

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



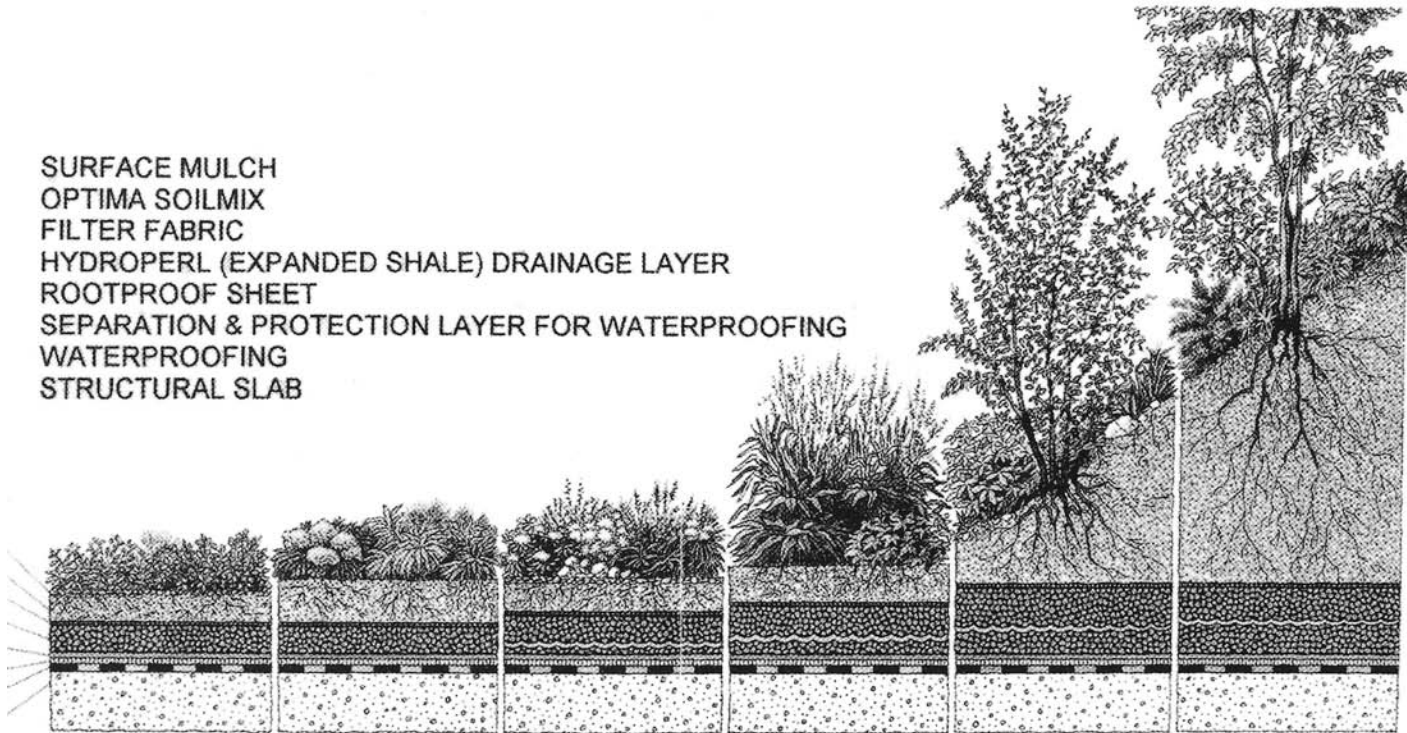
ARCH 1250 APPLIED ENVIRONMENTAL STUDIES

CLASS SIX SITE BIOLOGY

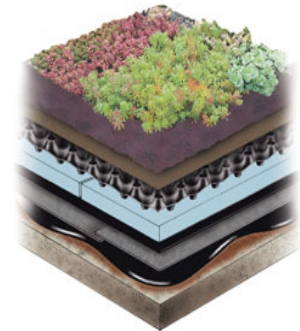
John Seitz, RA, LEED AP
Adjunct Assistant Professor

