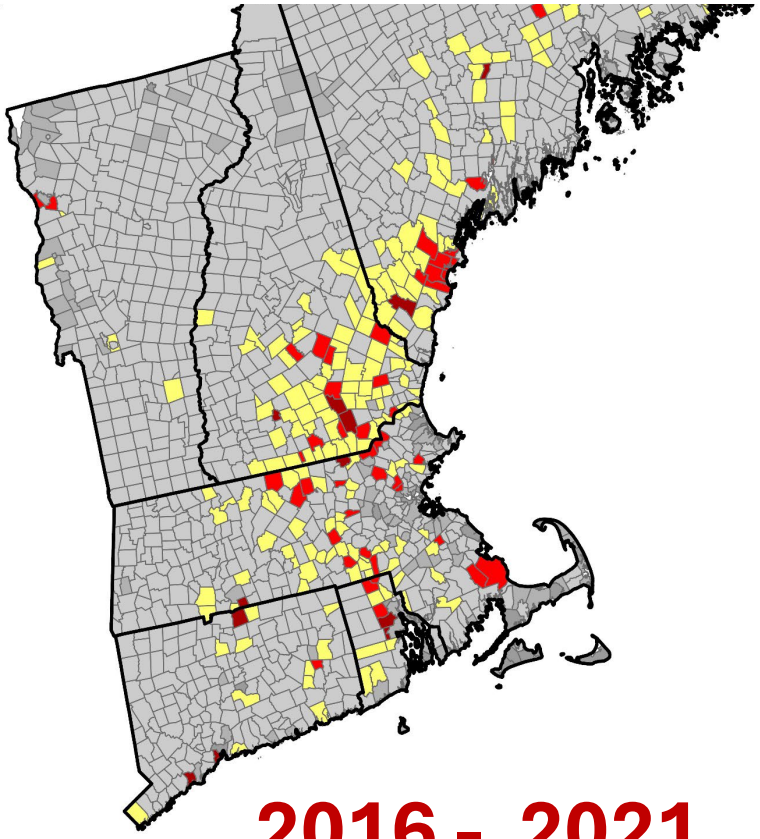
Forest-Loss Hotspots through time:



