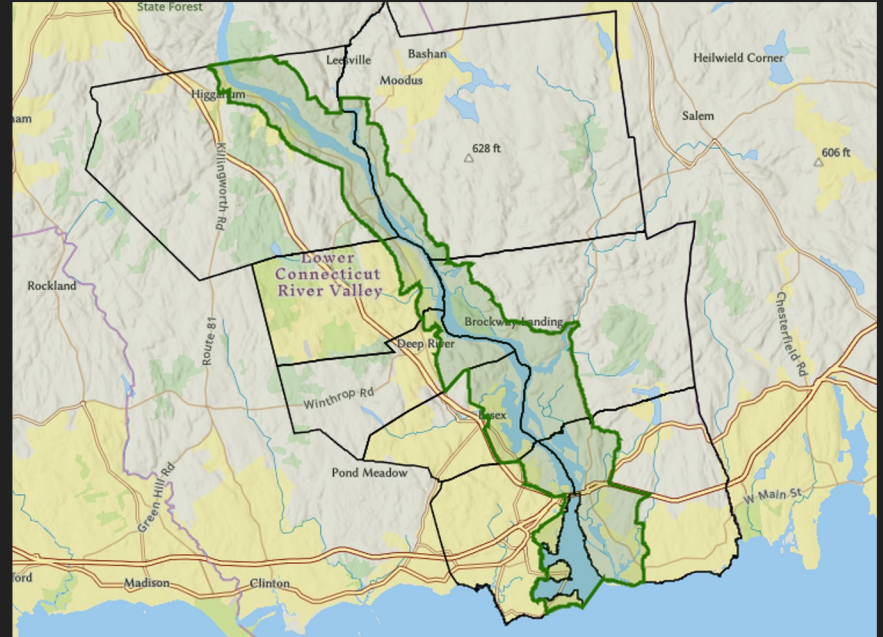


# CT River Gateway Commission Zone Land Use Change

By: Charlie MacArthur

# Original Study Prompt

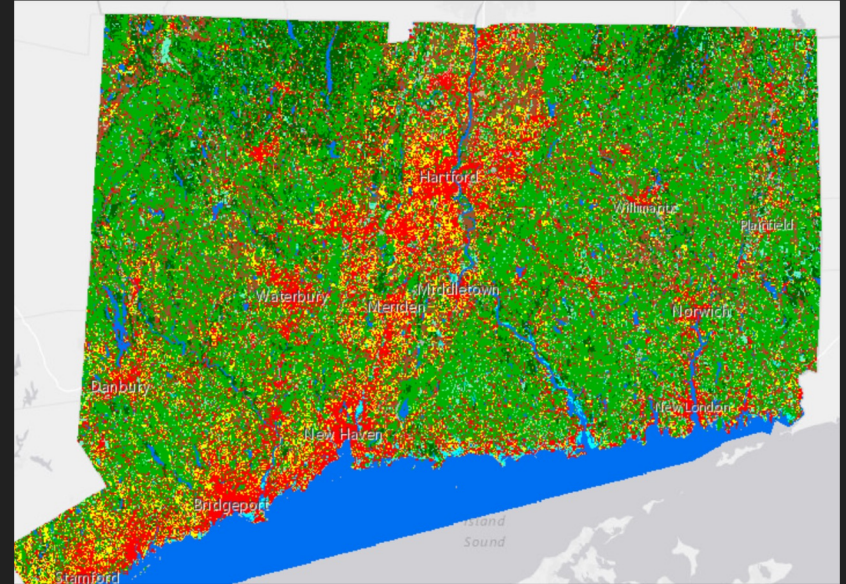
- Examine land use change from 1985-2015, particularly forest cover with the CT River Gateway Zone (lower Connecticut River towns in Connecticut) using CT Eco data.



Commission Zone and Town Boundaries (CT River Gateway)

# Objectives

The goal of this project is to provide easy-to-read and useful maps that capture land use changes to the Connecticut River Commission Zone using available GIS data in the last 30 years. A second goal of this project is to quantify the changes in land coverage for the zone and analyze potential trends.