LECTURE SIX
SITE BIOLOGY

SURFACE MULCH
OPTIMA SOILMIX
FILTER FABRIC
HYDROPERL (EXPANDED SHALE) DRAINAGE LAYER
ROOTPROOF SHEET
SEPARATION & PROTECTION LAYER FOR WATERPROOFING
WATERPROOFING
STRUCTURAL SLAB



Extensive green roof



Intensive green roof

**LECTURE SIX
SITE BIOLOGY**

OVERVIEW
SELECTION &
BOUNDARIES
ANALYSIS and
MAPPING
PROGRAMMING
and INTEGRATED
DESIGN
CLIMATE
PRODUCTIVITY &
BIODIVERSITY
MAINTENANCE
INTRO TO TERM
PROJECT
NEXT CLASS

ARCH 1250
APPLIED
ENVIRONMENTAL
STUDIES

NYC COLLEGE
OF TECHNOLOGY



Renzo Piano's roof for the California Academy of Sciences building in SF

LECTURE SIX
SITE BIOLOGY

OVERVIEW
VEGETATIVE
STRUCTURE
UNBUILT
BUILT
CHALLENGES
STRATEGIES

ARCH 1250
APPLIED
ENVIRONMENTAL
STUDIES

NYC COLLEGE
OF TECHNOLOGY



Musee du Quai Branly, Paris, 2007 Patrick Blanc

Public Open Space



“Ensure that all New Yorkers live within less a 10 minute walk to a park”

PlaNYC Goal



LECTURE SIX
SITE BIOLOGY



Native Plants and Lepidoptera species supported

These numbers become astonishing when you consider that many of our non native species even after several hundred years in this country support 0 Lepidoptera species.

Common name	Genus	Butterfly or moth species	Common name	Genus	Butterfly or moth species
Goldenrod	Solidago	115	Oak	Quercus	534
Asters	Aster	112	Black cherry	Prunus	456
Sunflower	Helianthus	73	Willow	Salix	455
Joe pye, Boneset	Eupatorium	42	Birch	Betula	413
Morning glory	Ipomoea	39	Poplar	Populus	368
Sedges	Carex	36	Crabapple	Malus	311
Honeysuckle	Lonicera	36	Blueberry	Vaccinium	288
Lupine	Lupinus	33	Maple	Acer	285
Violets	Viola	29	Elm	Ulmus	213
Geraniums	Geranium	23	Pine	Pinus	201
Black-eyed susan	Rudbeckia	17	Hickory	Carya	200
Iris	Iris	17	Hawthorn	Crataegus	159
Evening primrose	Oenothera	16	Spruce	Picea	156
Milkweed	Asclepias	12	Alder	Alnus	156
Verbena	Verbena	11	Basswood	Tilia	150

APPLIED
ENVIRONMENTAL
STUDIES

NYC COLLEGE
OF TECHNOLOGY

Results of a study undertaken by Professor Douglas Tallamy and published in *Bringing Nature Home: How You Can Sustain Wildlife with Native Plants*, 2009

