

Pollution Remediation and Contamination Risk

**NJ Shade Tree Federation
Oct. 25th 2014**

**Frank J. Gallagher
Department of Landscape Architecture
School of Environmental and Biological Sciences
Rutgers the State University**

Gallagher@sebs.rutgers.edu

1) Provide some context?

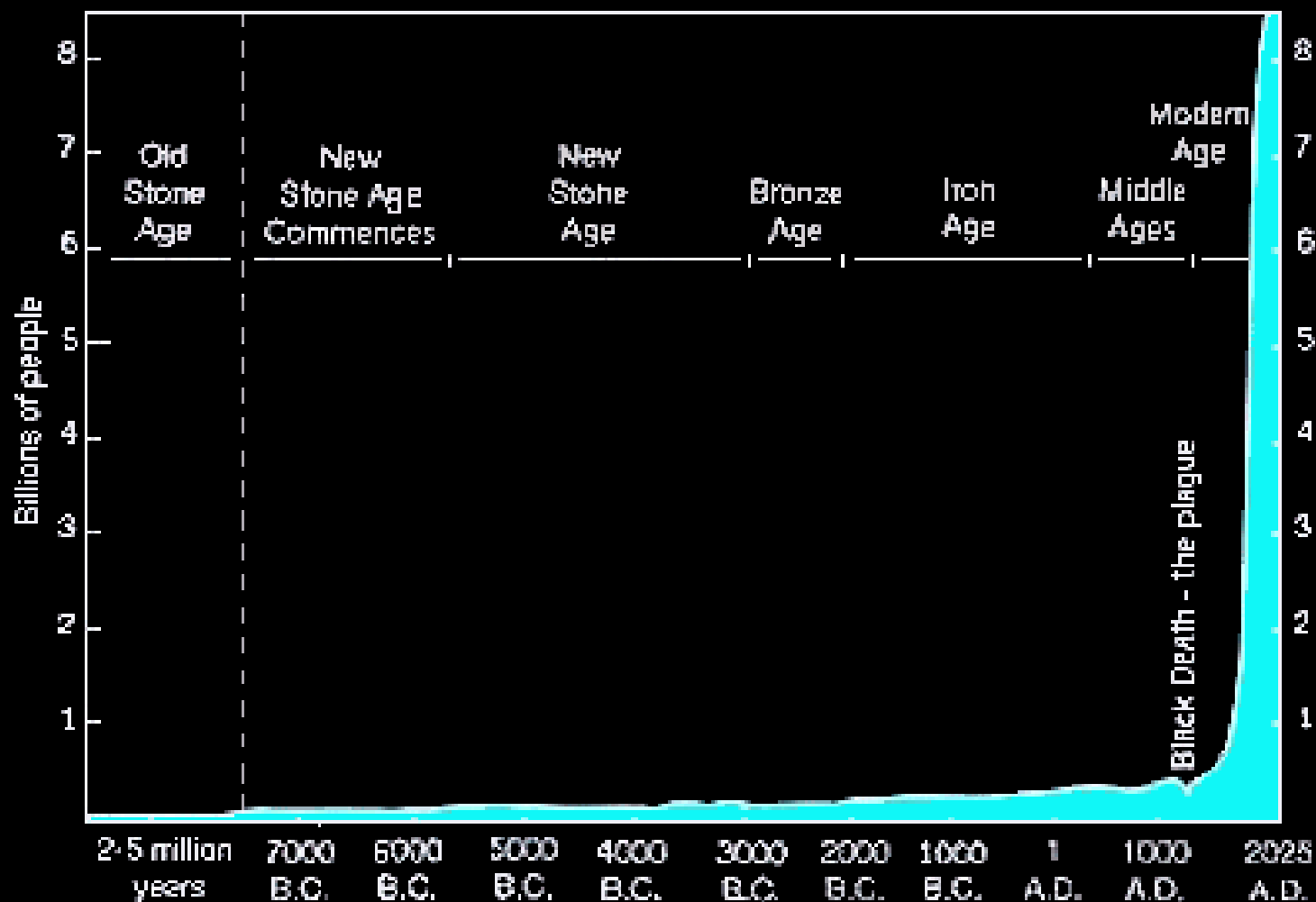
2) What does the research actually say?

3) Why trees, why open space?



