

QUANTUM OF BUFFER



Emily Wilson
Juliana Barrett
CT NEMO, CT Sea Grant

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OUTLINE

Agent Emily

- Landcover
- Riparian Buffers Methods
- Results

Agent Juliana

- Outreach
- Towns

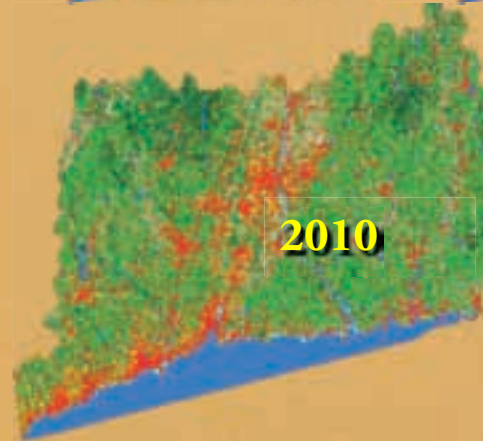
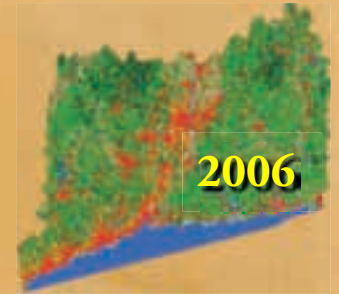
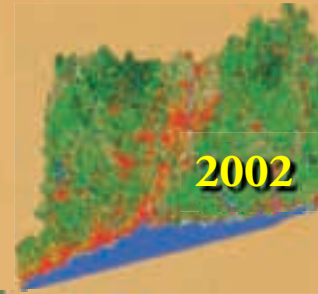
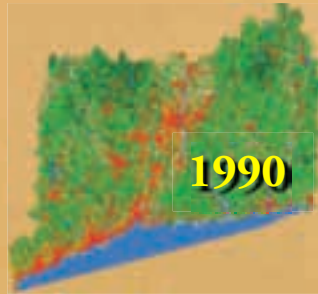
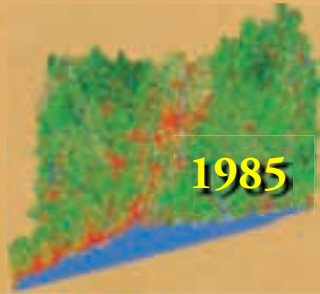


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CONNECTICUT'S CHANGING LANDSCAPE

Version 1: 4 Dates of Consistent Land Cover
Version 2: 5 Dates of Consistent Land Cover
Addition of Agricultural Field Class
Refinement of all classes in all dates



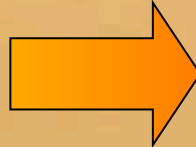
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WHAT IS LAND COVER?

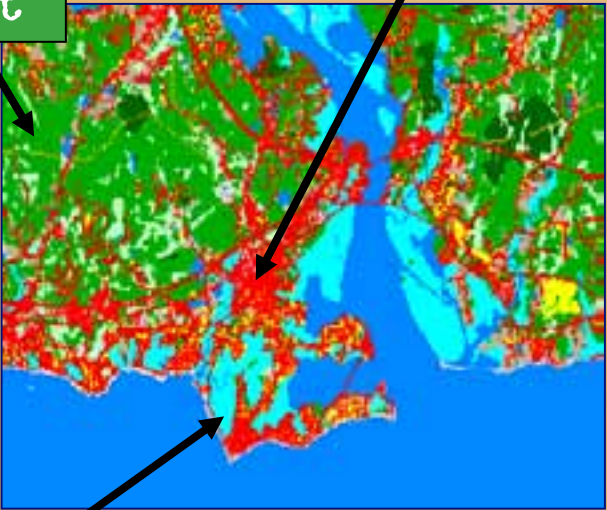


Satellite image



39%
forest

21% developed



16%
wetland

Land cover map

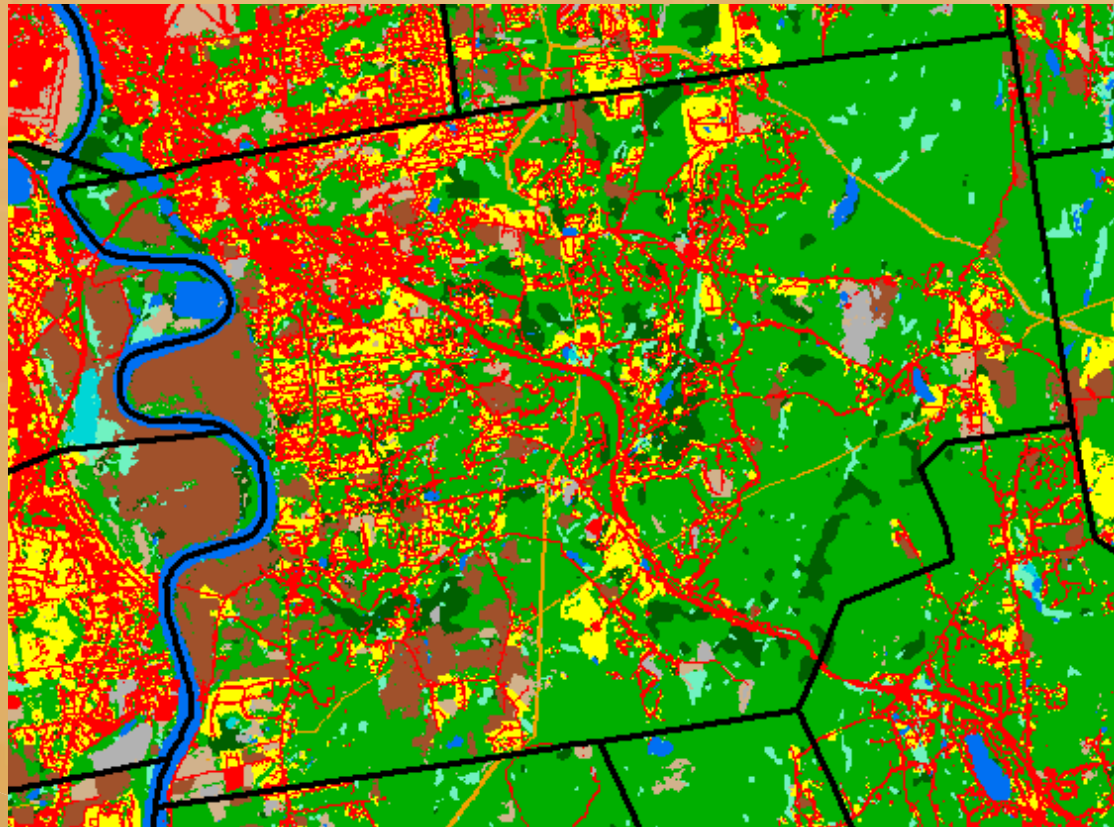


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QUANTIFY AND COMPARE

Increase in Development:	1613 acres
Loss of Forest:	1778 acres
Loss of Ag Field:	1306 acres



1985
2006

Developed
Turf & Grass
Other Grasses
Agricultural Field
Deciduous Forest
Coniferous Forest
Water
Forest Wetland
Non-forested Wetland
Tidal Wetland
Barren
Utility Right-of-way