Waste to plant food

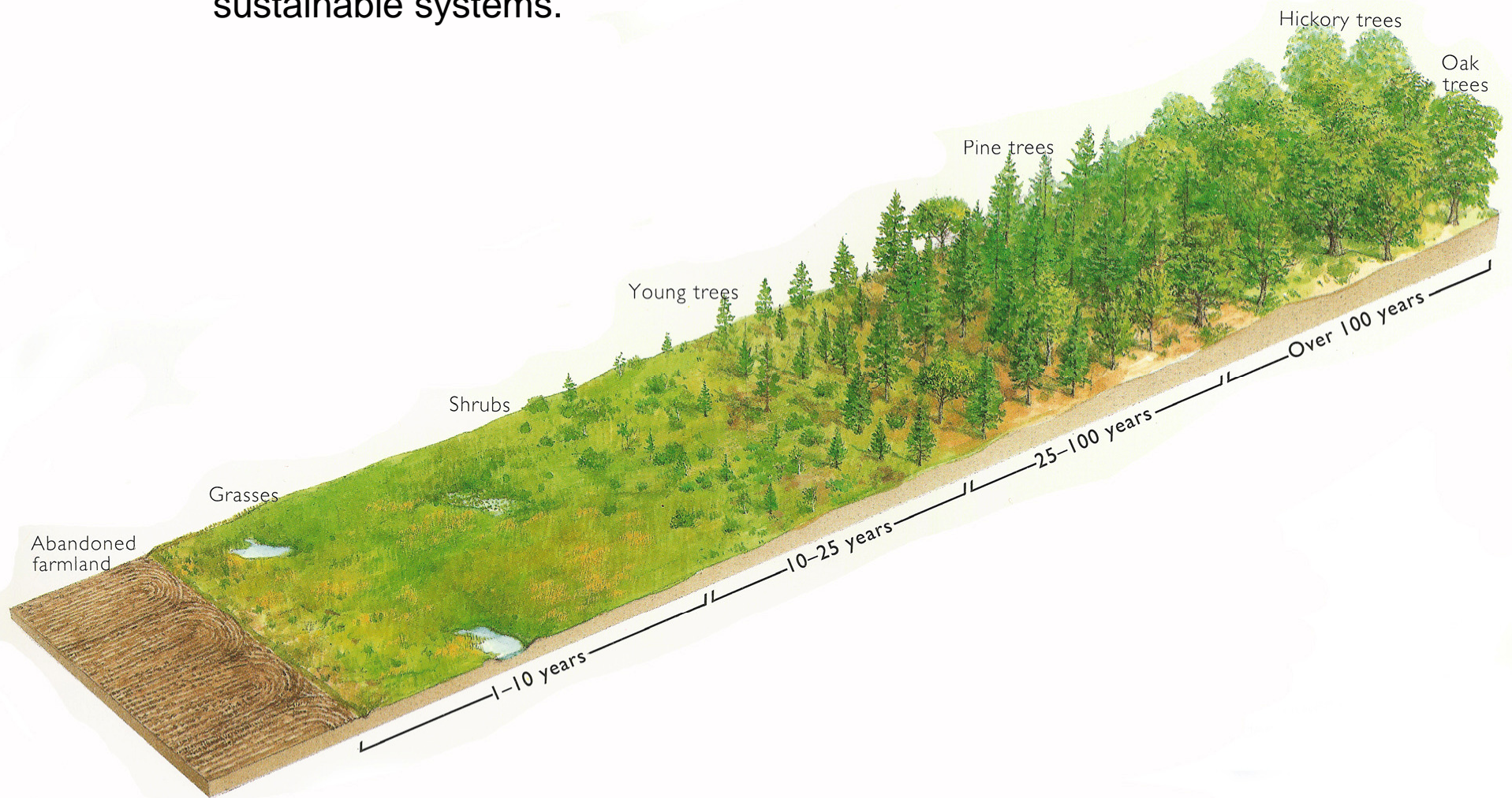


Going . . .

Going ...

gone. . .

Adaptability to change (resilience) is a hallmark of sustainable systems.