Miloni Mody, MLA Rutgers

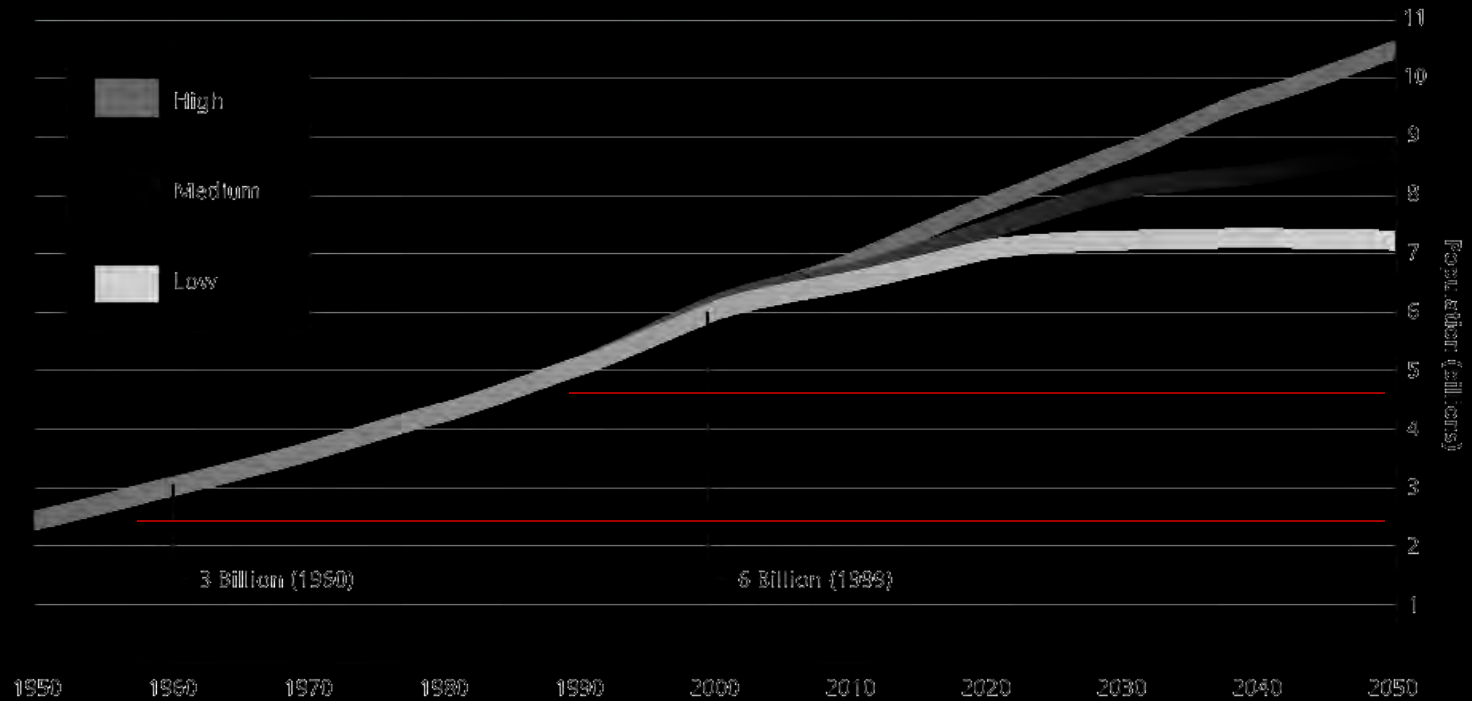
World Population Growth Through History



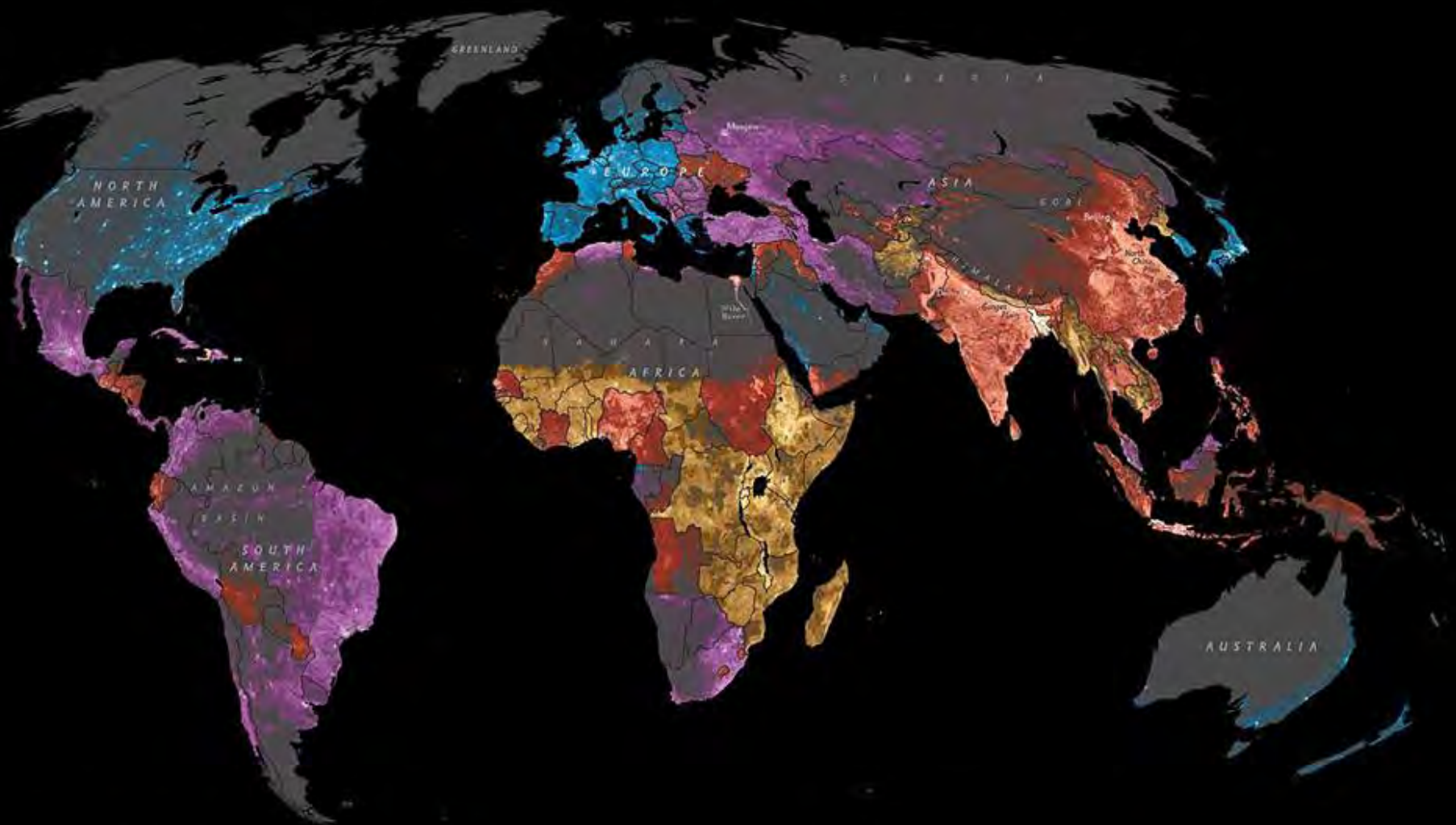
World Population Growth, Actual and Projected, 1950-2050

**World
population: the
growing
numbers**

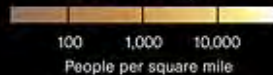
We entered the 20th century with a population of less than 2 billion people. We started 21st century with more than 6 billion.



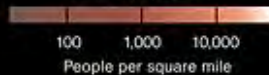
Source: United Nations, 1998, *World Population Prospects (The 1998 Revision)*.



