Comparing the Ecological Benefits of Shutesbury Zoning and Conventional Subdivision Zoning Practices

Research completed by Brian Hall, Harvard Forest and Bill Labich and Laura Hammett, Highstead to support the North Quabbin Regional Landscape Partnership

Introduction

1. The Project
2. Methodology
3. Results from Wilbraham site
4. Conclusions

Introduction to the project

- Shutesbury Open Space Design Zoning Bylaw (2008)
- NQRLP requests analysis
- Brian Hall, Bill Labich – Harvard Forest
  - Design worksheet for "re-drawing" a site with Shutesbury model
- Fall 2009 – Highstead Regional Conservation Intern Laura Hammett further develops methodology, determines study sites, runs ecological metrics

Methodology – Fall 2009

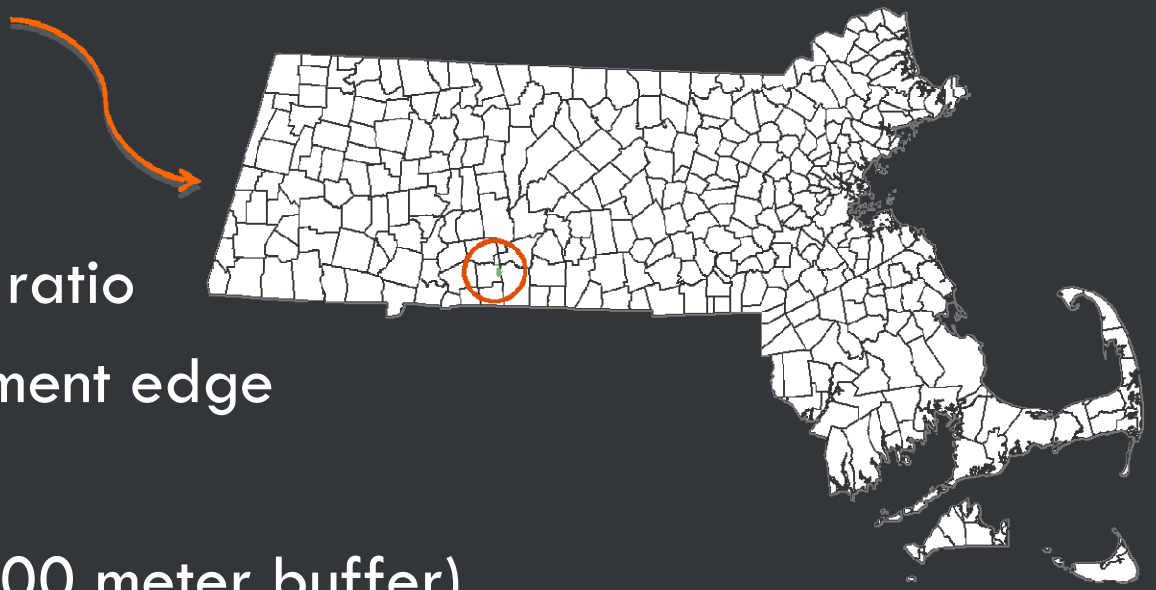
1. Determine study sites
   - Forest blocks > 750 acres in 1985
   - New residential development since 1985
   - Pattern of "cookie cutter" subdivision development

Where do these intersect?

2. Design and run ecological metrics
   - Landscape ecology
3. Re-draw for Shutesbury Zoning, run metrics
   - Open Space Design worksheet