1986 – 1991

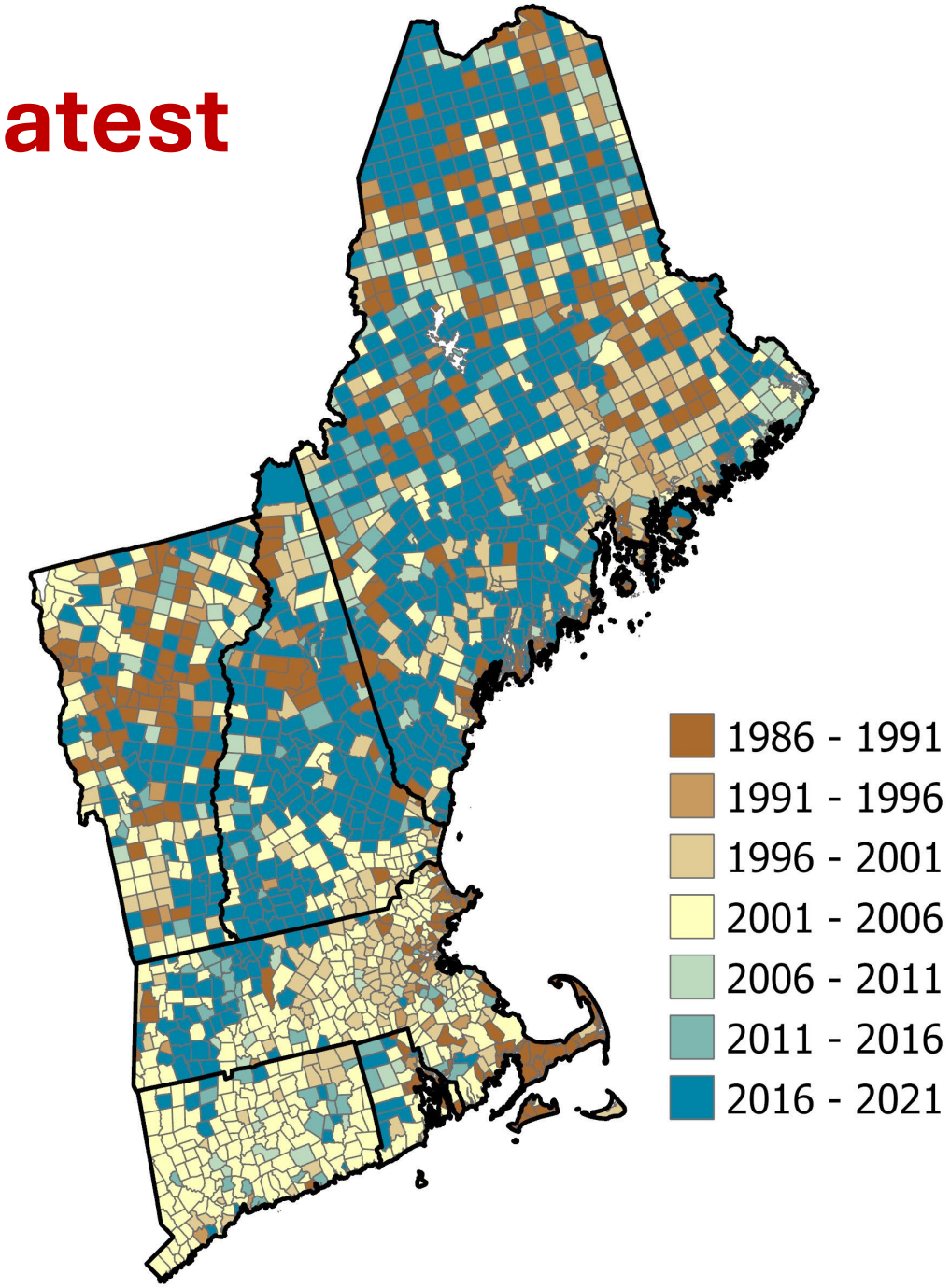


2001 - 2006



2016 - 2021

Time-Period of Greatest Forest Loss (1986 – 2021)



Preliminary findings of note:

1) Land Use/Land Cover

2) Protected Open Space

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Published March 23, 2023 | Version 1.2

Dataset | Open

New England Protected Open Space

Harvard Forest[1]

Show affiliations

The New England Protected Open Space dataset maintained by Harvard Forest is a compilation of existing open space datasets in the New England region including The Nature Conservancy's Secured Areas, National Conservation Easement Database, Protected Areas Database of the U.S., and data provided by states and land trusts. See metadata for each version for version-specific information and information about fields.

Version 1.2 was developed between May 2021 and March 2022, and was published in March 2023. Version 1.2 has new data from multiple sources added circa May 2021, more complete attribute information, and tribal lands removed. See metadata for more details. File geodatabase and shapefile versions are provided - refer to metadata for full field names if using shapefile version, as names will be truncated.

Important note about versions of NE POS: NE POS is a dataset we maintain for research purposes, and research projects can take varying lengths of time. Versions of NE POS may be uploaded to Zenodo "out of order," meaning older versions of data may be uploaded after more recent versions have been published. Use the version number to identify the recency of the data rather than the date of upload.

Files

NE_POS_v1-2_GDB.zip

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Show more details

Versions

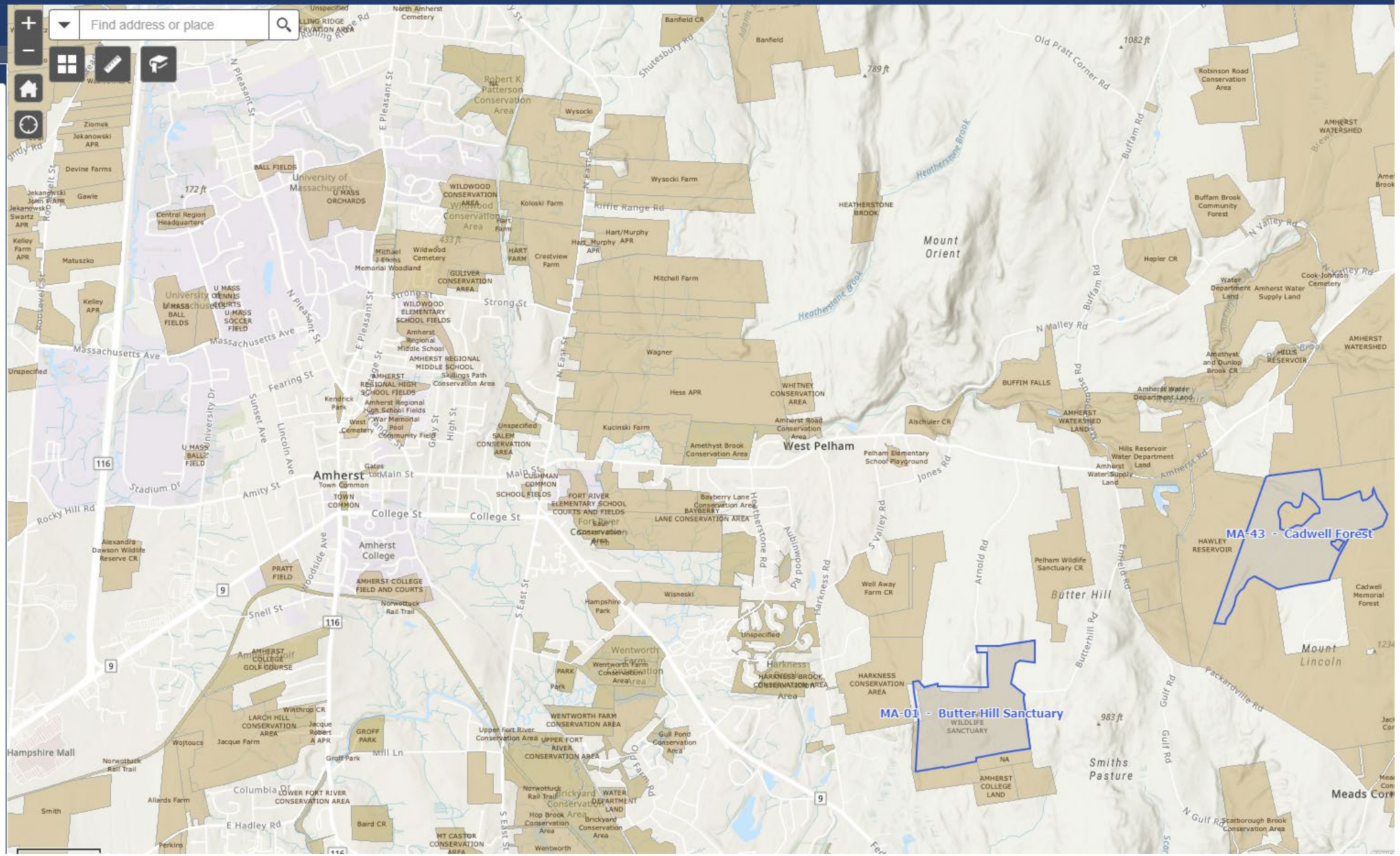
Version 1.2 (10.5281/zenodo.7764284)	Mar 23, 2023
Version 1.0.1 (10.5281/zenodo.7577253)	Jan 27, 2023
Version 1.1.0 (April) (10.5281/zenodo.4688018)	Apr 14, 2021
Version 1.1.0 (10.5281/zenodo.4416179)	Jan 4, 2021
Version 1.0.0 (10.5281/zenodo.3606763)	Jan 13, 2020