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QUANTIFY AND COMPARE

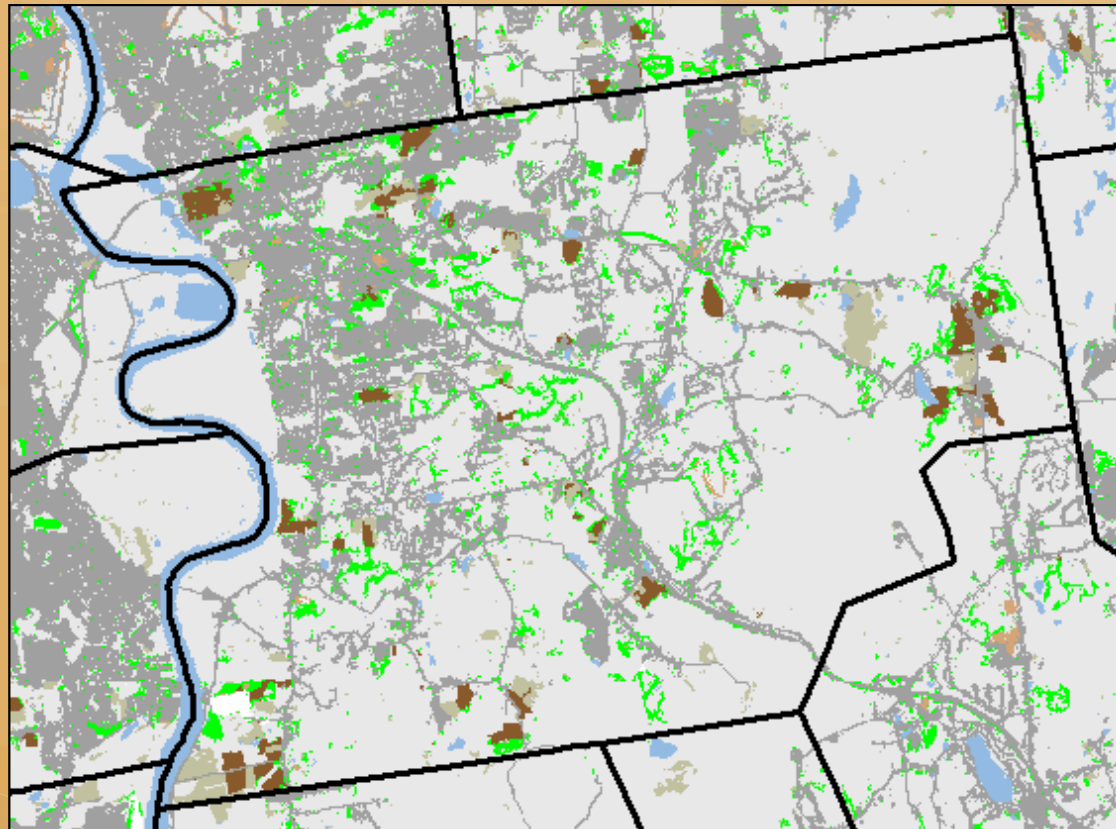
Increase in Development:	1613 acres
Loss of Forest:	1778 acres
Loss of Ag Field:	1306 acres

No Change Classes

- Developed
- Turf & Grass
- Water
- Undeveloped

Change Classes from Undeveloped to:

- Developed 1985-1990
- Turf & Grass 1985-1990
- Developed 1990-1995
- Turf & Grass 1990-1995
- Developed 1995-2002
- Turf & Grass 1995-2002
- Developed 2002-2006
- Turf & Grass 2002-2006



No Change Classes

- Developed/Turf & Grass
- Agriculture
- Water
- Undeveloped

Change Classes: Between 1985 and 2006, change to Developed or Turf & Grass

- Other Grasses
- Agriculture
- Forest or Wetland
- Barren

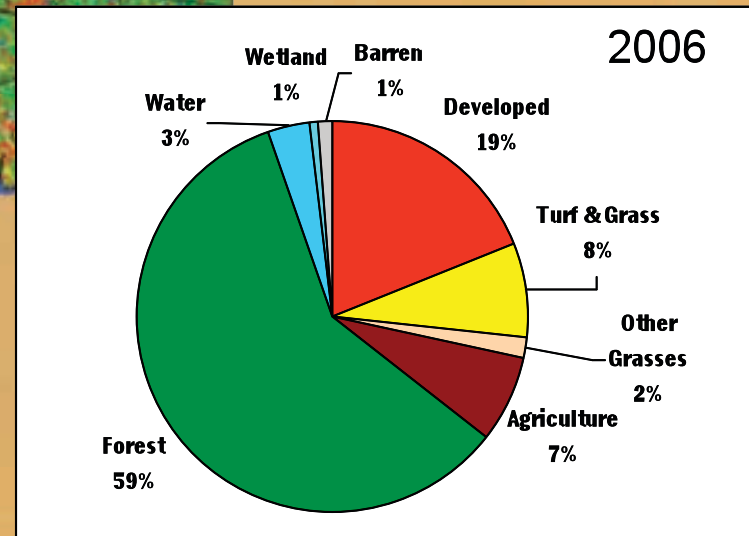
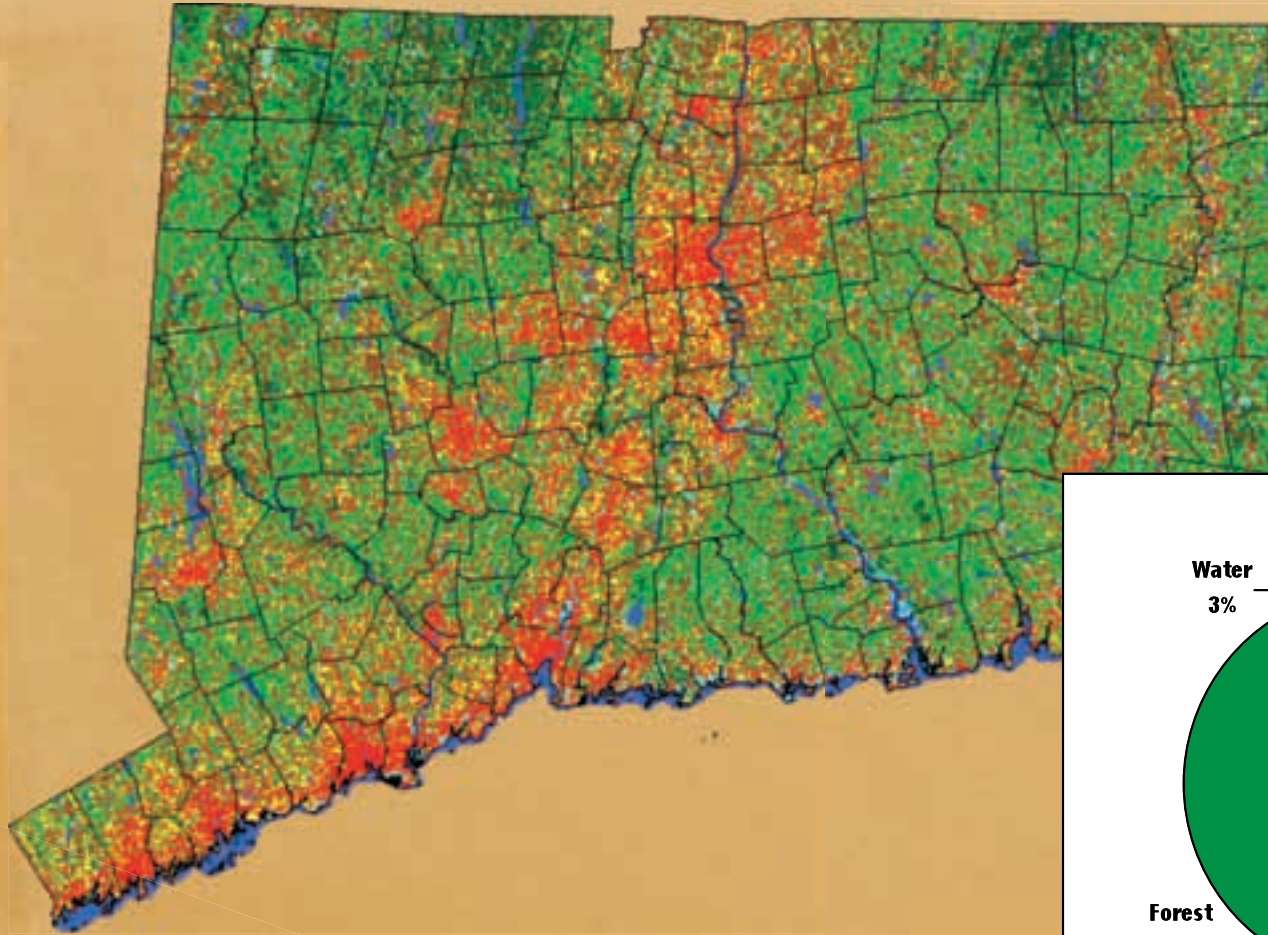
Other Changes