Methodology in practice

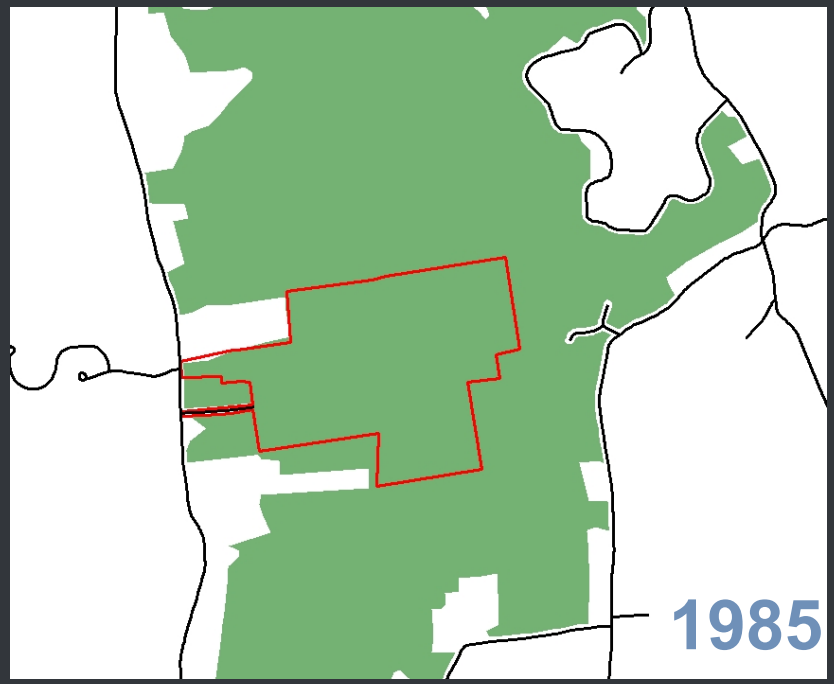
- 12 study sites
  - Wilbraham site is only one tested so far (fall '09)
- Metrics used:
  - Perimeter/Area ratio
  - Forest/Development edge
  - Raw acreage
  - Interior forest (100 meter buffer)

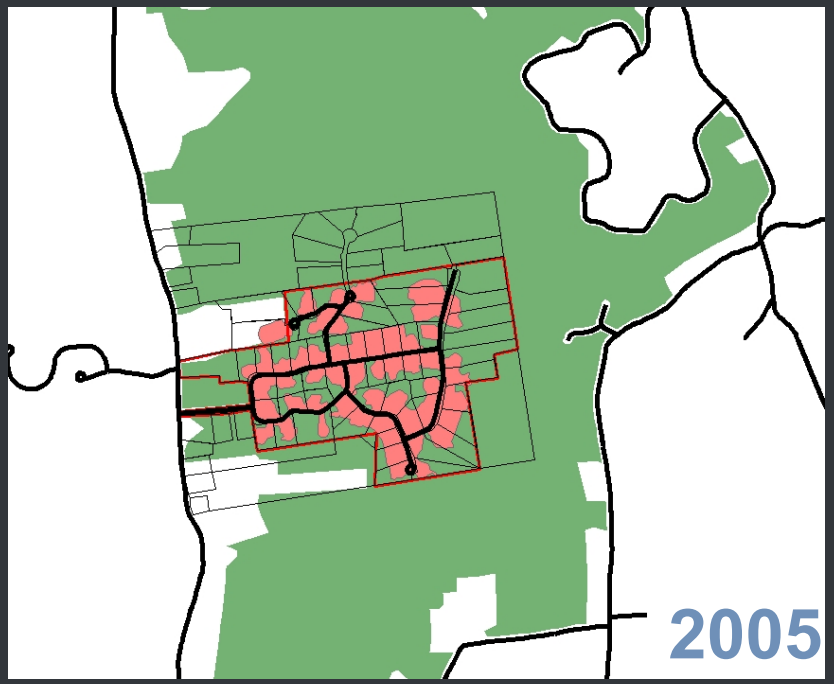


Results – Wilbraham Study area

Forest Block	Raw Acreage	Interior Forest	Perimeter/area ratio	Development/Forest edge
Pre-development	1102 acres	624 acres	1:574 0.00174 ft/sq ft	35576 ft 42.5%
Post-development	1027 acres	499.5 acres	1:434 0.00208 ft/sq ft	52178 ft 52%
Shutesbury bylaw	1068 acres	600 acres	1:554 0.00181 ft/sq ft	38486 ft 46%