View all 5 versions

Layer List

Layers

- Wildlands (updated 3/11/2024)
- Other Data Layers
  - All Parcels Greater than 10 Acres (Zoom in to See)
  - Towns
  - States
  - Protected Open Space (NEPOS)



Preliminary Data, do not release

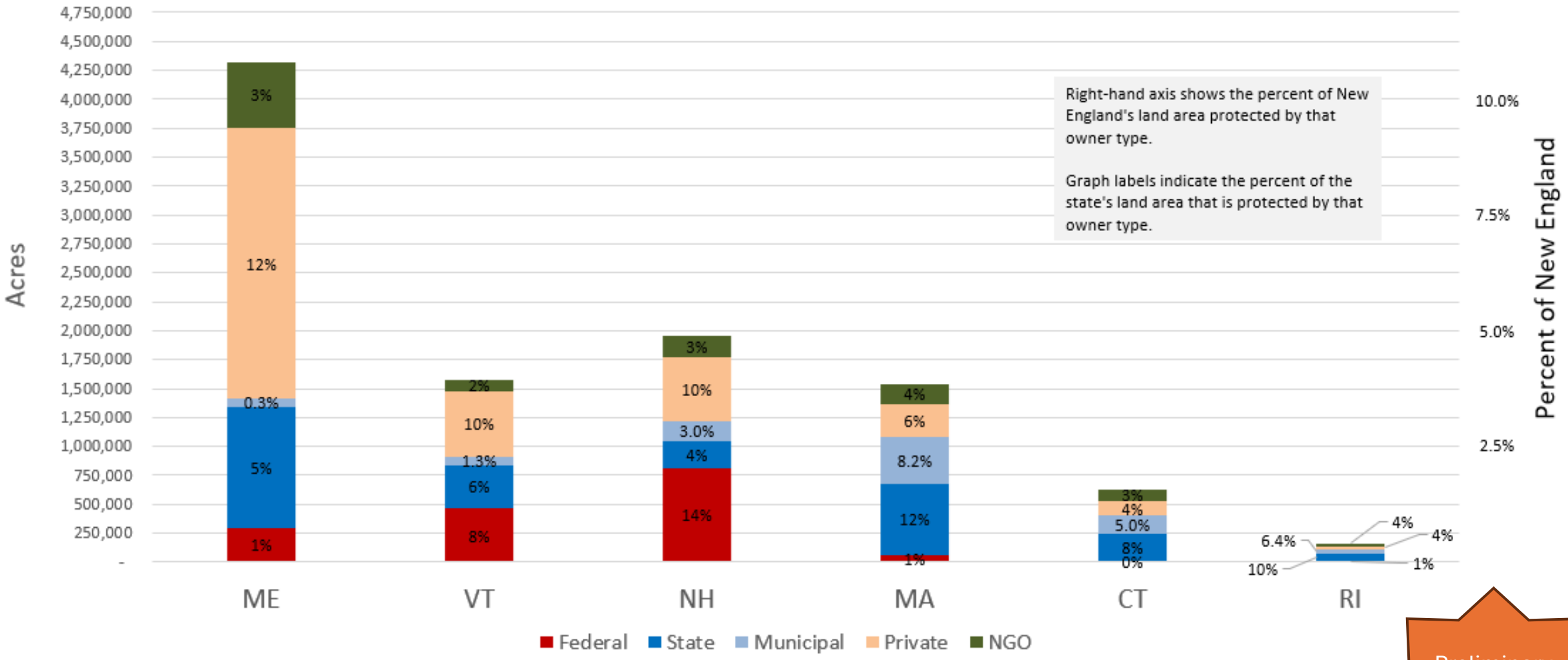
LAND AREA

	Total Land Acres From WiNE	Total Land Acres From LCMAP+LCMS	% of New England's Land	Protected Acres	% Protected	% of New England's Protected Area
New England	**40,237,798**	**39,975,670**	**-**	**10,211,925**	**26%**	**-**
ME	19,790,418	19,705,115	49%	4,321,206	22%	42%
VT	5,915,824	5,895,446	15%	1,582,829	27%	15%
NH	5,742,125	5,691,643	14%	1,965,456	35%	19%
MA	5,019,605	4,940,154	12%	1,544,194	31%	15%
CT	3,101,234	3,083,434	8%	635,953	21%	6%
RI	668,591	659,877	2%	162,287	25%	2%

FOREST AREA

	Total Forest Acres	% of New England's Forest	Protected Forest Acres	% of Forest Protected	% of New England's Protected Forest
New England	**33,289,141**	**-**	**9,295,348**	**28%**	**-**
ME	17,838,646	54%	4,144,342	23%	45%
VT	4,761,909	14%	1,376,328	29%	15%
NH	4,997,185	15%	1,874,211	38%	20%
MA	3,228,178	10%	1,239,917	38%	13%
CT	2,063,798	6%	531,052	26%	6%
RI	399,425	1%	129,499	32%	1%

Protected Open Space By Owner Type (preliminary data)



Preliminary Data, do not release

1 = GAP 1: Permanently Secured for Nature and Natural Processes. Managed for biodiversity with all natural processes, little to no human intervention.
Primary intention of the owner or easement holder is for biodiversity, nature protection, natural diversity, and natural processes. Land and water managed through natural processes including disturbances with little or no human intervention.
Examples: wilderness area, some national parks

2 = GAP 2 = Permanently Secured for Nature with Management: Managed for biodiversity, with hands on management or interventions. Primary intention of the owner or easement holder is for biodiversity conservation, nature protection, and natural diversity. Land and water managed for natural biodiversity conservation, but may include some hands on manipulation or suppression of disturbance and natural processes.