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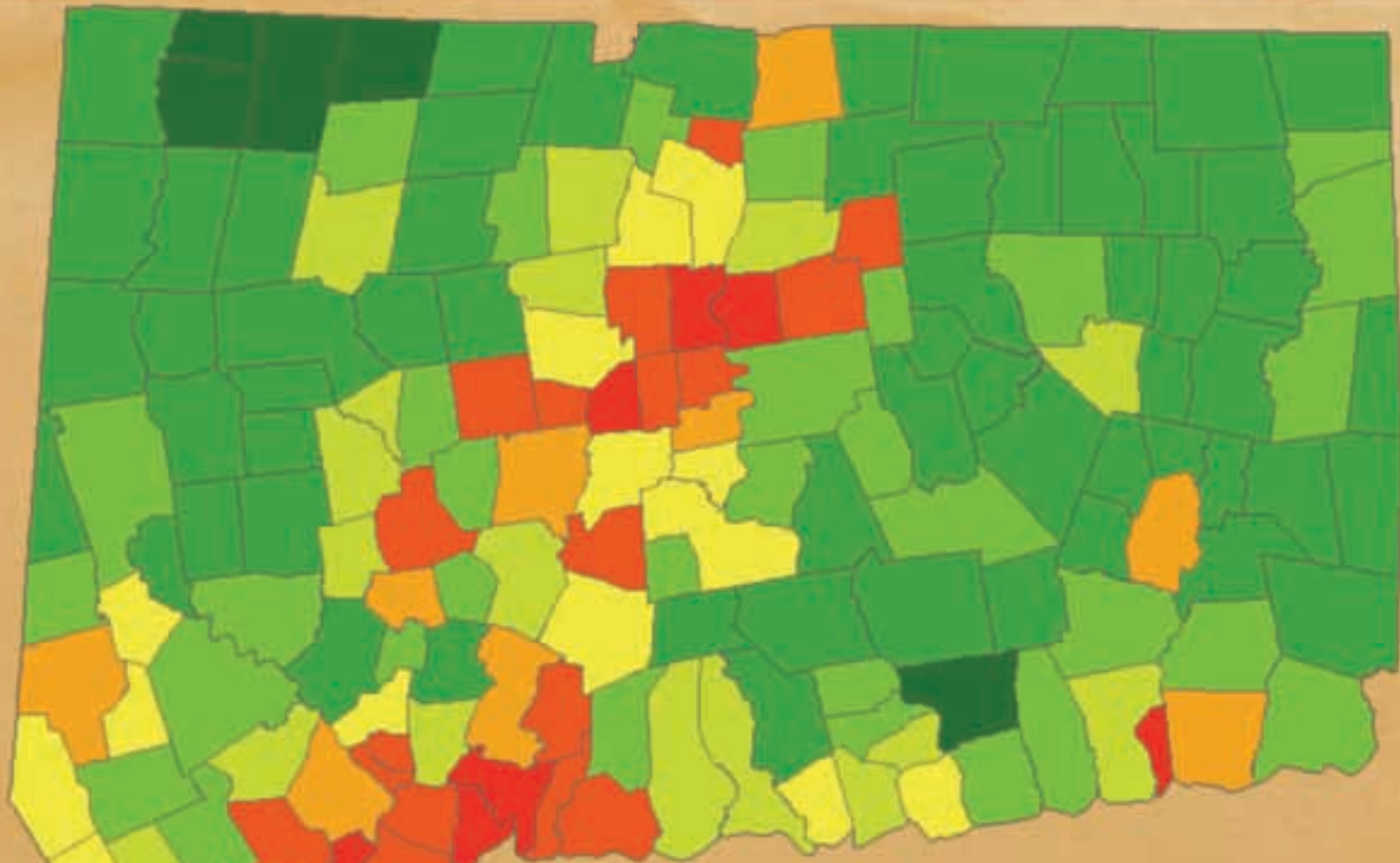
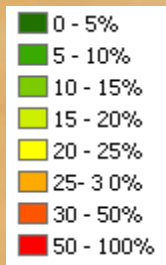


QUANTIFY AND COMPARE



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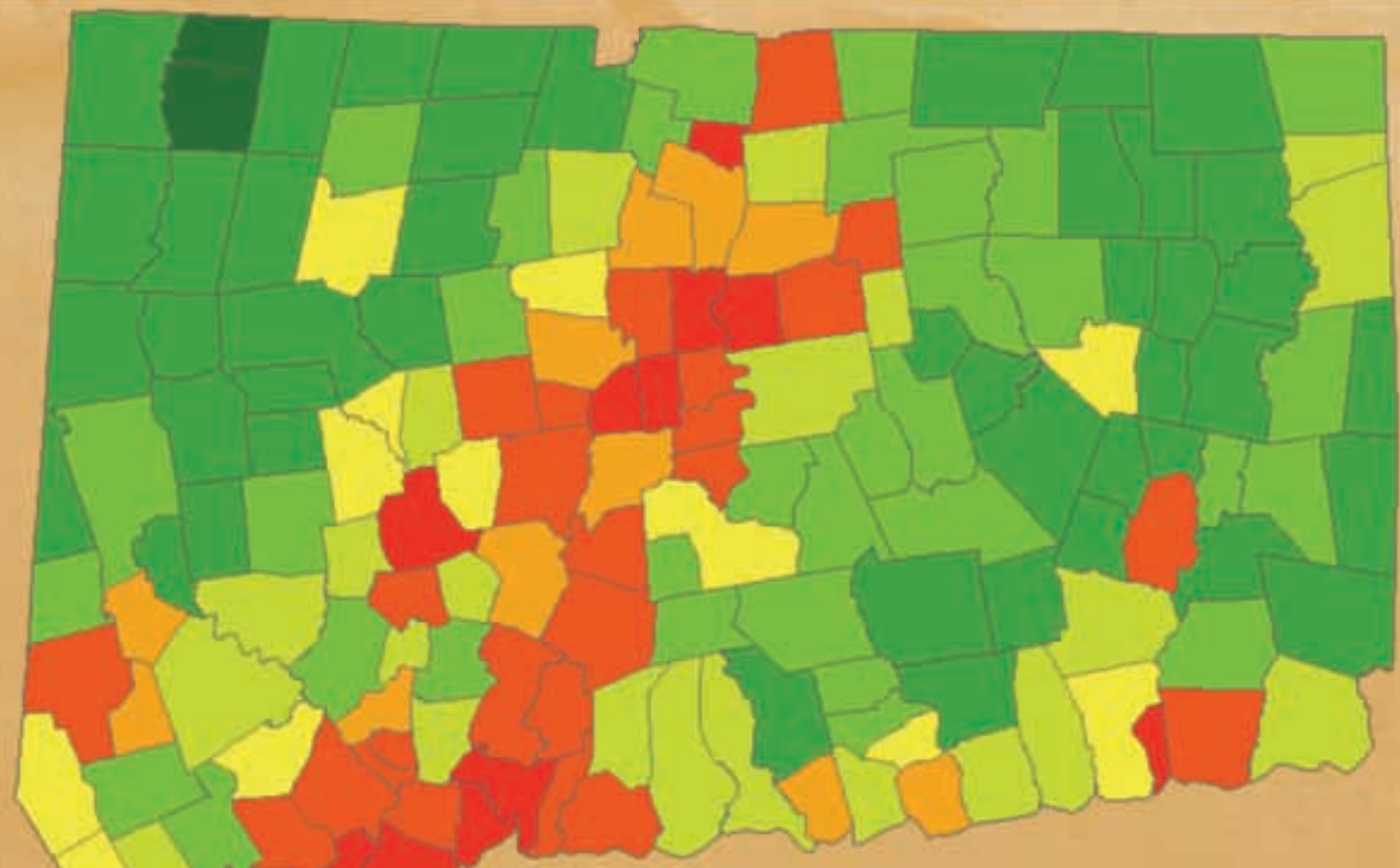
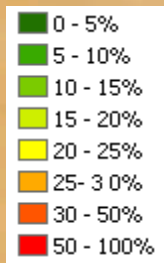




