This Lecture has been divided into three parts:
This file is Part 1 of 3

ARCH 1250
APPLIED ENVIRONMENTAL STUDIES

CLASS SIX
SITE BIOLOGY

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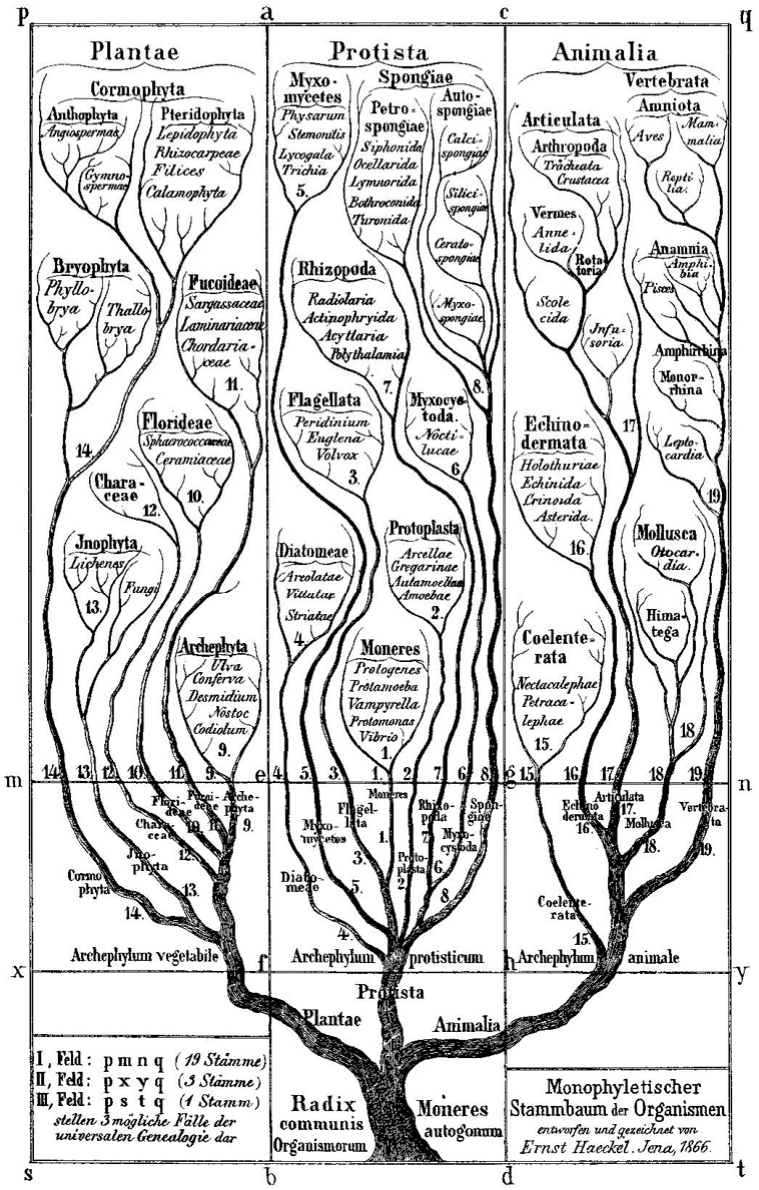
Adjunct Assistant Professor