Examples: national wildlife refuges, areas of critical environmental concern, inventoried roadless areas, some natural areas and preserves

3 = GAP 3: Permanently Secured for Multiple Uses, including nature: Primary intention of the owner or easement holder for multiple uses. Strong focus on recreational use, game species production, timber production, grazing and other uses in additional to these lands providing some biodiversity value. May include extractive uses of a broad, low-intensity type (e.g. some logging. grazing) or of a localized intense type (e.g. mining, military artillery testing area, public access beach area within large natural state park).
Examples: recreation focused protected areas such as state parks, state recreation areas, wildlife management areas, gamelands, state and national forests, local conservation lands with primary focus on recreational use.

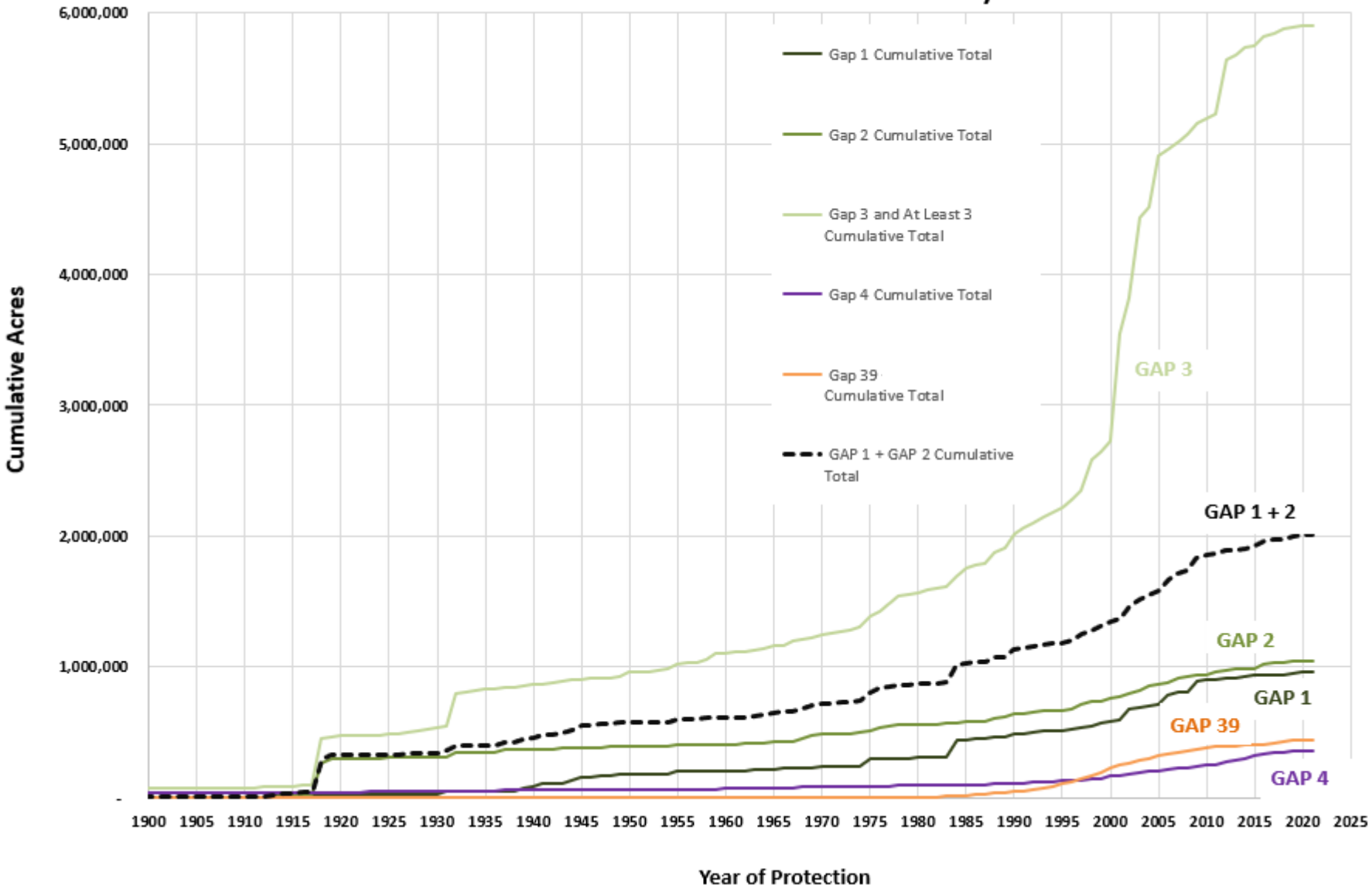
38 = State Board Lands and State Trust Lands: Lands in western and some southern states that are owned by the state and prevented from being developed, but which are managed to produce long term sustained revenue for the state's educational system. These lands were separated from other protected multiple use lands in GAP 3. Most of these lands are subject to timber extraction and management for profitable forest product production. Some also have agricultural use and revenue generated from grazing and/or agricultural production leasing. These lands are not specifically managed for biodiversity values, and some are occasionally sold in periodic auctions by the state for revenue generation. Note this type of land is most commonly assigned GAP 3 in the PAD-US GAP classification.