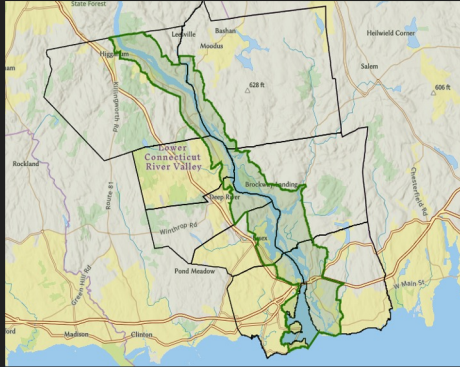


1985 Connecticut Land Cover Map View(CT Eco)

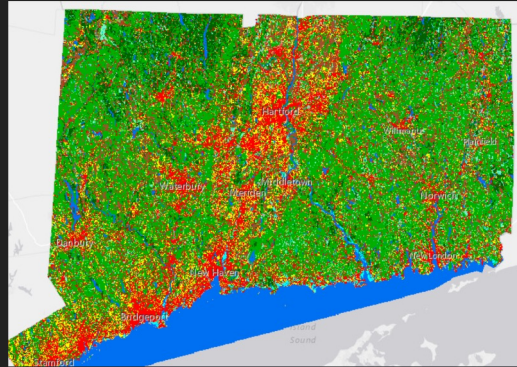
# Deliverables

1. Create 6 distinct maps for the past 30 years of the Connecticut River Commission Zone showing 4-5 different land types layers based on the CTEco data.
1. Collect numerical data of the Zone coverage and compare to other years to quantify the physical change in acreage.

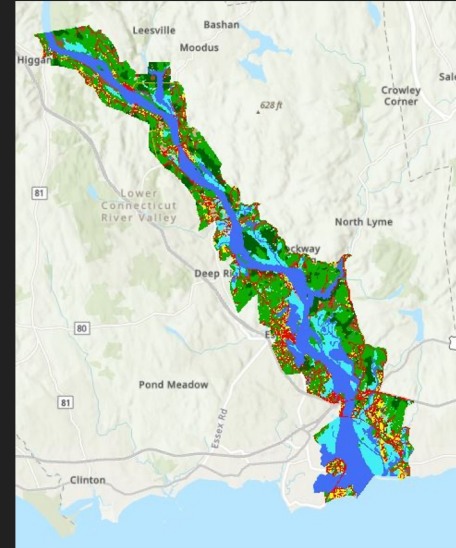
# Methods & Procedure



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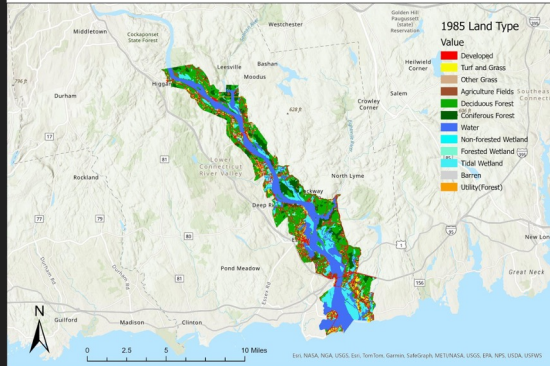
In ArcPro GIS:

- Create polygon by tracing River Gateway Zone boundaries
- Use the “Clip Raster” tool to cut down data to focus area
- Color maps accordingly, add legend, scale, and map title
- Enable field name “Count”