Biology

is a natural science
concerned with the study
of life and living organisms

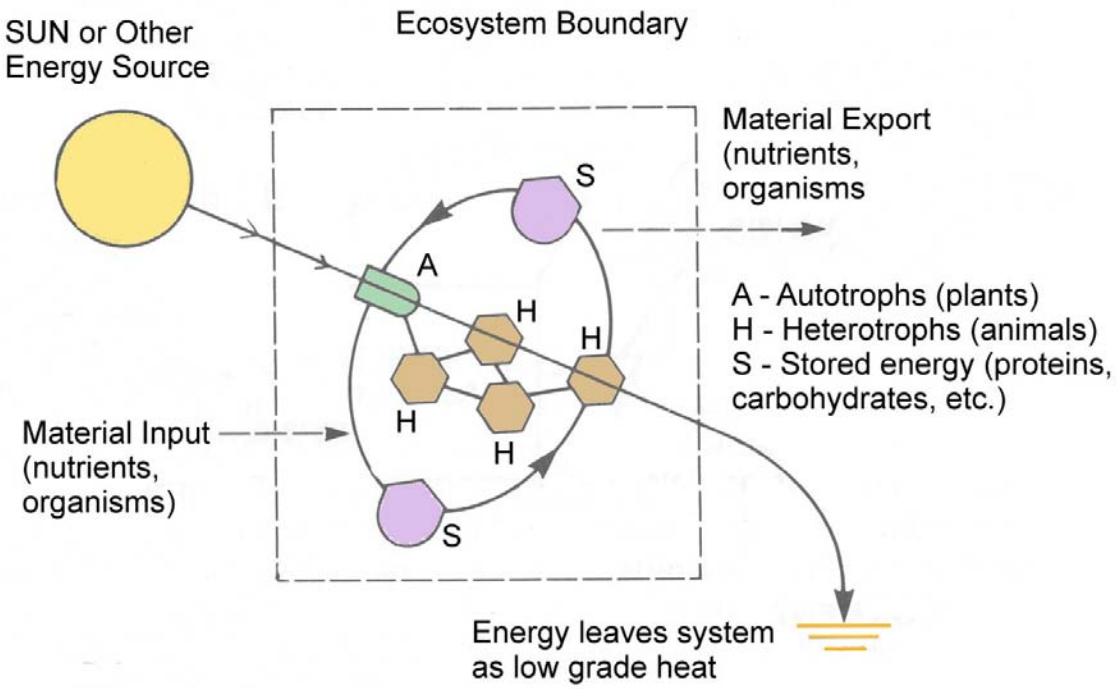


Ernst Haeckel, Tree of Life, 1866

Ecology

is the scientific study of the relations that living organisms have with respect to each other and their natural environment

Ecosystem - the complex of living organisms, their physical environment, and all their interrelationships in a particular unit of space



Plants =

food
nutrition
medicine
health

well-being
thermal comfort

paper
clothing
lumber

clean water
clean air
bio-fuels

Biodiversity

Biodiversity is the degree in variation of life forms across ecosystems, biomes and the planet.

Maintains reservoirs of genetic diversity essential to agricultural practice.

The Irish potato blight of 1846 caused the death of over 1 million people because only two varieties of potato were grown across the country and they were both vulnerable to the blight.

Provides a resource for medicine and the development of new drugs.

80%of the world's population depends upon medicine from nature
50% of US pharmaceuticals are derived from plant compounds

Under assault from climate change, development and food production.

30% of world's plant and animal species face a medium to high certainty of extinction this century.

Biophilia

Translates as “love of life” and is increasingly used by sustainable designers to describe our inherent preferences for natural environments. There are a number of “bio-philic” design elements that are central to sustainability and which support our well-being.