LOW INCOME LEVEL
\$995 or less a year



LOWER MIDDLE
\$996 to \$3,945



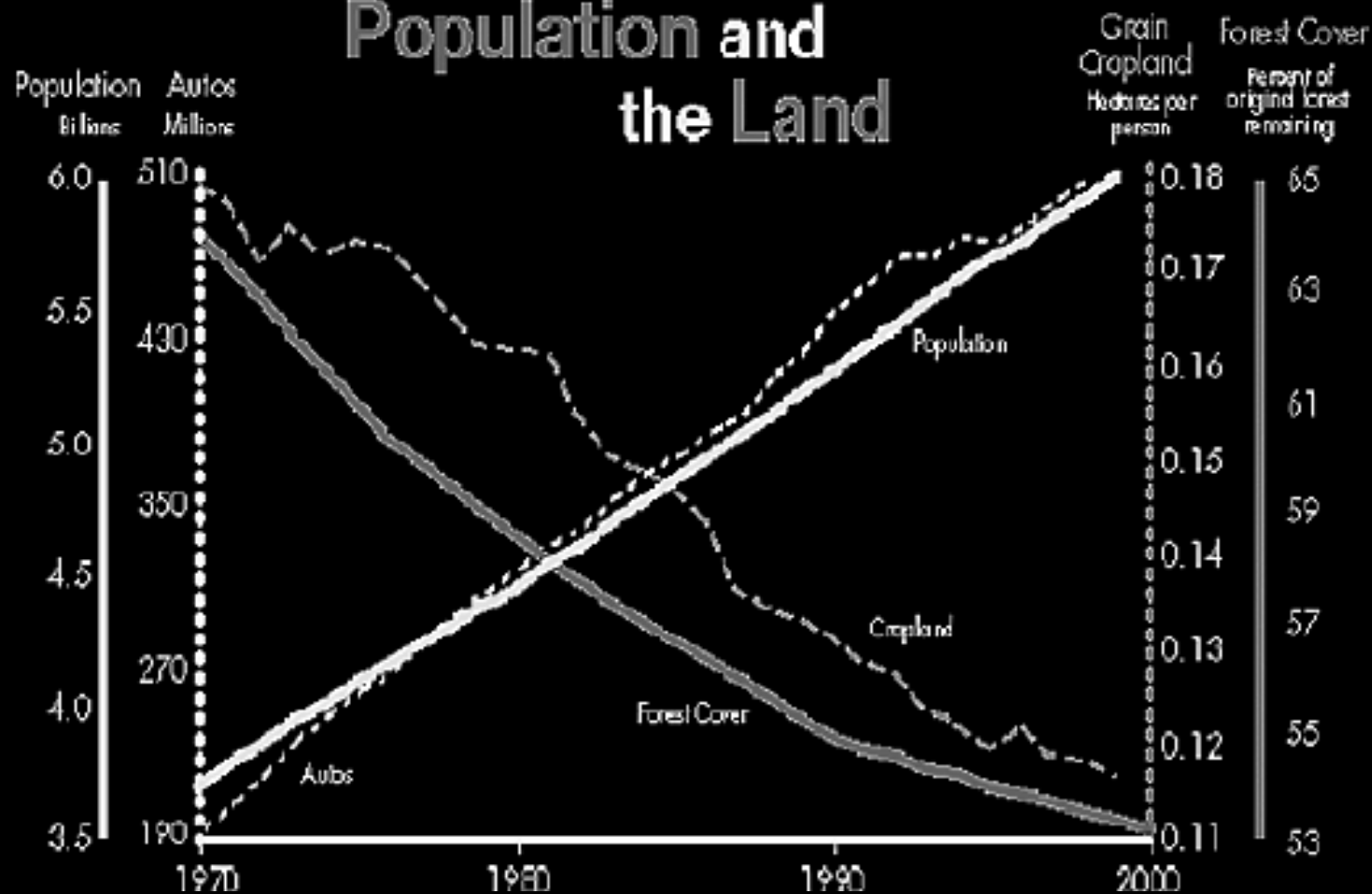
UPPER MIDDLE
\$3,946 to \$12,195



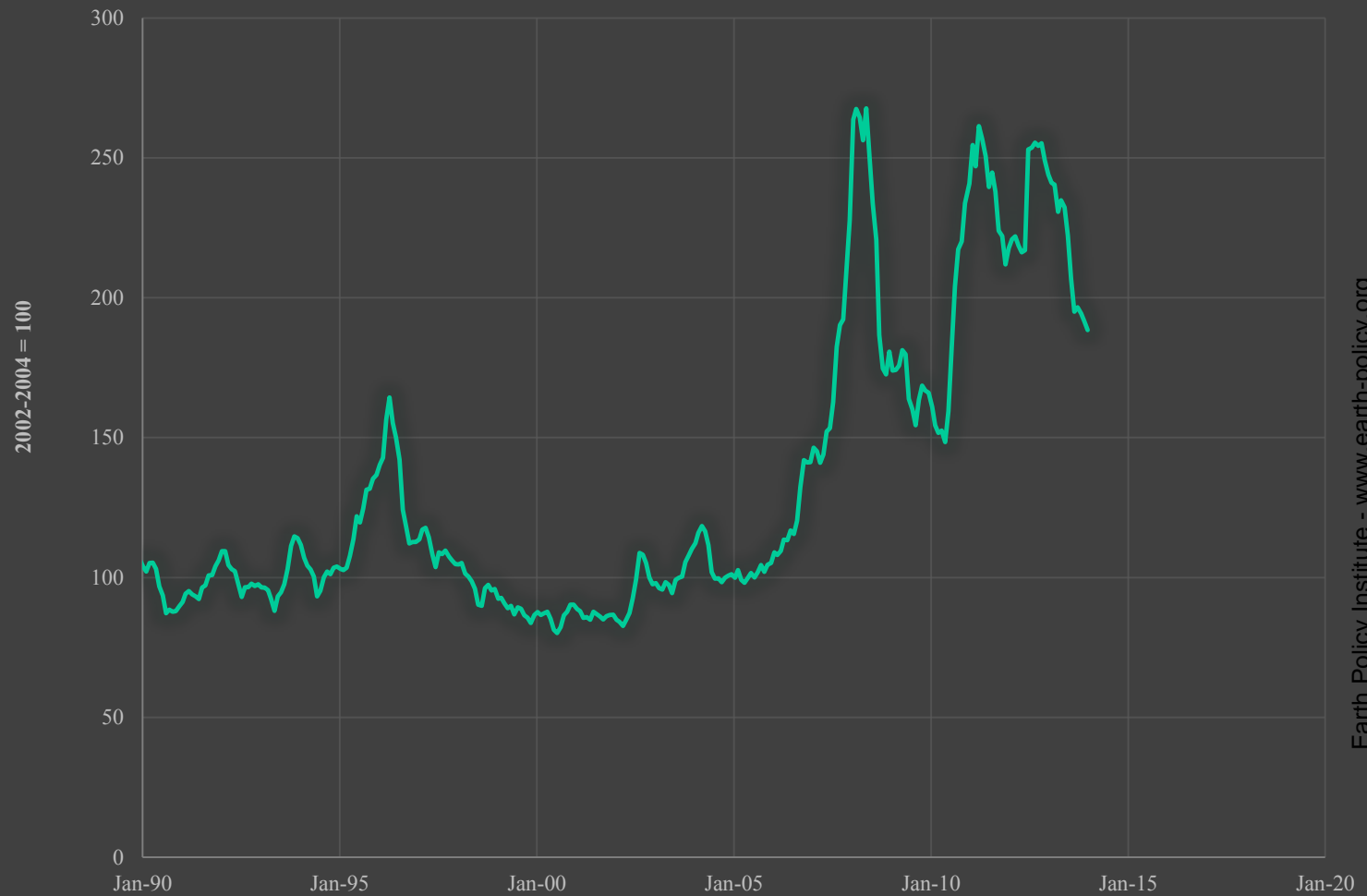
HIGH
\$12,196 or more



Population and the Land



World Monthly Grains Price Index, January 1990 – January 2014

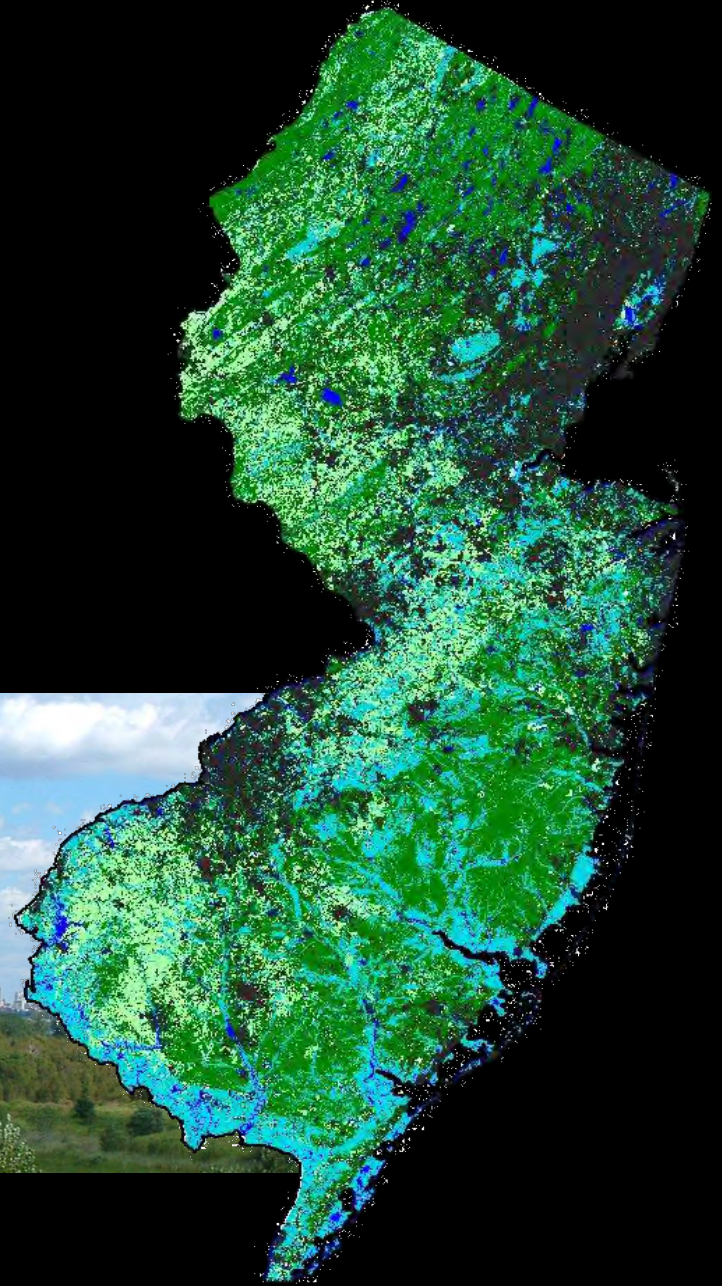


Source: FAO

World Ecological Footprint, 1961-2001



The world is in transition from an era of food abundance to one of scarcity. Over the last decade, world grain reserves have fallen by one third. World food prices have more than doubled, triggering a worldwide land rush and ushering in a new geopolitics of food. Food is the new oil. Land is the new gold.