1985
Percent developed
land by town

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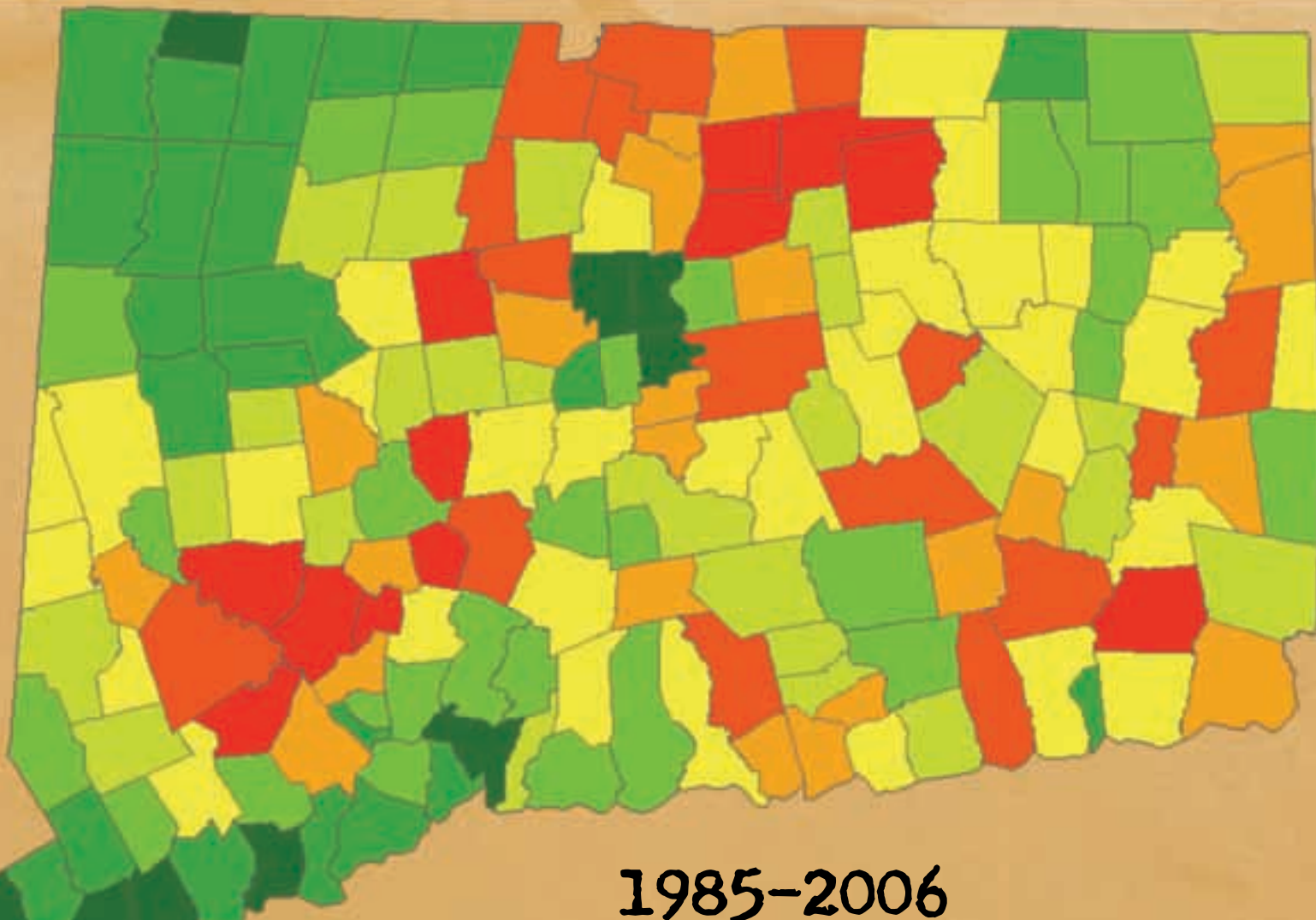
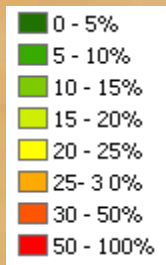




2006
Percent developed
land by town

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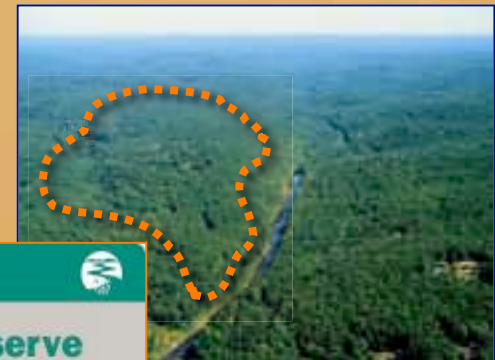
1985-2006
 Percent increase in
 developed land by town

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LAND COVER VS LAND USE

- **Land Cover:** Literally, what is covering the land (forest, wetland, pavement)
- **Land Use:** What is planned, practiced or permitted on a given area (commercial, residential, dedicated open space)



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~~RIPARIAN BUFFERS~~ CORRIDORS

Riparian: the area by the banks of a river, stream, or other body of water

Buffer: a designated zone or strip of land of a specified width along the border of an area

Riparian Buffer: is the natural vegetation and soil cover adjacent to a river, stream, or other body of water.

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RIPARIAN CORRIDORS FUNCTIONS AND VALUES

- **first line of defense against the impacts of impervious surfaces**
- **slow runoff**
- **protect shorelines from erosion**
- **aid in flood control**
- **filter or trap pollutants**
- **provide habitat and corridors for wildlife**
- **shade waters for fisheries enhancement**



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RIPARIAN BUFFERS ANALYSIS

- Provide an overall picture of the state of riparian buffers and the changes over time
- Develop diagnostic information at the watershed level which managers can use to direct future efforts

Version 1: - Funded by the Long Island Sound Study.
- Used Version 1 Land Cover
- Southern half of Connecticut