Change
Delight
Nurture
Captivate

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SITE BIOLOGY

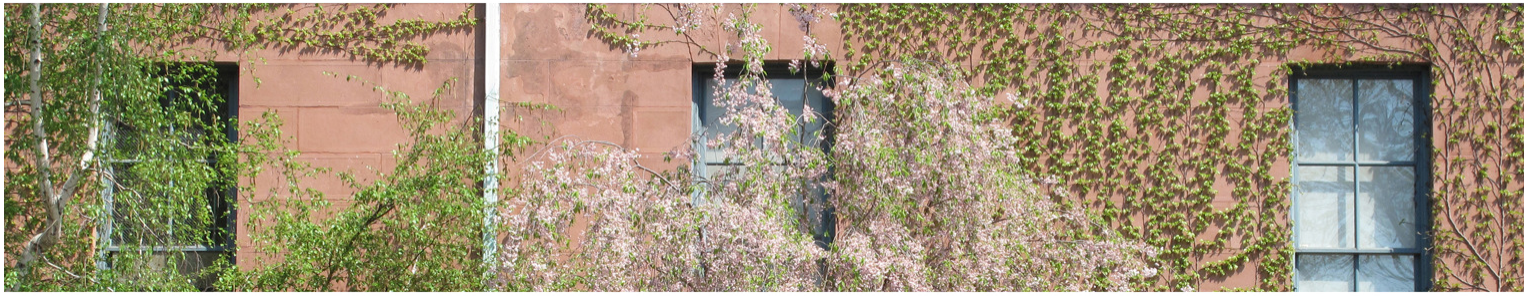
OVERVIEW

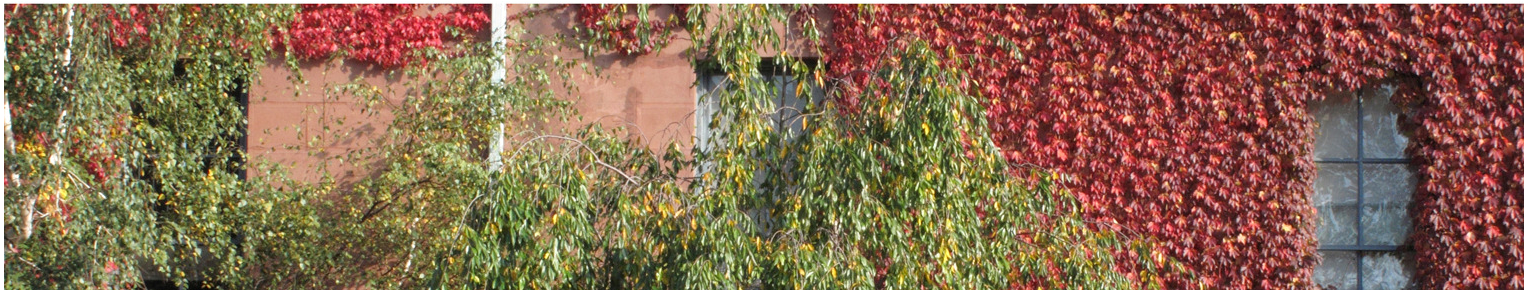
VEGETATIVE STRUCTURES

- UNBUILT
- BUILT

CHALLENGES

STRATEGIES





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Vegetative Structure

The living structure of the unbuilt environment has been shaped by access to resources and adaptation over millions of years, largely self-sustaining. Characterized by biodiversity, ecological productivity is 100% solar driven

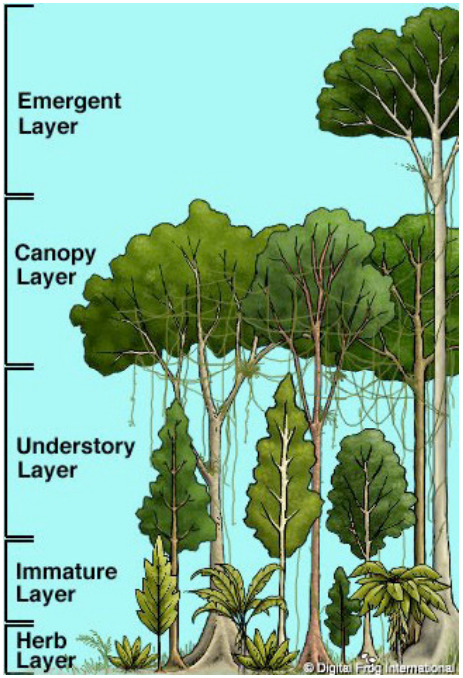
- Canopy, understory, ground plants

Forest, North Carolina (image © 2009 John Seitz)