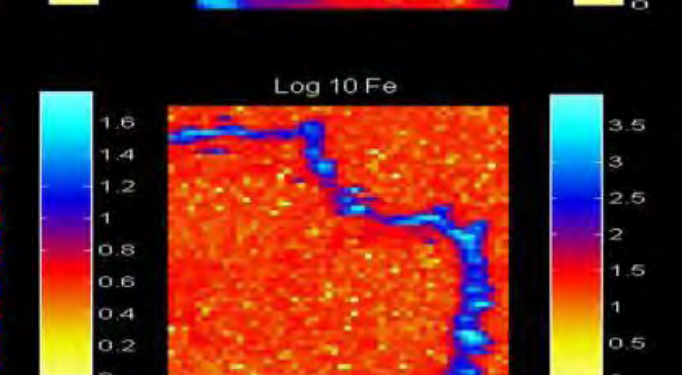
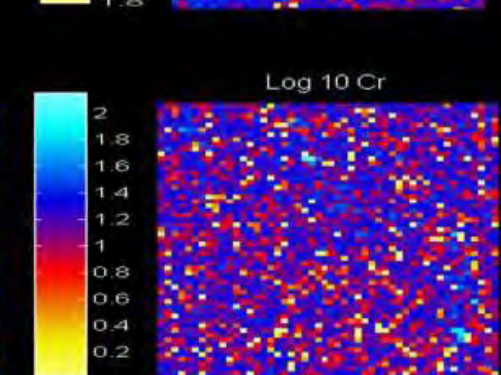
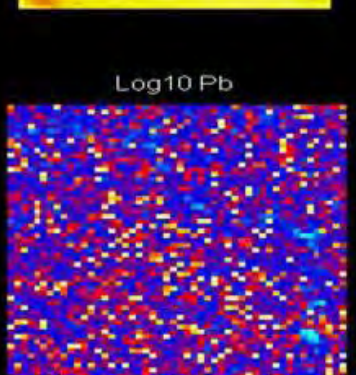
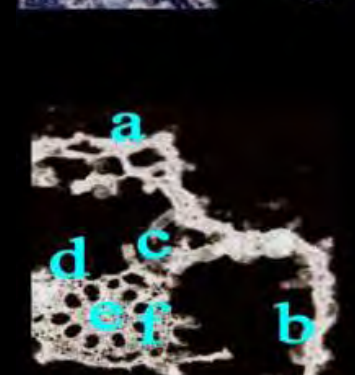
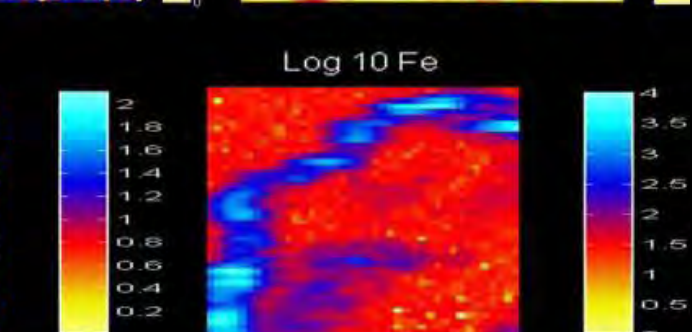
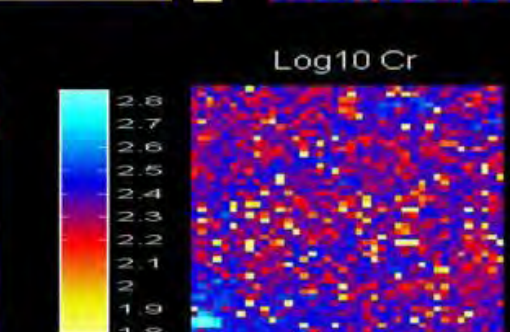
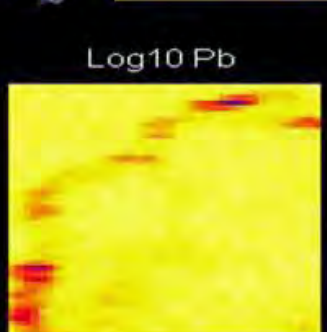
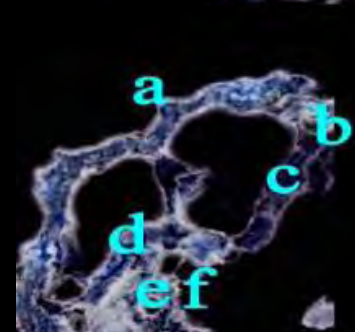
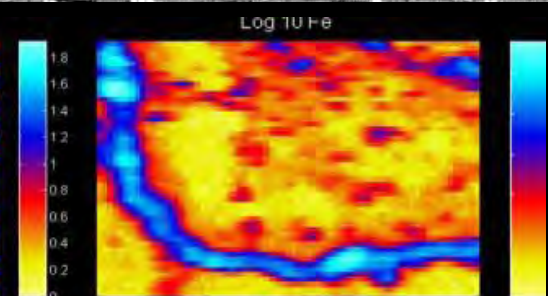
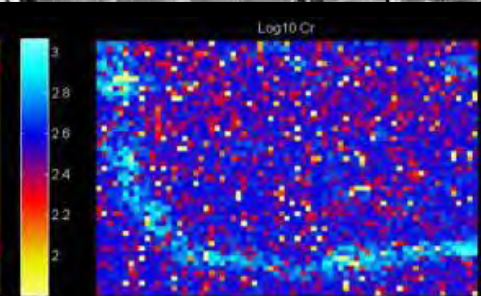
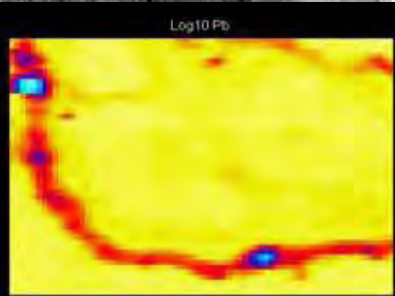
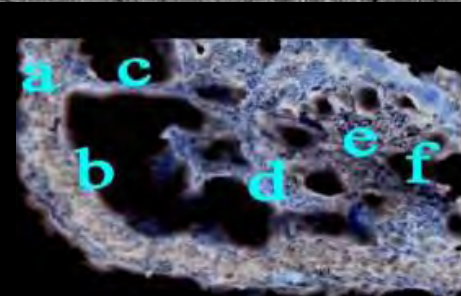
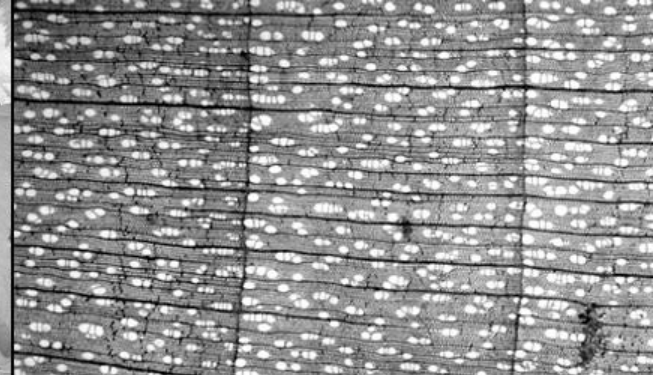