39 = Permanent Agricultural Easements: Conservation land where the primary intent is the preservation of farmland. Land is in a permanent agricultural easement or an easement to maintain grass cover. The land will not be converted to a built or paved development. Example: vegetable farm with permanent easement to prevent development. Note this type of land would be assigned GAP 4 in the PAD-US GAP classification.

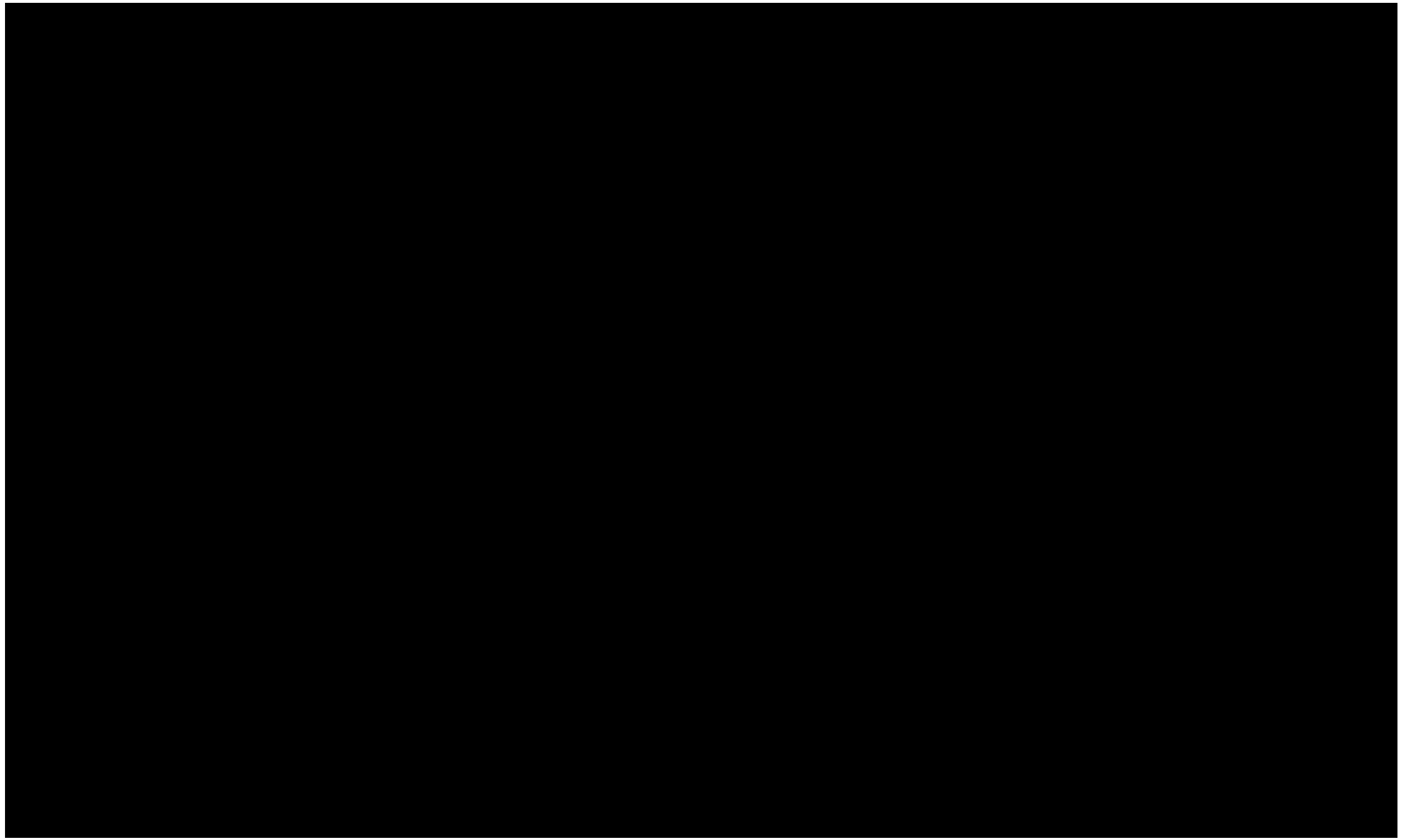
4 = GAP 4: Areas with no known mandate for permanent biodiversity protection. Municipal lands and other protected open space (e.g. town commons, historic parks) where the intention in management and the use of the open space is not for permanent biodiversity values. It was beyond our capacity to comprehensively compile these GAP 4 lands, and as such, they are included only where source data made it feasible to easily incorporate them.