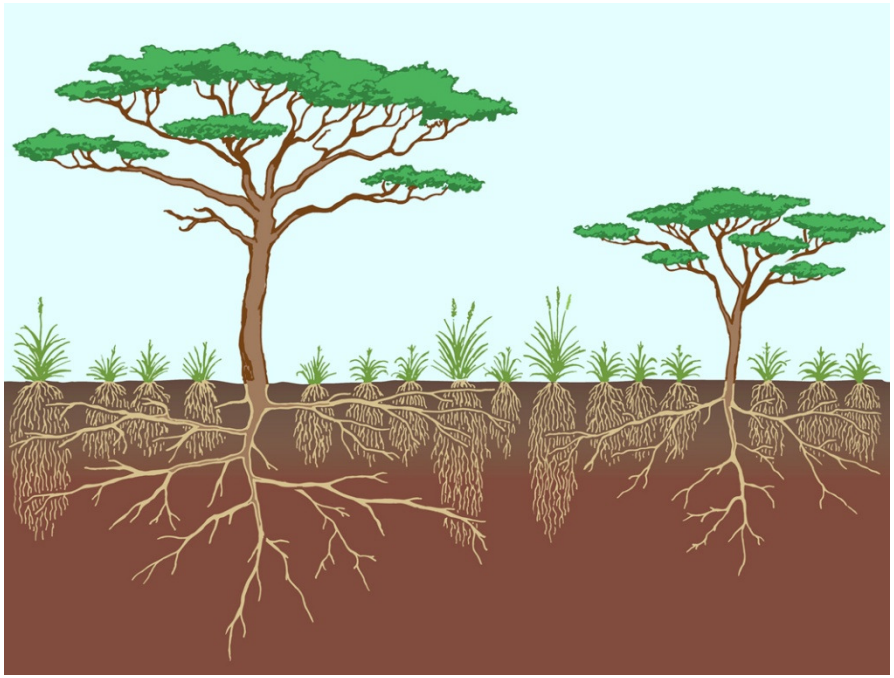
LECTURE SIX

SITE BIOLOGY

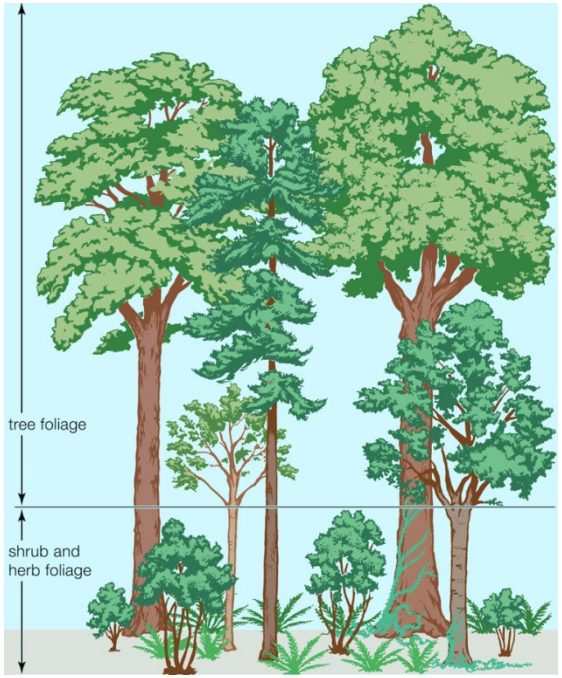
Types of Plant Communities



Rain Forest



Savannah



Temperate Forest

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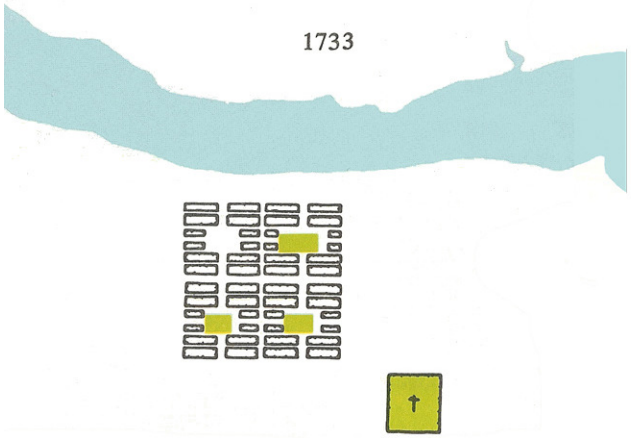
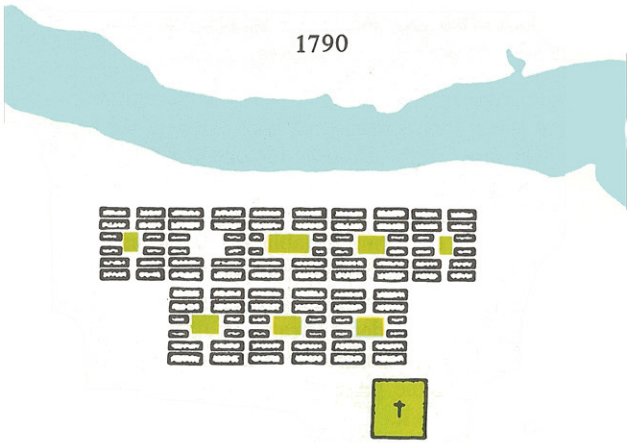
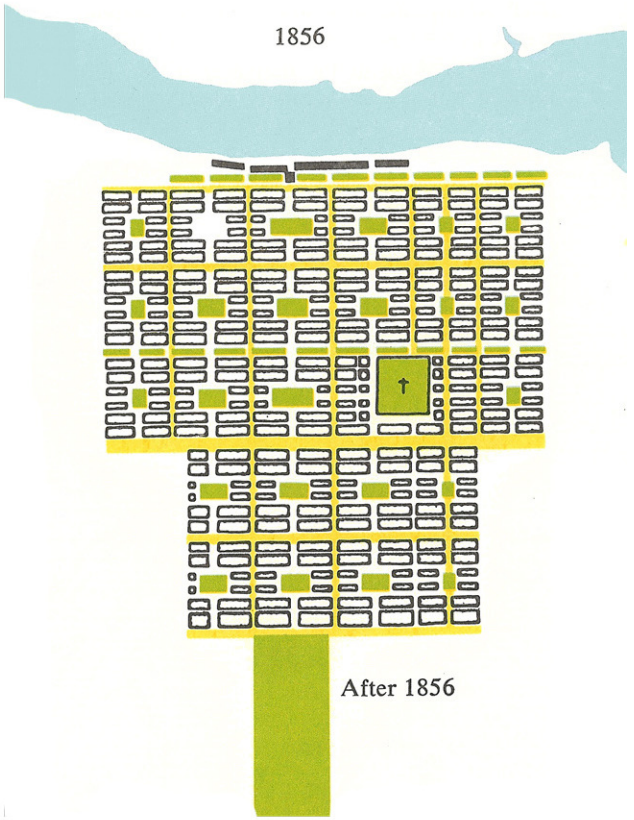
Understanding how natural plant communities have evolved helps us shape the design of not only our site plantings, but also our site and buildings.