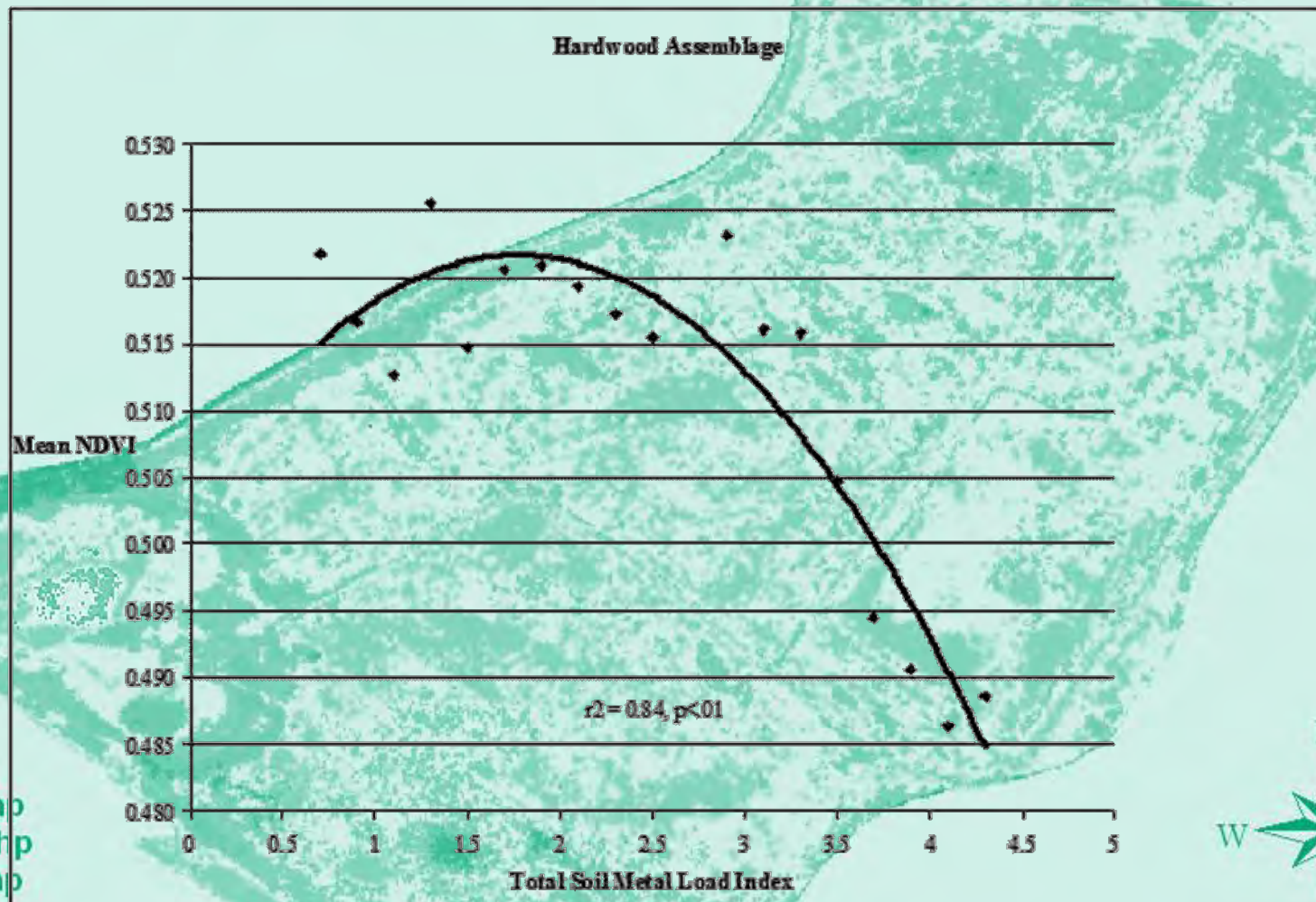
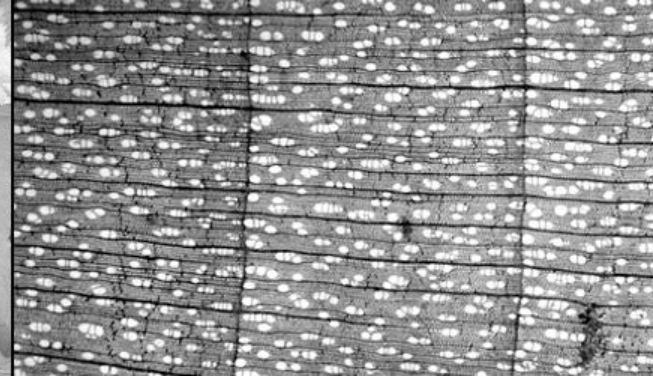


What does the research actually say?

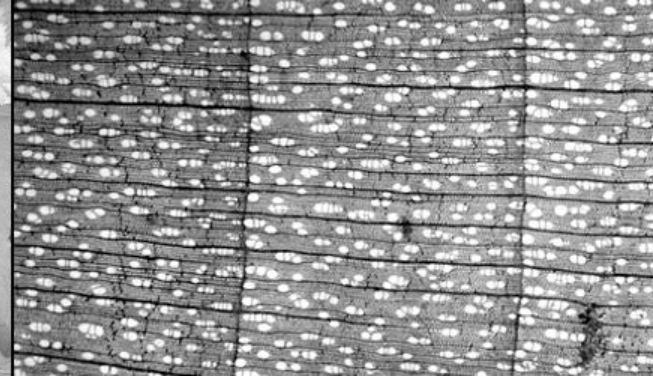


How do altered systems function? Given time will the selective pressure of the anthropogenic soils result in novel assemblages that are both ecologically viable and have the potential to reduce the risk associated with trophic transfer of contaminants?