Version 2: - Used Version 2 Land Cover
- Statewide
- Still a work in progress



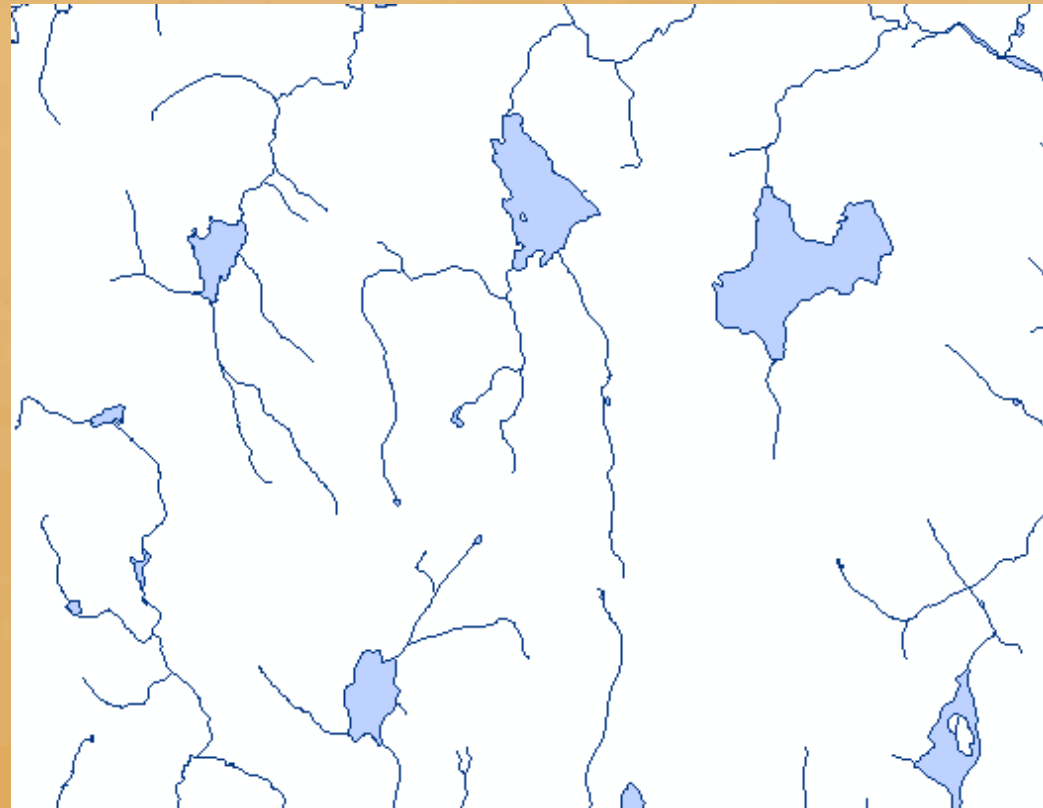
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METHODS