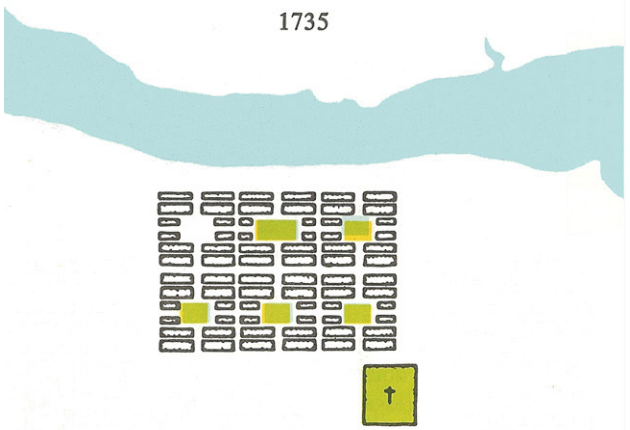
Vegetative Structure

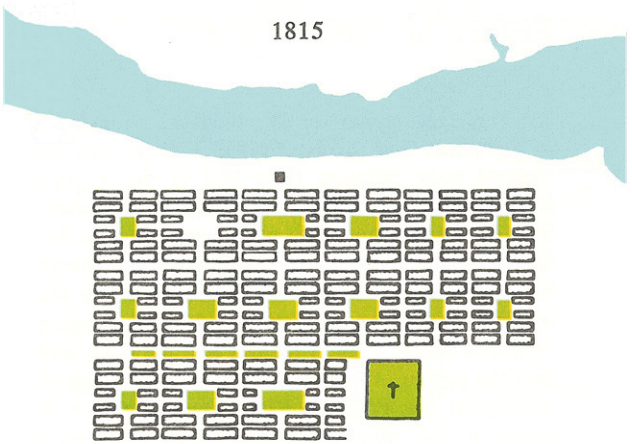
Living structure of the built environment is being shaped by structures and human preference, largely dependent upon significant human intervention, not sustaining. Characterized by lack of diversity, energy intensive and includes numerous stressors.