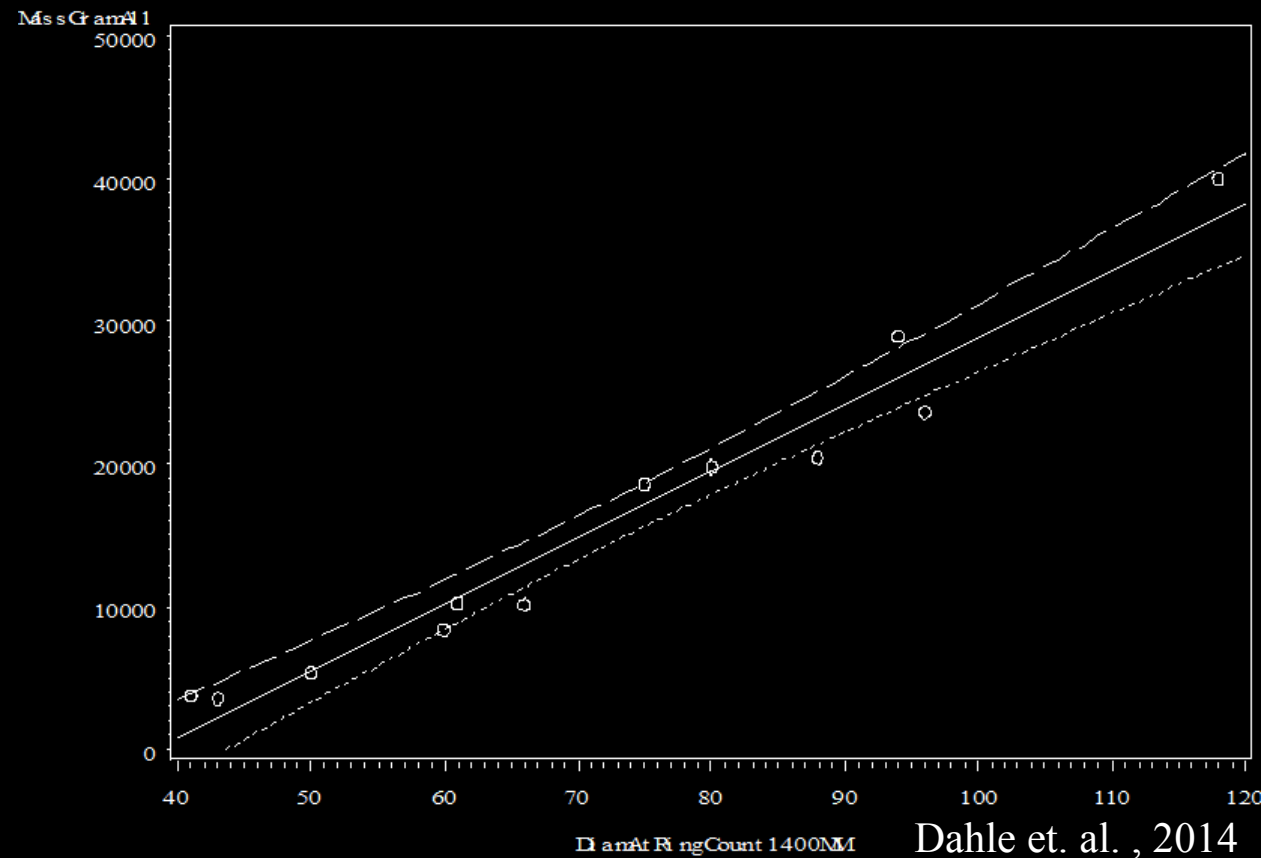


Blue.shp
Orange.shp
Yellow1.shp
Green1.shp
Green2.shp
Green3.shp



Regression Mass vs DBH

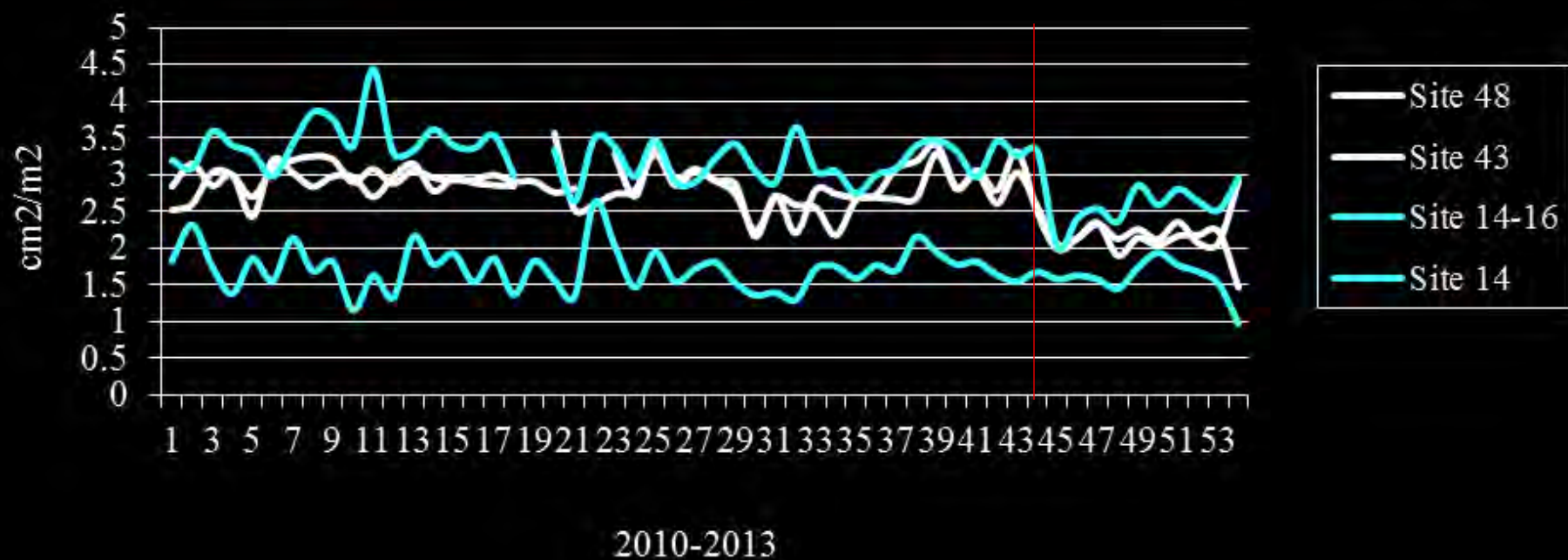
Total Above Ground Mass by DBH with 95% CI

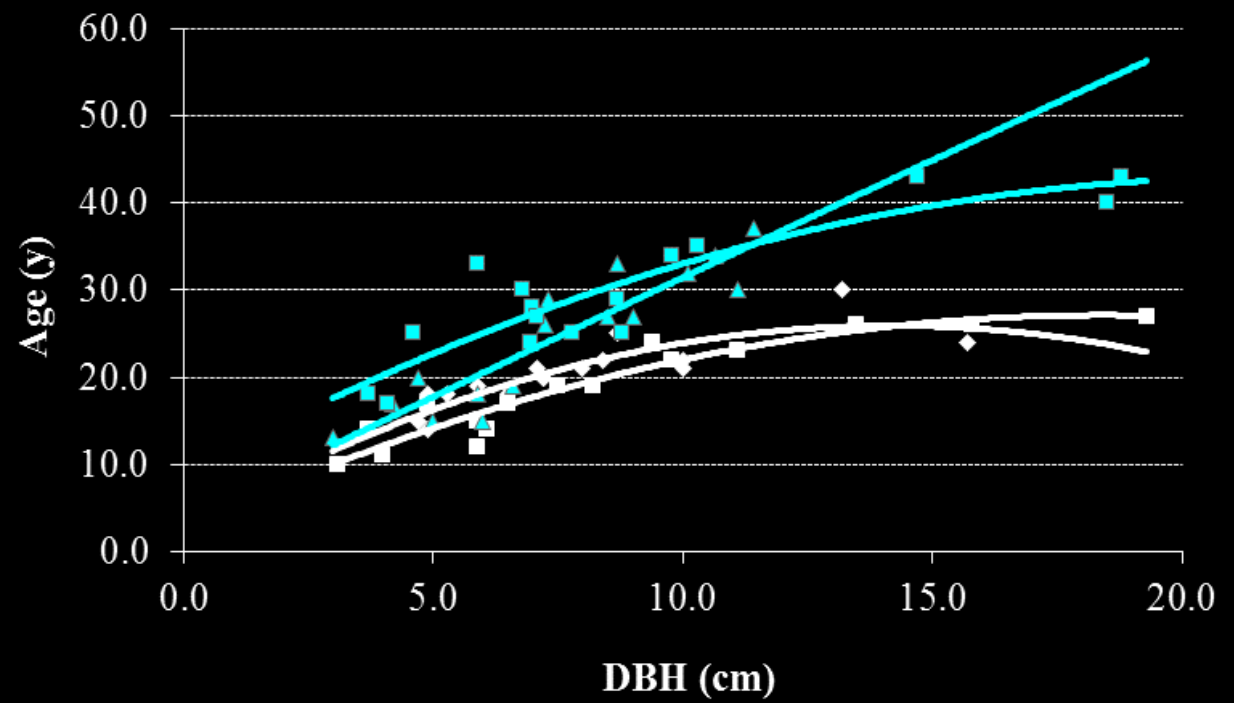
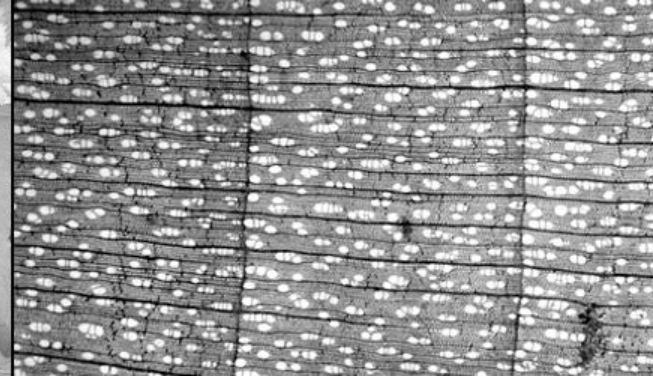