GIS Magic to create “To Be Buffered” Line

Stream Lines
+
Shore Lines



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METHODS

Buffer Zones: 100 ft and 300ft

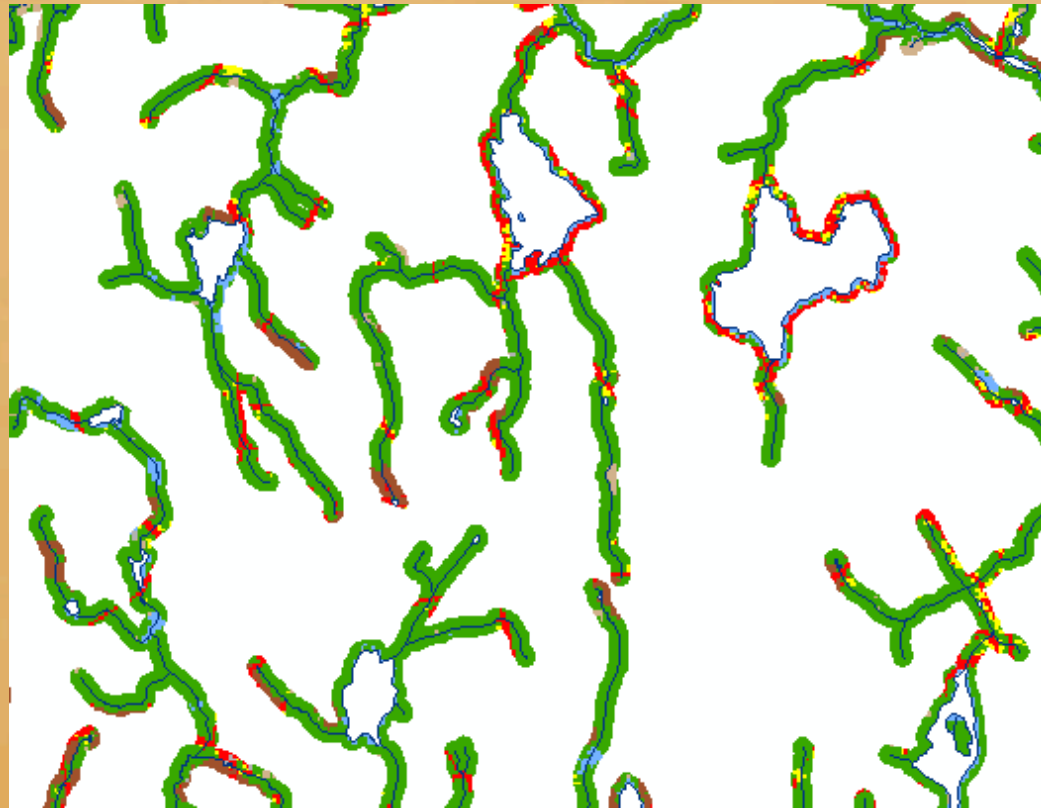


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METHODS AND RESULTS

Land Cover in Buffer Zones

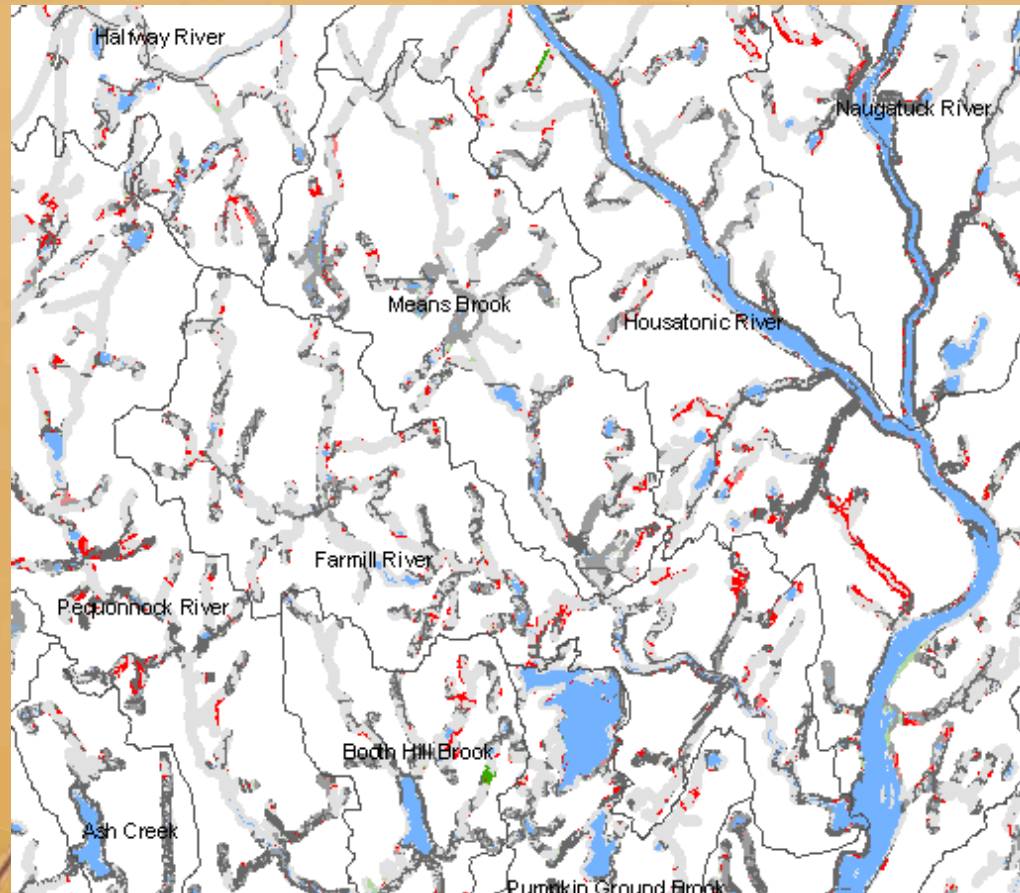


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METHODS AND RESULTS

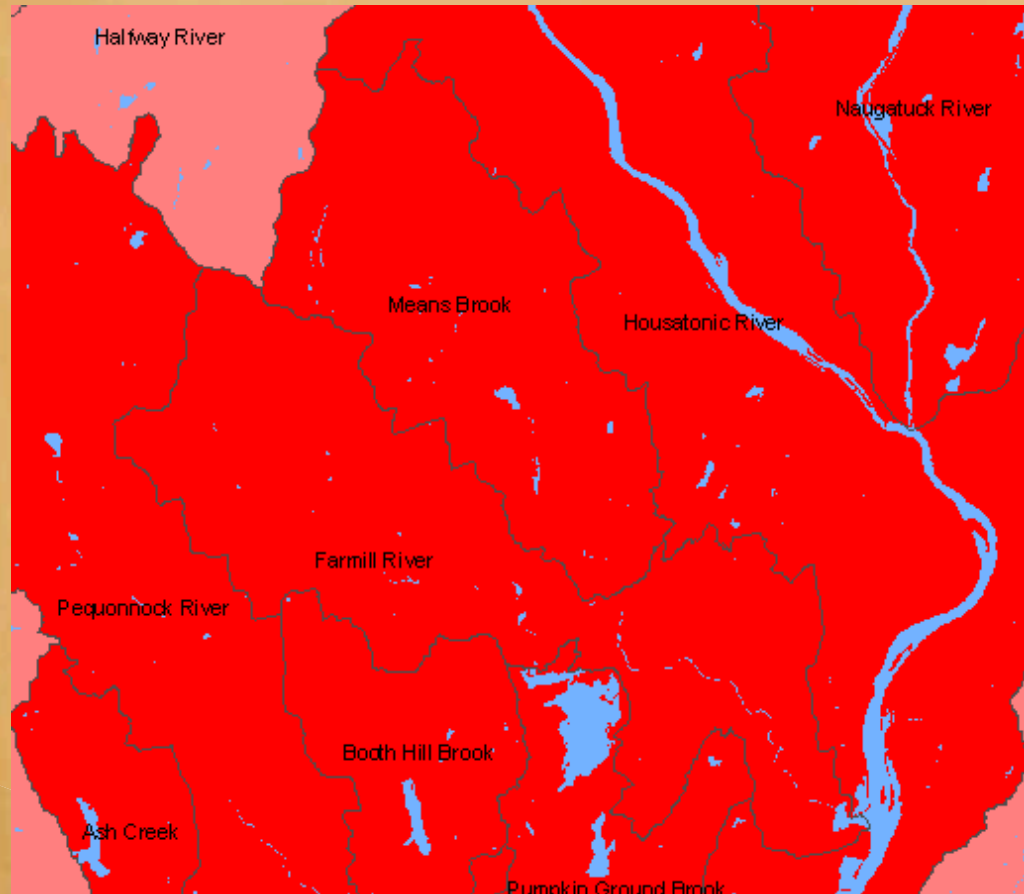
- **Change in Buffer Zones**



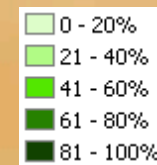
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METHODS AND RESULTS

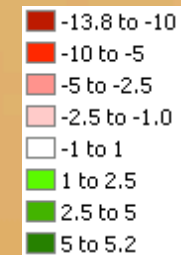


- **1985 percent Natural Vegetation (300ft)**



- **2006 percent Natural Vegetation (300ft)**

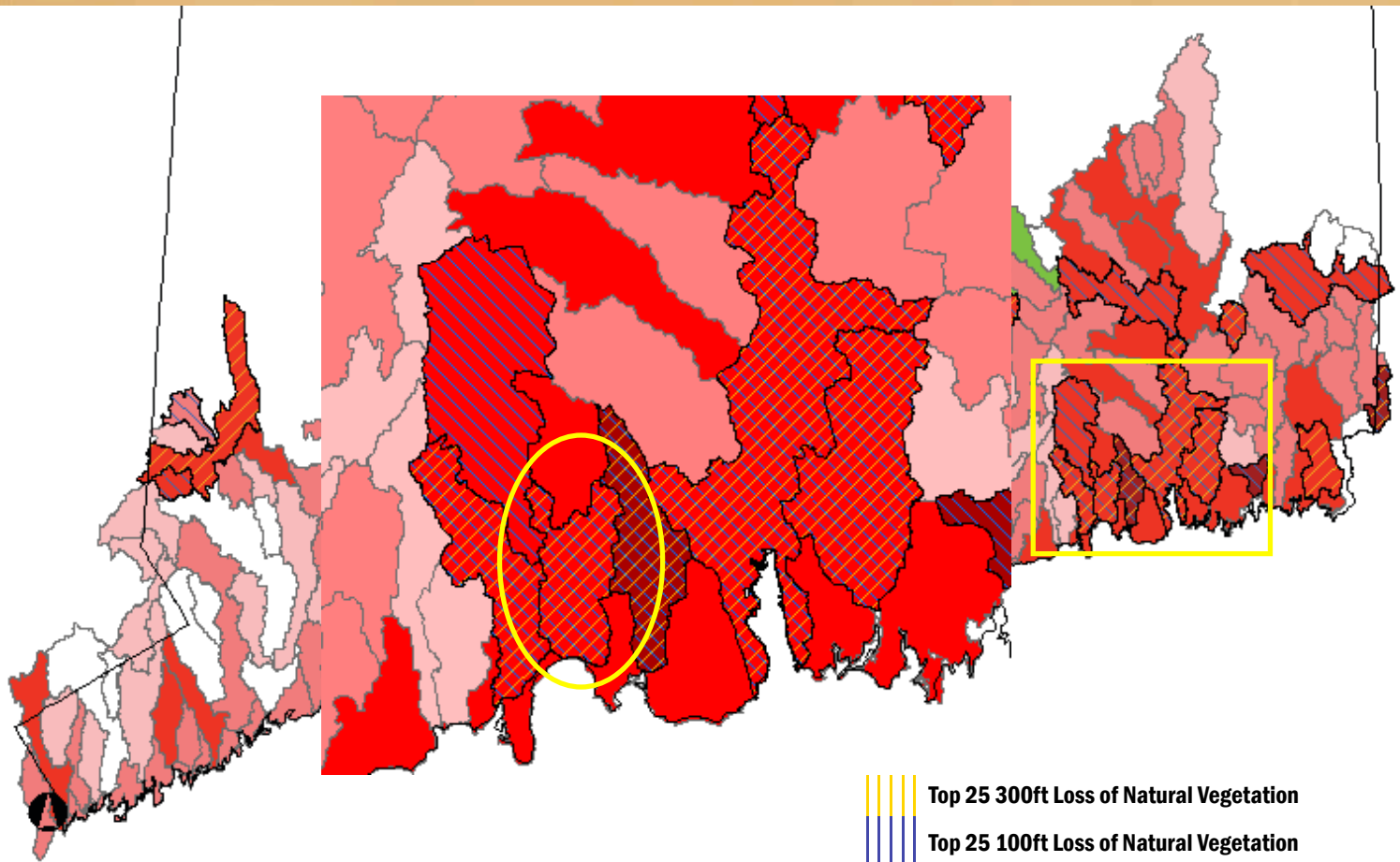
- **Change**



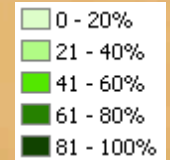
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METHODS AND RESULTS