Savannah, GA, plans from Bacon's, Design of Cities

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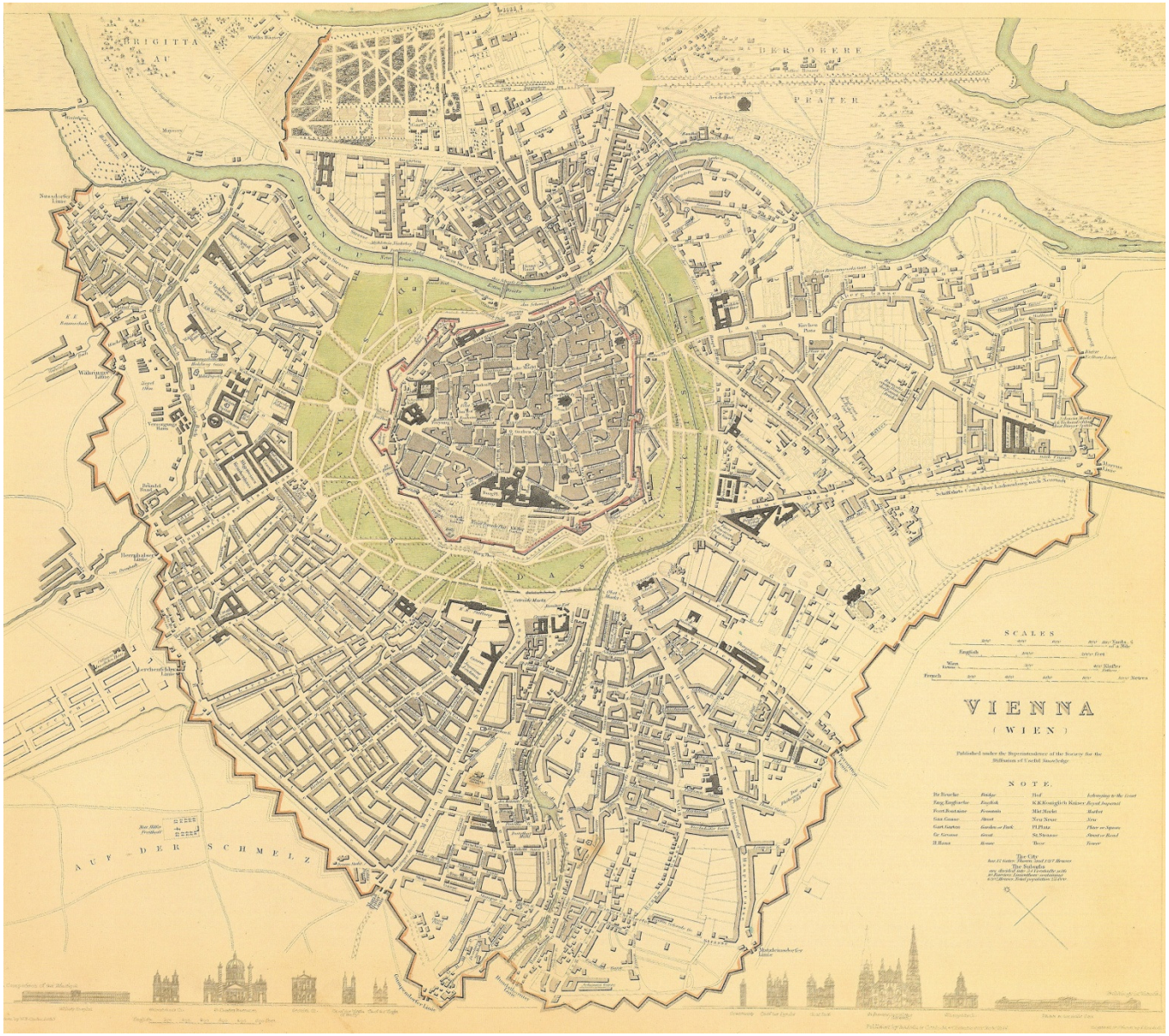

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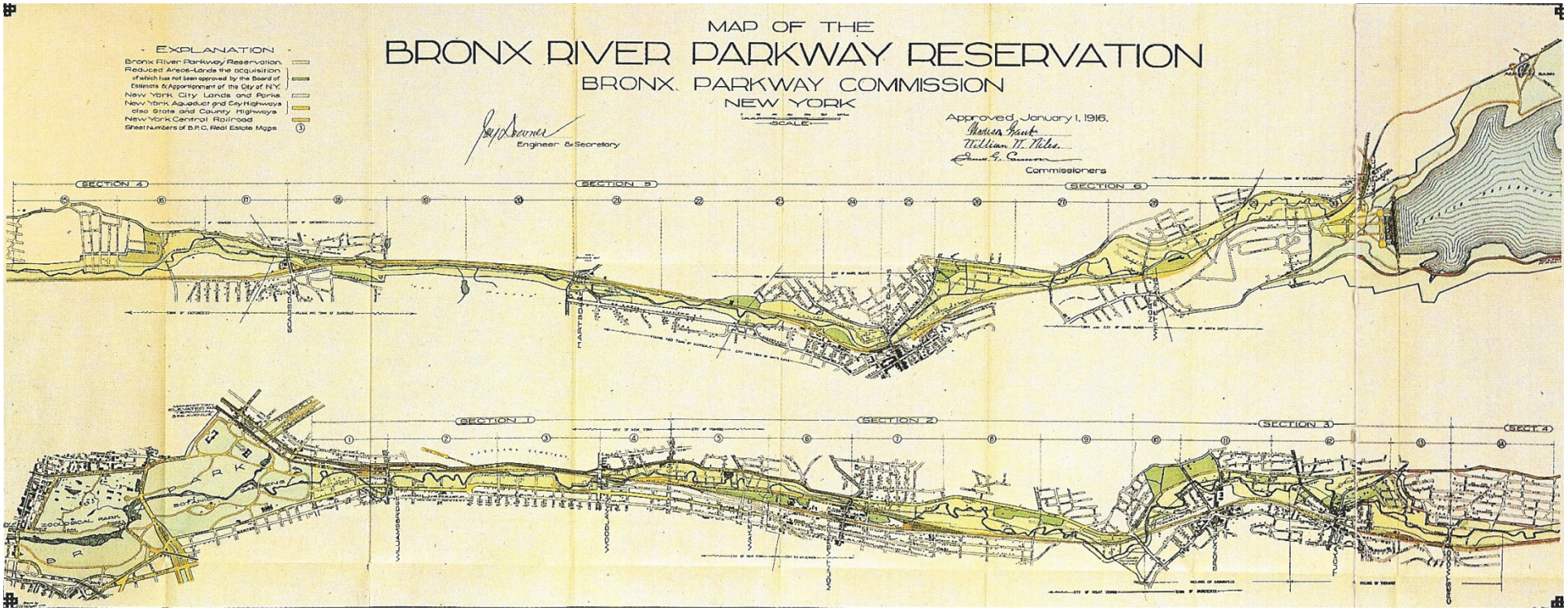