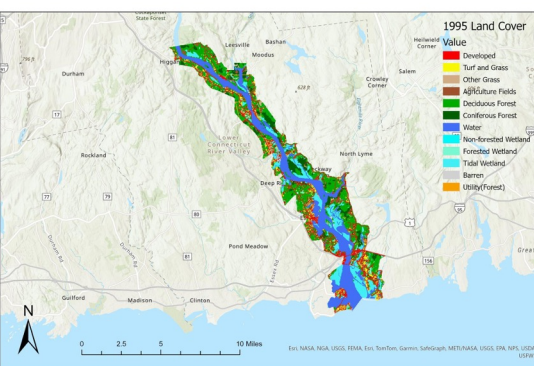


# 6 Commission Zone Maps

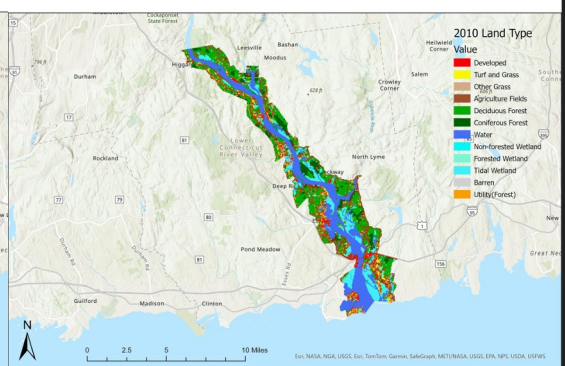
1985 Commission Zone Land Cover



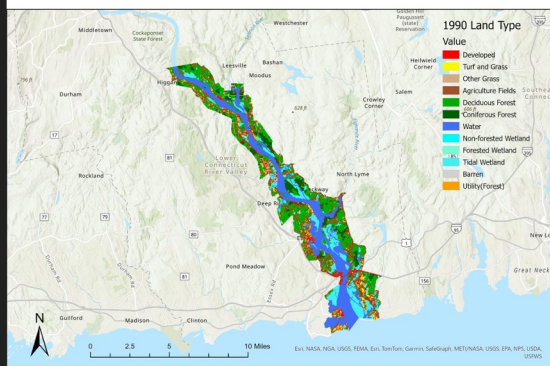
1995 Commission Zone Land Cover



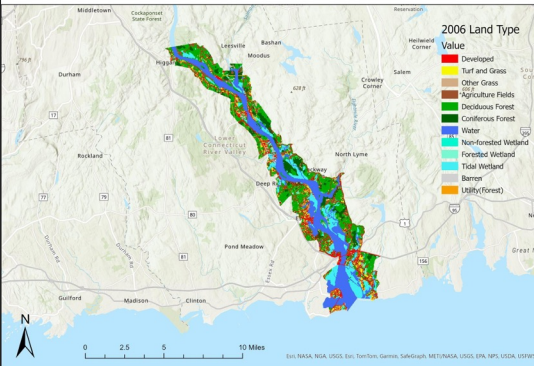
2010 Commission Zone Land Cover



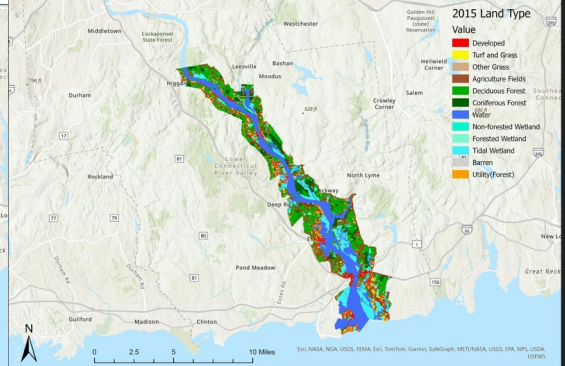
1990 Commission Zone Land Cover



2006 Commission Zone Land Cover

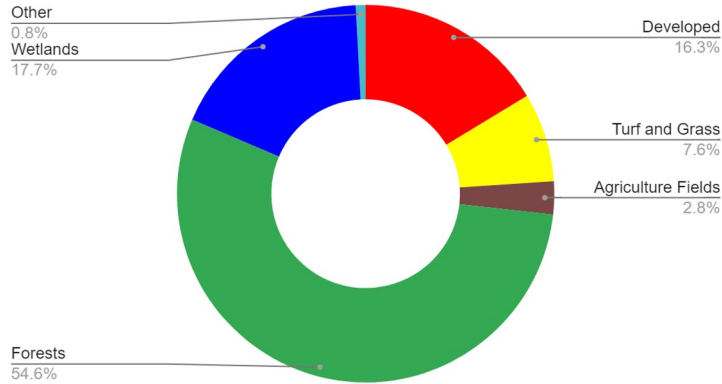


2015 Commission Zone Land Cover

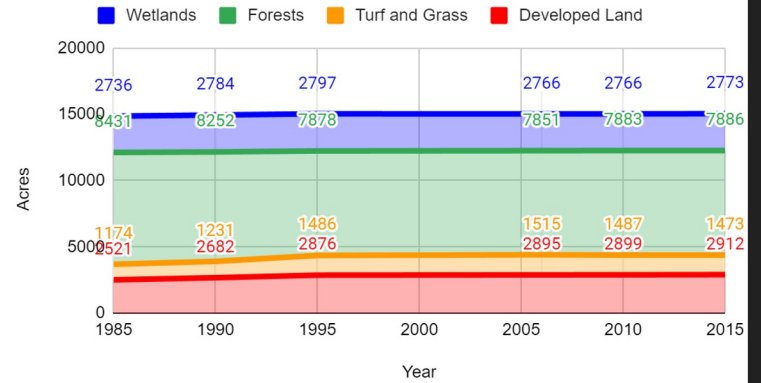


# Graphs

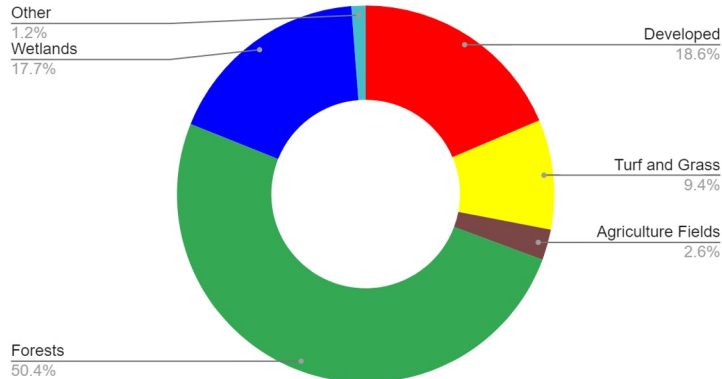
## 1985 Connecticut Gateway Commission Zone Distribution



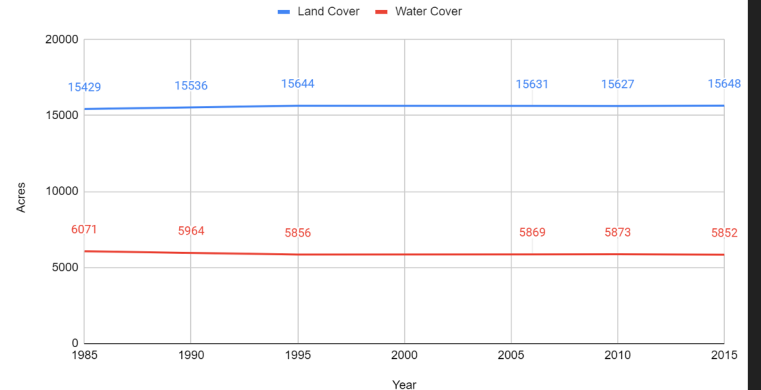
## Developed Land, Turf and Grass, Forests and Wetlands



## 2015 Connecticut Gateway Commission Zone Distribution



## Land versus Water Coverage(Acres)



# Tables

In Acres:						
Land Type	1985	1990	1995	2006	2010	2015
Developed	2521	2682	2876	2895	2899	2912
Turf and Grass	880	927	1090	1145	1142	1143
Other Grass	294	303	396	370	345	330
Agriculture Fields	436	429	413	413	415	413
Deciduous Forest	6592	6438	6129	6099	6126	6125
Coniferous Forest	1839	1814	1749	1752	1756	1760
Water	6071	5964	5856	5869	5873	5852
Non-forested Wetland	10	9	10	11	11	11
Forested Wetland	176	172	170	169	168	168
Tidal Wetland	2550	2603	2617	2586	2587	2594
Barren	71	98	134	133	119	132
Utility Forest	60	60	59	59	59	59
Total Acres	21500	21500	21500	21500	21500	21500
Land Cover Acres	15429	15536	15644	15631	15627	15648