What this looks like | Conventional



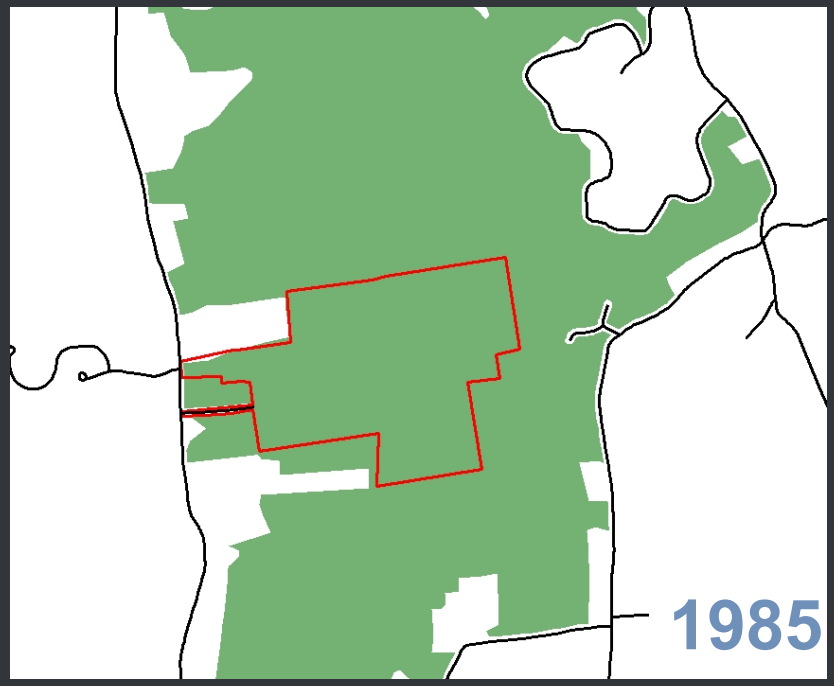


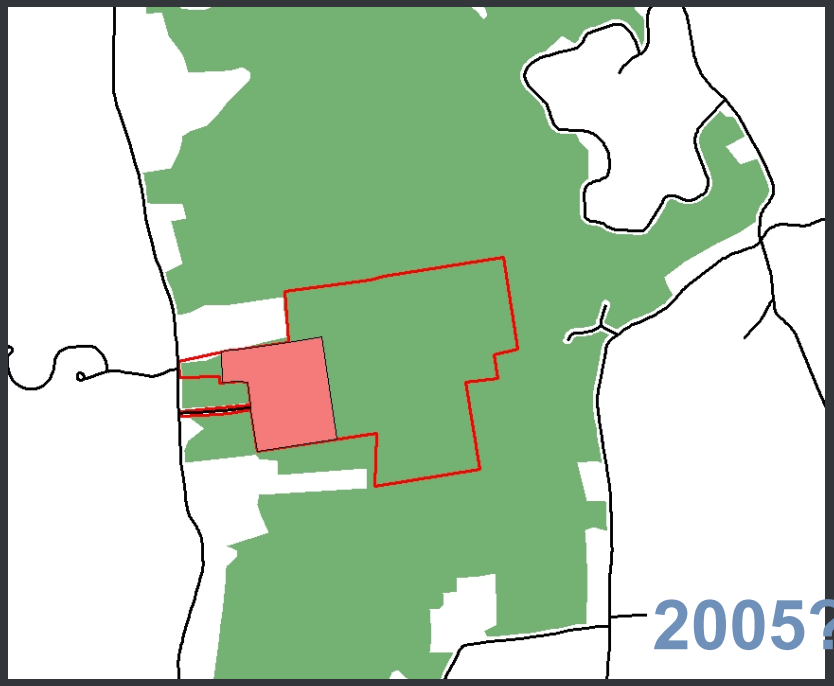
= res. development post 1985

129 acre original parcel

- Completely built-out
- Average lot size approx. 2 acres
- Expansion of development beyond original lot further into forest block

What this looks like | Shutesbury





= developed area

129 acre original parcel

- 26 acres developed (incl. roads)
- Core forest preserved
- No minimum lot size

Patch Shape Change

Wilbraham / Monson study site

Pre-development

Post-development

Shutesbury Model

Conclusions

- Subjectivity of this study
- Difficulty of applying the Shutesbury model in other areas
- Further study necessary?

- Value of the methodology