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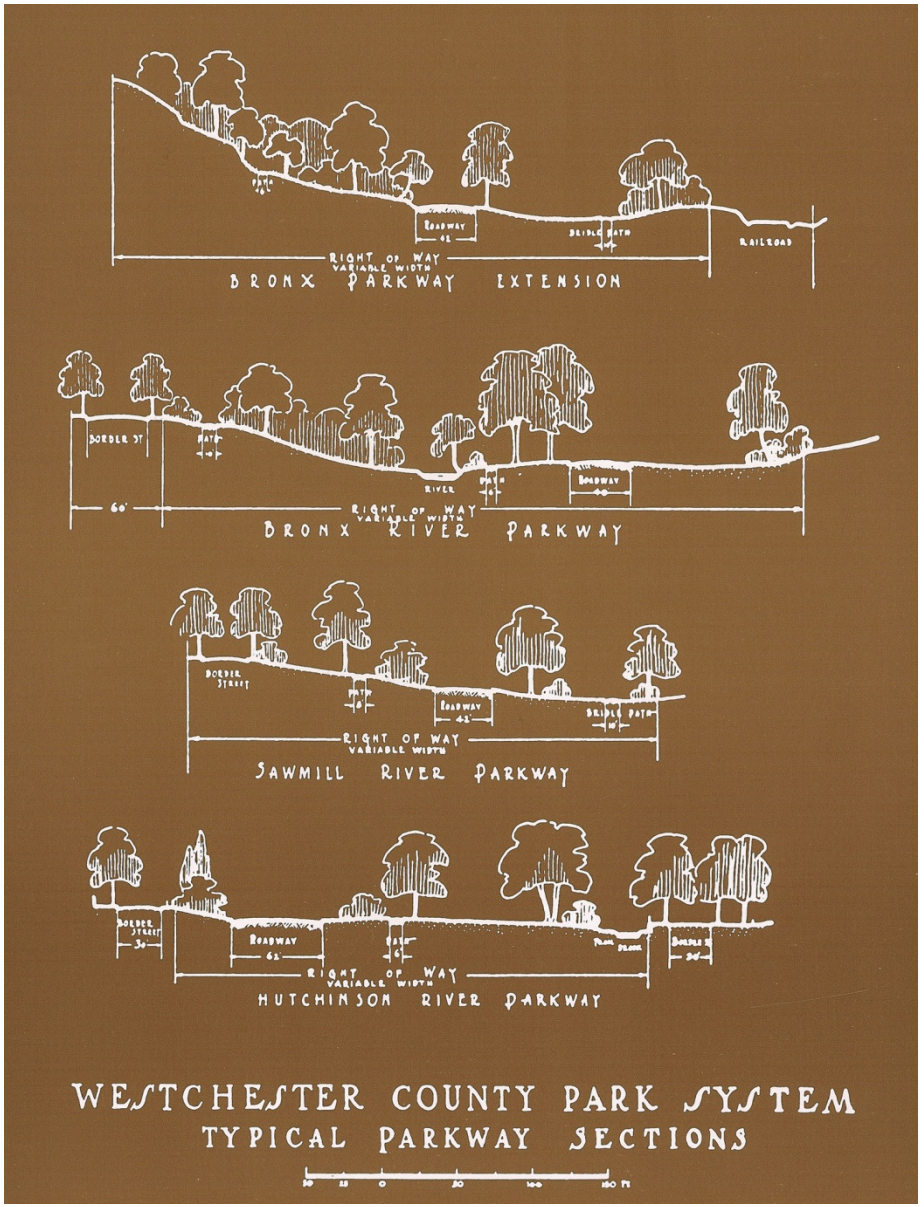

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BUILDING A METROPOLITAN GREENSWARD

The Metropolitan Greensward is a vision of a system of protected open spaces, greenways and rural landscapes that distinguish the cities and suburbs of the New York/New Jersey/Connecticut metropolitan region. By implementing the Greensward, the Region will conserve its critical natural resource systems, its recreational opportunities and the working landscapes of farms and forests. Together, these protected open lands will help shape future patterns of growth in the Tri-State Region.