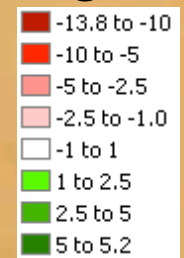


- **1985 percent Natural Vegetation**



- **2006 percent Natural Vegetation**

- **Change**



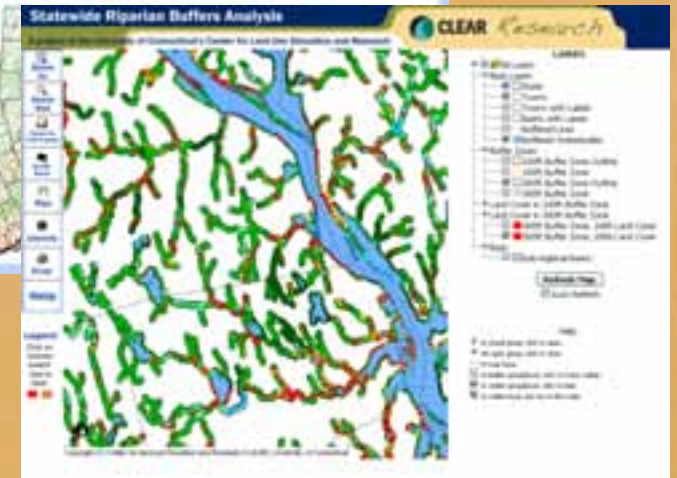
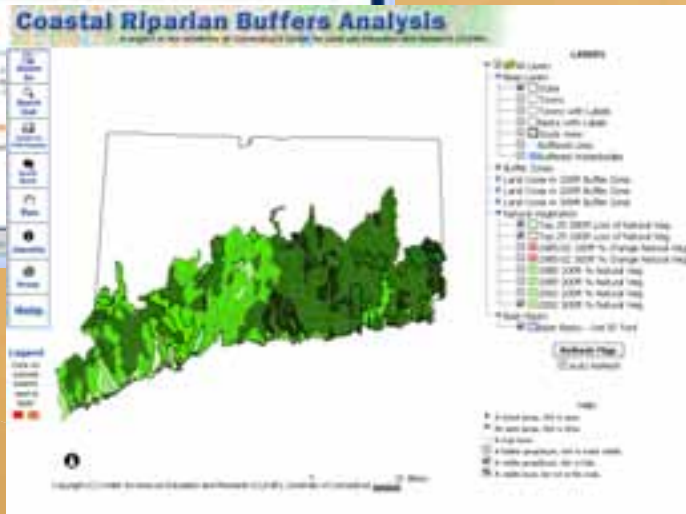
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WEBSITE

http://clear.uconn.edu/projects/riparian_buffer/

http://clear.uconn.edu/projects/riparian_buffer2/



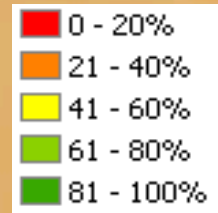
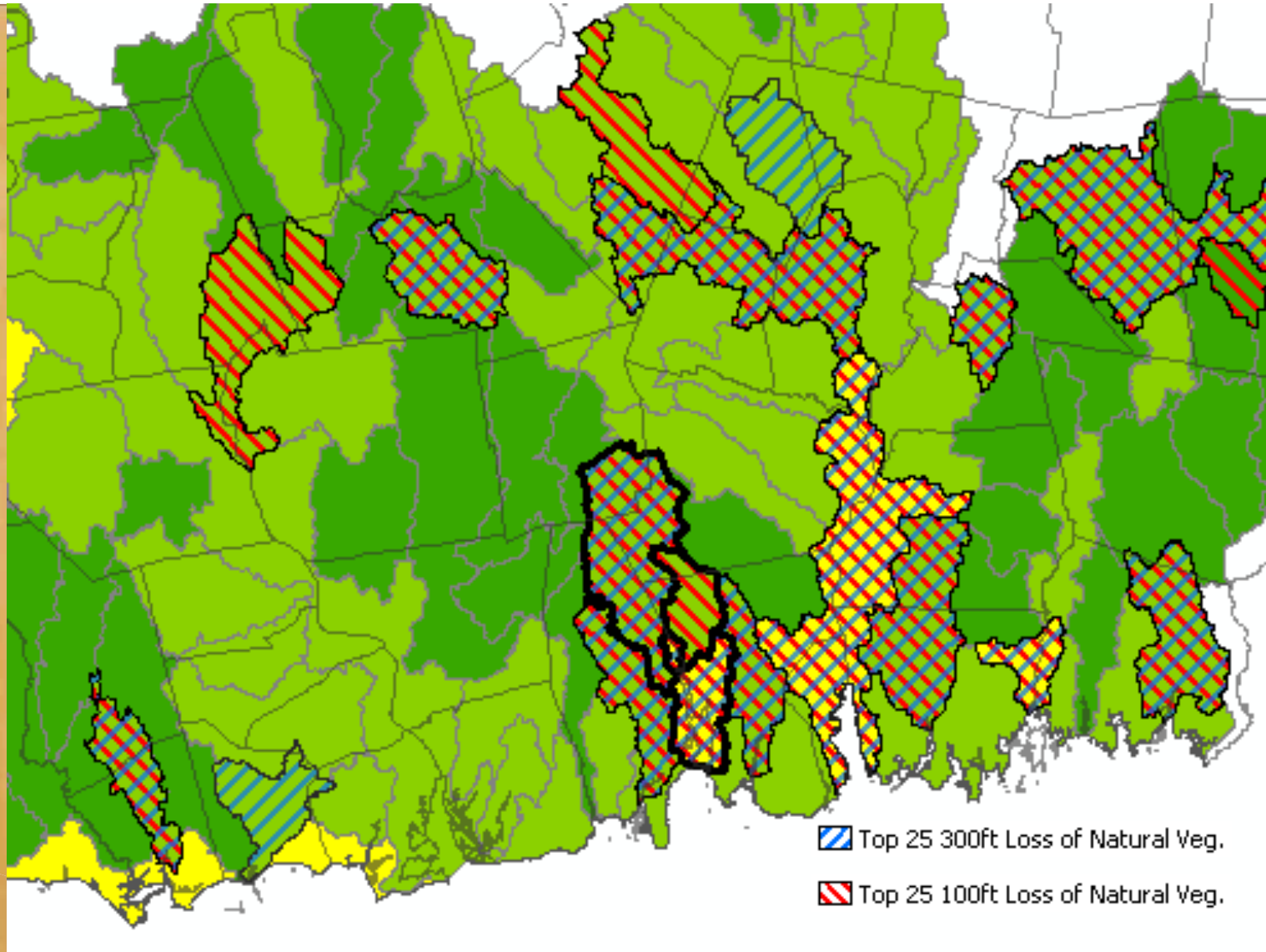
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WHAT TO DO WITH THIS GREAT ANALYSIS?