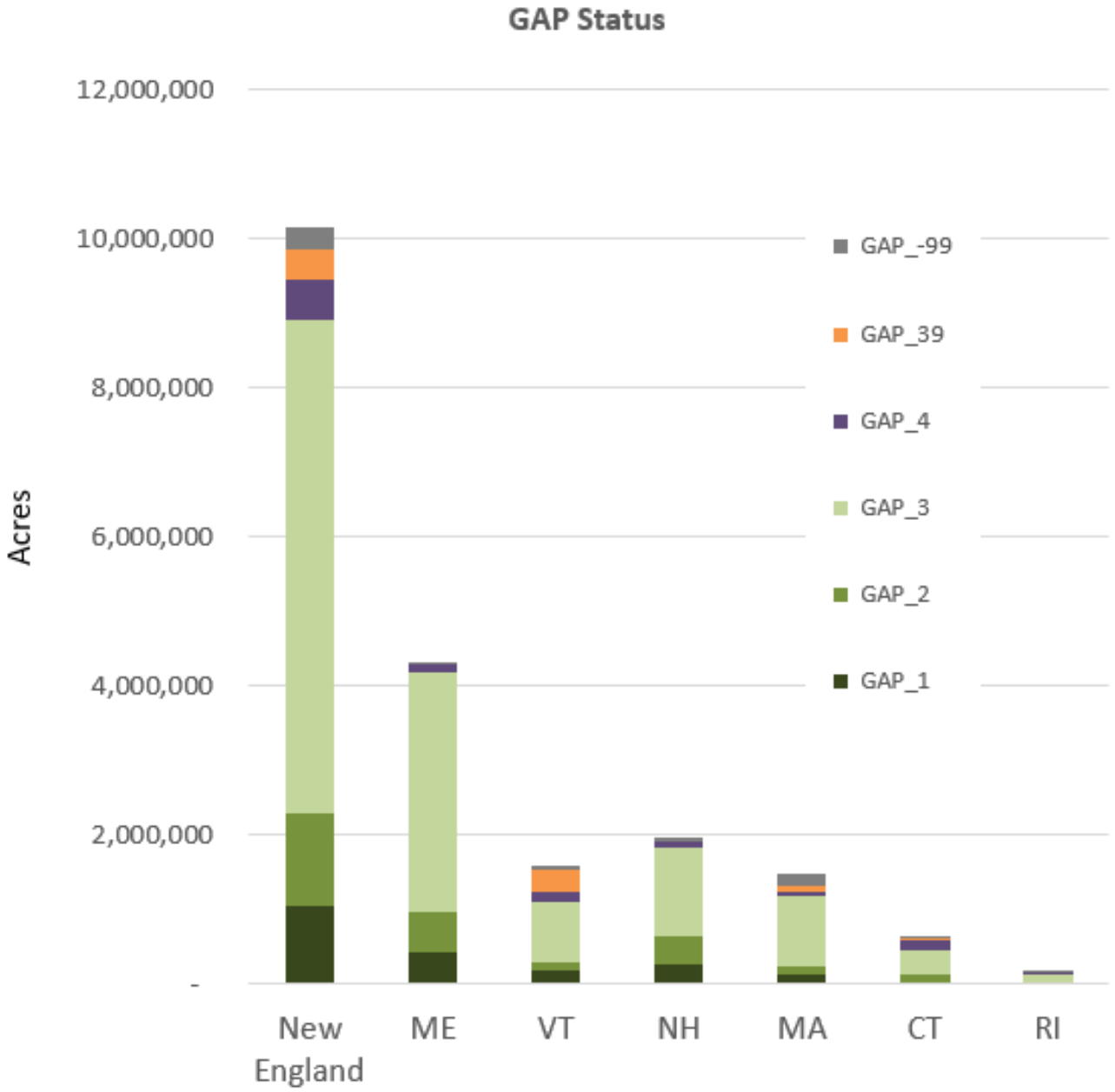
https://tnc.maps.arcgis.com/home/item.html?id=568642436 0814955a 7d40ce1c 2442549