REGIONAL RESERVES

To construct the Greensward, the Region must help communities manage change in nine special places, or "regional reserves," which encompass the Region's most important scenic, biological and water resources and which are now threatened by urban sprawl.

- Catskill Park
- Delaware River Valley
- Hudson River Valley
- Long Island Pine Barrens/Peconic Estuary
- Long Island Sound
- The Appalachian Highlands of New York, New Jersey and Connecticut
- New Jersey Pinelands
- New York-New Jersey Harbor
- Shawangunk/Kittatinny Mountains
- Atlantic Seashore
- Agricultural Areas

Greenway and Greenspace Initiatives

Building the Greensward also means weaving together a network of Greenways and Greenspaces that protects and enhances individual rivers, trails, ridgelines and urban open lands. Seventy-two of the most important public and private initiatives are listed below.

NEW YORK

1. Long Path
2. Route 28 Corridor
3. Mongaup River and Reservoirs
4. Neversink River and Gorge
5. Delaware and Hudson Canal/Ontario and Western Right-of-Way
6. Shawangunk Kill
7. Black Dirt Agricultural Area
8. Sterling Forest
9. Hudson River Shore Trails
10. Wappinger Creek
11. Sitsing Mountain
12. Harlem Valley Right-of-Way
13. Nellie Hill
14. Putnam/Northern Tier Greenway
15. Great Swamp
16. Putnam Division Right-of-Way
17. Hutchinson River Parkway
18. Hudson River Waterfront Park
19. East River Esplanade
20. Harlem River Esplanade/Putnam Railroad Greenway
21. Bronx River Trailway/Soundview and Ferry Point Parks
22. East Bronx-City Island Greenway
23. Queens-East River Greenway/North Shore-Flushing Meadow Trail
24. Brooklyn-Queens Greenway/North Brooklyn Greenway/Piers 1-5
25. Cross Brooklyn Greenway
26. Shore Bikeway/Jamaica Bay-Forest Park Trail
27. Laurelton Parkway Greenway/Rockaway-Gateway Greenway
28. Staten Island Greenbelt
29. North Shore Esplanade/Staten Island Railroad Trail
30. West Shore Greenway
31. South Shore Esplanade
32. Oyster Bay Estate and Waterfront
33. Underhill Estate
34. Nassau-Suffolk Border Trail
35. Cross County Trail
36. North Fork Trail
37. South Fork/Montauk Trail
38. Dwarf Pine Barrens
39. Shinnecock Bay Tidal Wetlands
40. Robbins Island
41. Long Pond Greenbelt

NEW JERSEY

42. Paulins Kill Trail
43. Bear Swamp
44. Wallkill River Greenway
45. Delaware River Greenway
46. Lehigh and Hudson Right-of Way/Pequest Greenway
47. Morris Canal
48. Musconetcong River
49. Lamington/Black River
50. Lenape Trail/Patriots' Path
51. Passaic River
52. Pyramid Mountain/Turkey Mountain/Farny Highlands/Wyanokie Highlands
53. Ramapo Mountains and River
54. Lower Palisades Cliffs/Hudson Waterfront Walkway
55. Rahway River/Arthur Kill Tributaries
56. Kaser Mountain
57. Scarland Mountain Ridge
58. Bayshore Project
59. Manasquan River
60. Northern Barnegat Bay/Metedeconk River

CONNECTICUT

61. Robbins Swamp
62. Housatonic River and Tributaries
63. Mianus River
64. Merritt Parkway/Wilbur Cross Parkway
65. Bridgeport Hydraulic Lands
66. Pequonnock River
67. West Rock Ridge Trail
68. Boston and Maine Right-of Way/Farmington Canal
69. Farmington River
70. Metacommet Trail
71. Metabosset Trail
72. New Haven Water Co. Lands

greensward studies began with the 3rd Regional Plan in 1996