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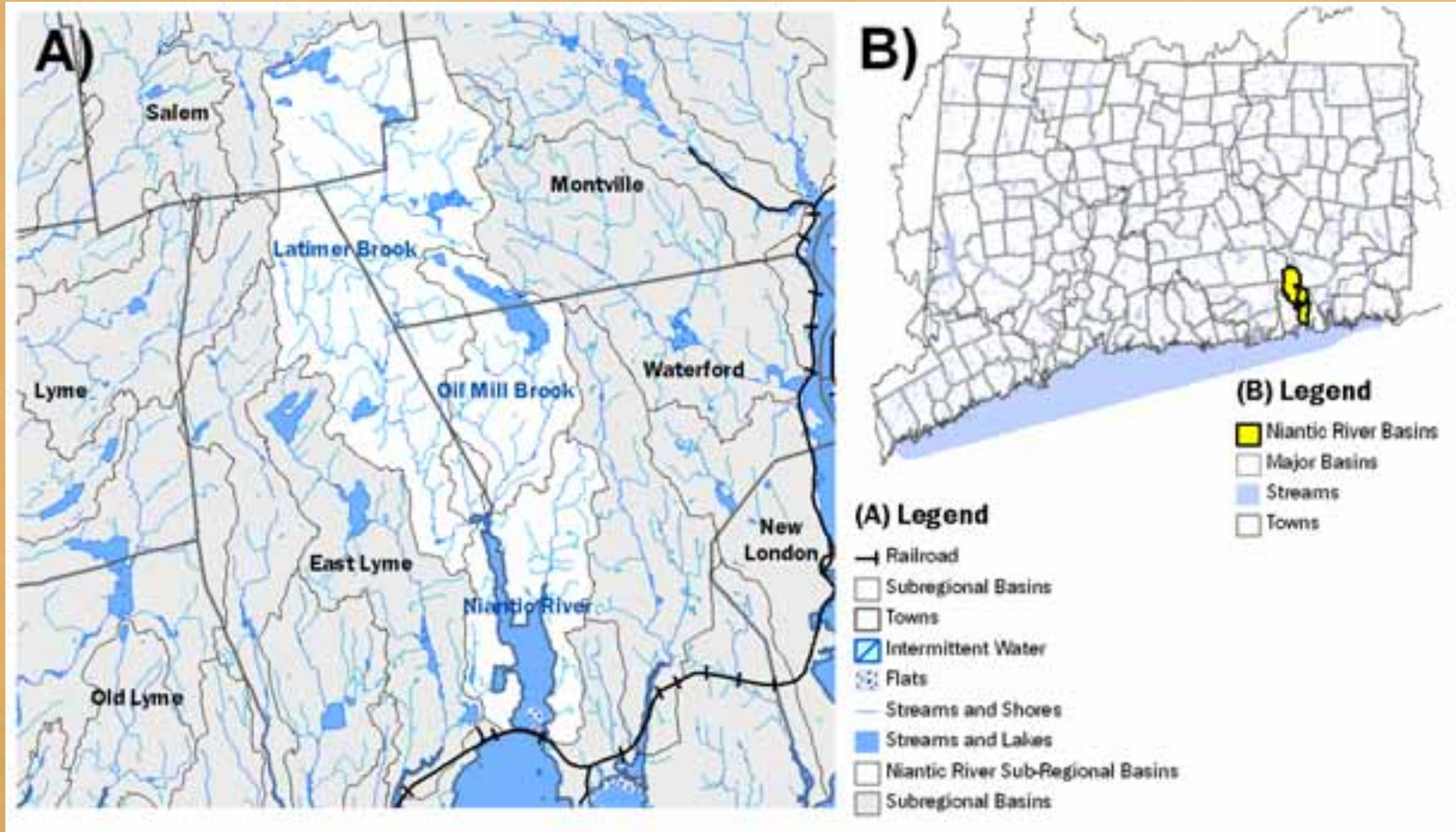




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NIANTIC RIVER WATERSHED



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NIANTIC RIVER WATERSHED

- “Yellow” zone watershed
- Watershed has a state plan with a watershed coordinator working through a local Conservation District
- Nonpoint source pollution identified as the greatest threat to the water quality and ecological health of the Niantic River
- Four towns (2 coastal, 2 inland); opportunity to talk about riparian areas and climate change

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NIANTIC RIVER WATERSHED

Submitted grant to:

- **Create updated (to 2006) state-wide riparian buffer land cover change dataset**
- **Develop educational workshop on riparian buffers for local land use officials**
- **Develop educational workshop on riparian buffers for homeowners**
- **Contribute to NEMO website on riparian buffers**

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NIANTIC RIVER WATERSHED

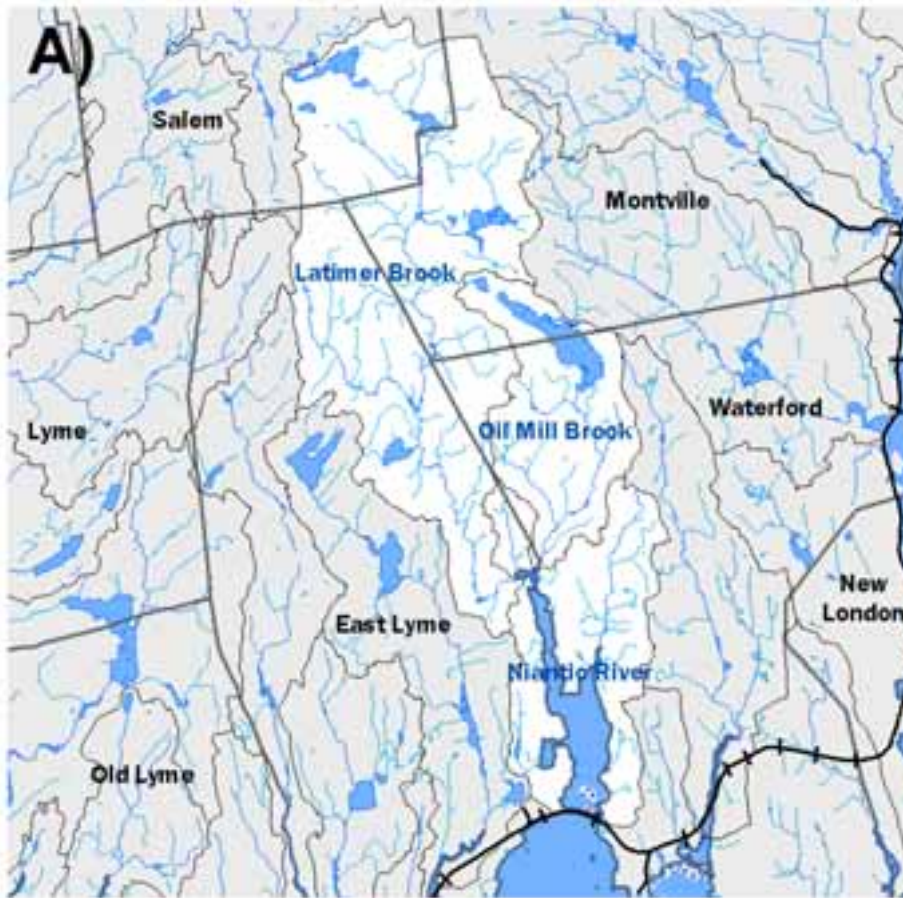
**Received grant from Long Island Sound Studies
Futures Fund – (US Fish and Wildlife Foundation)**

- **Met with Environmental Planners for each town**
- **Each town set up slightly differently with commissions, different issues, concerns**
- **UConn Service Learning Project**

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NIANTIC RIVER WATERSHED



- Two coastal towns within I-95 / Amtrak corridor, intense development both commercial and residential
- Two inland towns with largely residential, agrarian concerns, sand and gravel quarries



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NIANTIC RIVER WATERSHED

- **Developed individual workshops for each town based on needs identified by environmental planners**
- **Watershed coordinator provided overview of watershed plan and issues**
- **Provided town specific information**
- **All workshops included riparian buffer functions and values, information on climate change**

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TOWN COMMISSIONS

Montville

- **Inland Wetlands Commission**
- **Emphasis on wetlands, watershed**

Waterford

- **Invited all commissions**
- **Emphasis on cross cutting issue**
- **Relation to climate change issues**
- **Intense develop along I-95 corridor and along coast**

Salem

- **Invited P & Z and Inland Wetland Commissions**
- **Emphasis on cross cutting issue**
- **Eightmile River Watershed buffer overlay zone**

East Lyme

- **Newly formed conservation commission**
- **Very intense coastal development**
- **Whatever worked for Waterford**

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LESSONS LEARNED

- Use “corridor” instead of “buffer”
- Emphasize that this is a cross-cutting commission issue
- Encourage environmental planners to invite all commissions or be willing to return
- Follow up with website announcement and link
- Planting seeds of change
- Didn't get new information from Service Learning Project, but process result rather than product

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LESSONS LEARNED

For homeowners:

- **Local weekly newspapers best way to advertise (not bulk mailing)**
- **Timing was fortuitous as heavy April rains caused numerous flood events giving audience something to relate to**
- **Give people something tangible to take away: brochure on riparian areas; list of plants suitable for riparian areas**
- **“You must come talk to...”**

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WHERE WE HOPE TO GO...

- **Groups working on buffer legislation at the state level**
- **Salem - buffer overlay zone for Niantic River Watershed; invited back to present to P&Z**
- **Riparian restoration projects/USFWS**
- **Buffers in a Bag**

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QUESTIONS OR COMMENTS...



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