**Table 1.** 1985-2015 Acreage for Original CT Eco Categories

In Acres:						
Year	1985	1990	1995	2006	2010	2015
Developed	2521	2682	2876	2895	2899	2912
Turf and Grass	1174	1231	1486	1515	1487	1473
Agriculture Fields	436	429	413	413	415	413
Forests	8431	8252	7878	7851	7883	7886
Wetlands	2736	2784	2797	2766	2766	2773
Other	131	158	193	192	178	191
Total Acres	15429	15536	15644	15631	15627	15648

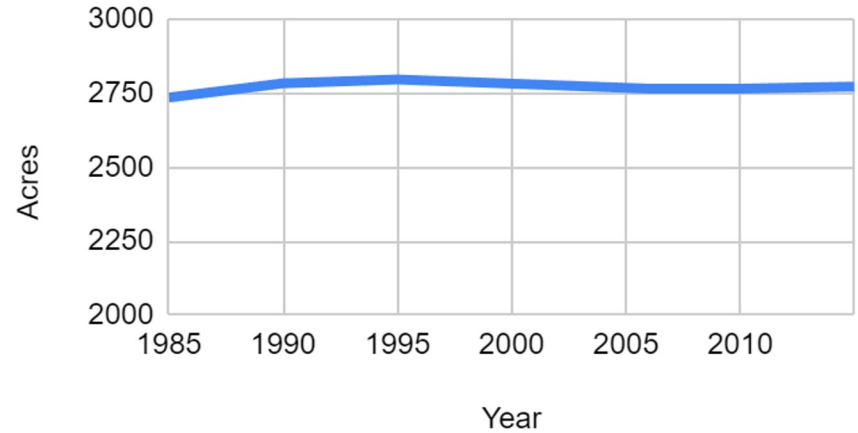
**Table 2.** 1985-2015 Acreage for Combined Categories



# Results

From 1985 to 2015, Deciduous and Coniferous forests in the Conservation Zone decreased by 4.2%, a total of 545 acres. Developed land, mainly infrastructure, increased by 2.3% with an additional 391 acres built upon. Turf and Grass areas also rose 1.8% of the zone land coverage for 299 acres. Forested, non-forested, and tidal wetlands coverage showed almost no change over the 30-year period, only gaining about 37 acres. The total land versus water coverage shifted by roughly 1% by adding 198 acres of land that was previously aquatic habitat.

## Wetland Acreage 1985-2015



# Discussion & Analysis

Conservation efforts towards the Commission Zone have been effective. Most forest degradation occurred up until 1995 at which point it still showed a downward trend but at a much slower rate. Regardless of a growing Connecticut population and a desire to build on the scenic Connecticut River, the conservation zone shows minimal changes to wetlands and forests which function as a habitat for biodiversity and a buffer against sea level rise. The establishment of the zone has proven effective in mitigating anthropogenic effects on wildlife.



(Kathleen DeMeo, CT River Gateway)

# Project Future Suggestions

## Potential Errors/Assumptions:

- Assuming the CT Eco data was recorded at the same tide points
- The traced polygon may not encompass exactly 21,500 acres
- Raster cell size is 30m x 30m, a large cell size that may contain multiple land types

## Study Add-ons:

- Compare land use change rates to the rest of the town to determine if the Commission Zone is preserving land more effectively
- Compare land use rates to the entire state of Connecticut

# References

Bonsack, Kara. “CT Land Cover Viewer.” *Center for Land Use Education and Research*, 4 Mar. 2022,  
[clear.uconn.edu/projects/landscape/ct-landcoverviewer/](http://clear.uconn.edu/projects/landscape/ct-landcoverviewer/).

“Connecticut River Gateway Commission Zone Map Viewer.” *ArcGIS Web Application*,  
[rivercog.maps.arcgis.com/apps/webappviewer/index.html?id=c874276f8cad4f2b85d5eb337908825d](http://rivercog.maps.arcgis.com/apps/webappviewer/index.html?id=c874276f8cad4f2b85d5eb337908825d).