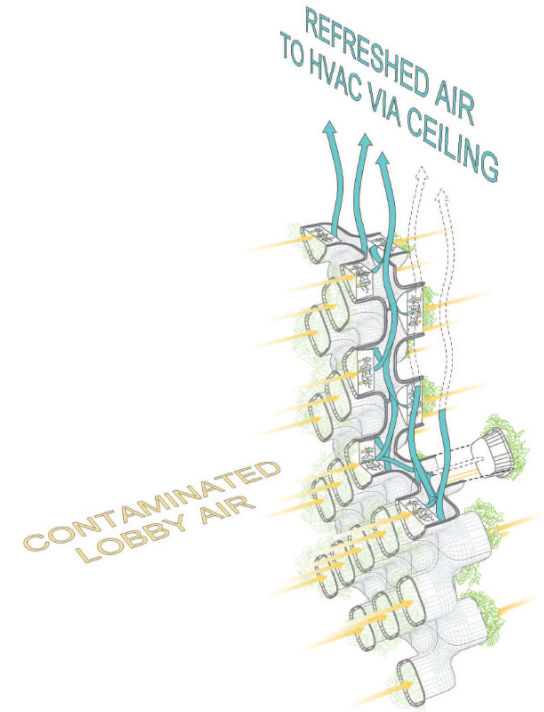
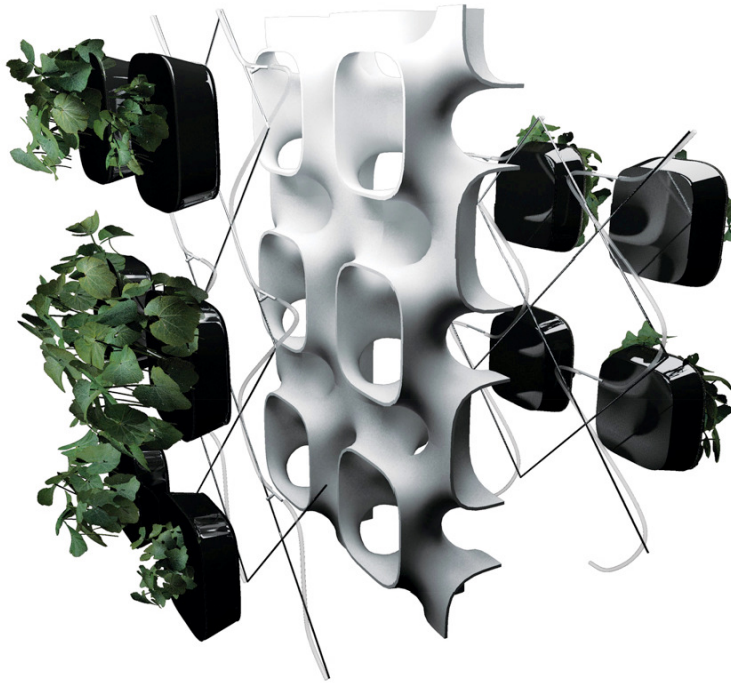
Active Phytoremediation Wall System



A modular wall system of pods housing hydroponic plants being developed by the Center for Architecture Science and Ecology (2008).

LECTURE SIX
SITE BIOLOGY

Because the plants' roots are exposed, instead of being buried in soil, the plants' air-cleaning capacity increases by 200 to 300 percent.



APPLIED
ENVIRONMENTAL
STUDIES

NYC COLLEGE
OF TECHNOLOGY

Air moves through a perforated air intake duct and directly over the root system. This allows the rhizomes on the roots to essentially digest airborne toxins (VOCs, particulate matter, and other biological and chemical pollutants) without the plant itself becoming toxic (which is what happens when the toxins are taken in solely through the leaves).

LECTURE SIX
SITE BIOLOGY

OVERVIEW
VEGETATIVE
STRUCTURE
UNBUILT
BUILT
CHALLENGES
STRATEGIES

ARCH 1250
APPLIED
ENVIRONMENTAL
STUDIES

NYC COLLEGE
OF TECHNOLOGY

Formaldehyde removal rates of some common plants.



Boston Fern

2

1863 μg



Pot Mum

2

1450 μg



Janet Craig

3

1361 μg



English Ivy

4

1120 μg

Based on EPA data a typical 100 SF commercial office may contain on average 3916 μg of formaldehyde. This formaldehyde can be completely removed with 2-4 plants.



ARCH 1250
APPLIED ENVIRONMENTAL STUDIES

CLASS SIX
SITE BIOLOGY

John Seitz, RA, LEED AP
Adjunct Assistant Professor