Cumulative Protected Open Space Acres By GAP Status (if year is unknown, it is not accounted for in this data)



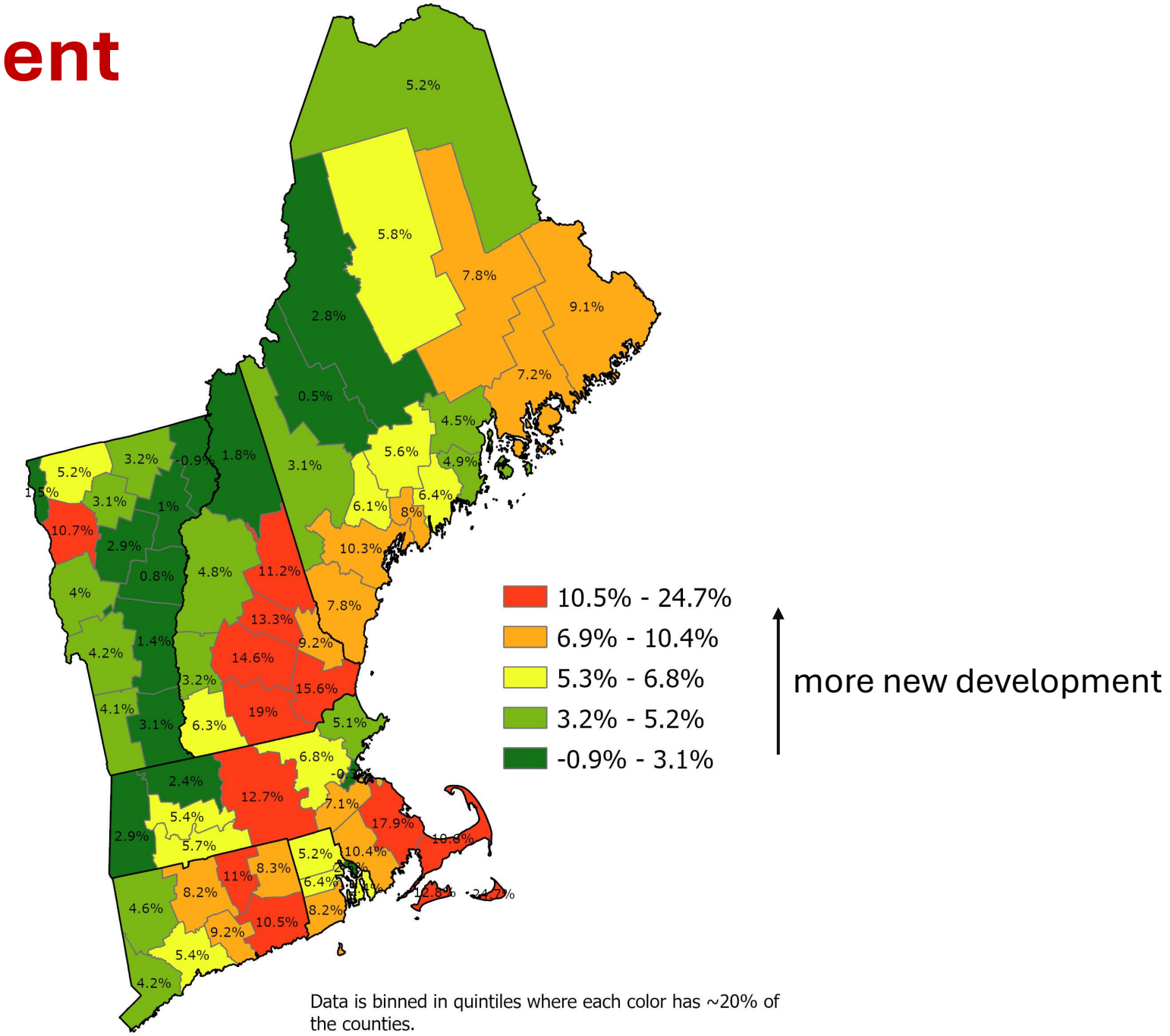
Preliminary Data, do not release



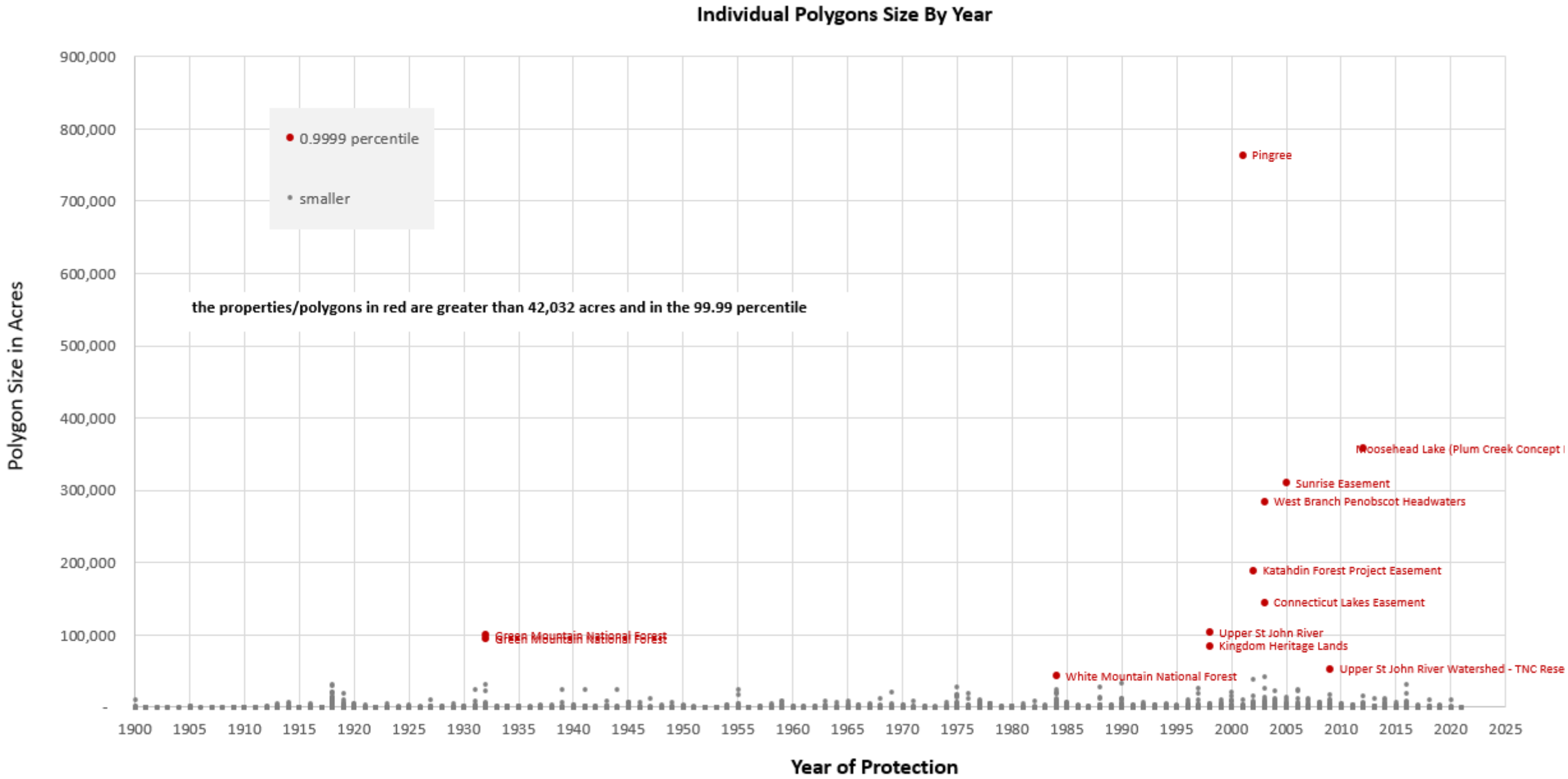


Preliminary Data, do not release

New Development by County (1986 – 2021)



Data is binned in quintiles where each color has ~20% of the counties.


Individual Polygons Size By Year
0.9999 percentile
smaller
the properties/polygons in red are greater than 42,032 acres and in the 99.99 percentile
Polygon Size in Acres
900,000
800,000
700,000
600,000
500,000
400,000
300,000
200,000
100,000
-
Pingree
Moosehead Lake (Plum Creek Concept
Sunrise Easement
West Branch Penobscot Headwaters
Katahdin Forest Project Easement
Connecticut Lakes Easement
Upper St John River
Kingdom Heritage Lands
Upper St John River Watershed - TNC Rese
White Mountain National Forest
Green Mountain National Forest
Green Mountain National Forest
1900
1905
1910
1915
1920
1925
1930
1935
1940
1945
1950
1955
1960
1965
1970
1975
1980
1985
1990
1995
2000
2005
2010
2015
2020
2025
Year of Protection

LCMAP DEVELOPED LAND

See table next slide.

Developed land covers x acres or Y % of New England. Development has increased steadily with 6,850 new acres of development each year, which represents a 0.22% increase annually.

States vary significantly in the extent of development from a high of 30% in RI to a low of 2% in VT and ME.

The development rate is greatest in NH (.34%) and MA (.24%) and lowest in VT (.11%).

Massachusetts accounts for 40% of the new development each year in New England (2,775/6,850).

The development rate is substantially less than the rate of forest loss, so we will want to explore that a bit as well as what is being developed. BH: Yes, done later. See the “fate”, “source” , and “net change” (1986 and 2021) slides. Those only look at 2 years, but if we wanted we could do the change by year although that would be time consuming so we would want to give that more consideration.