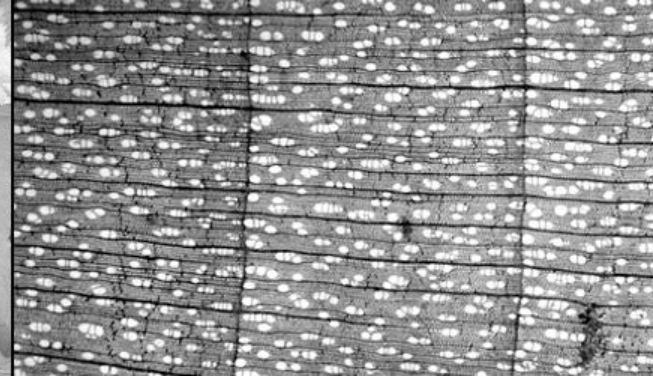
Dahle et. al., 2014



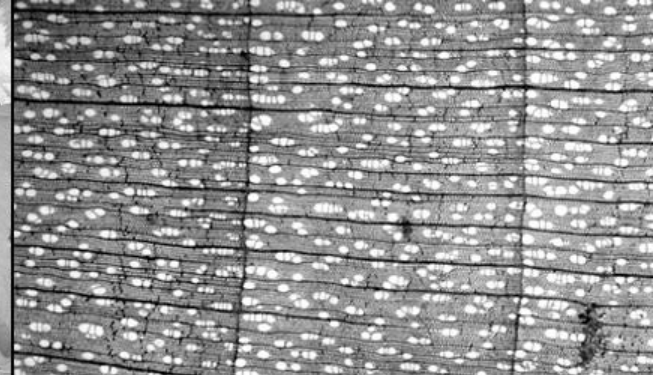
LAI

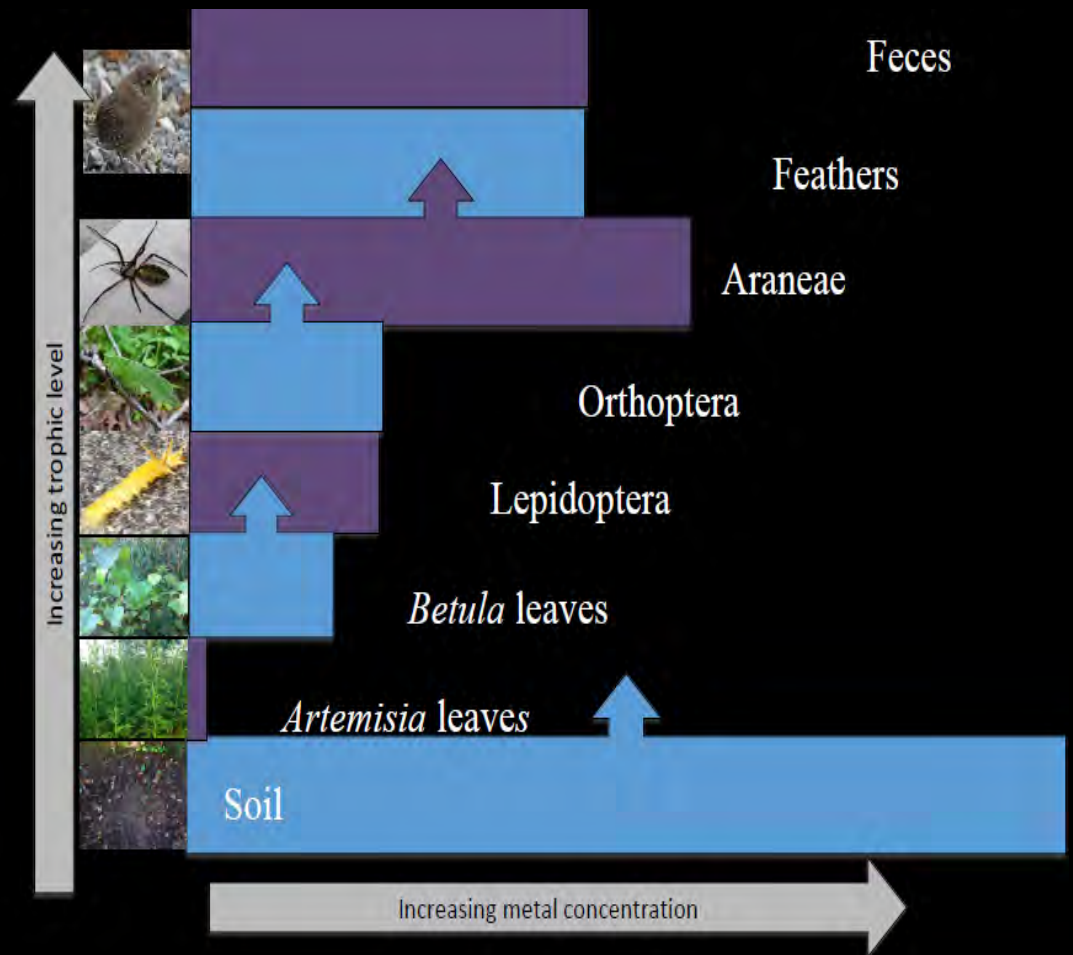
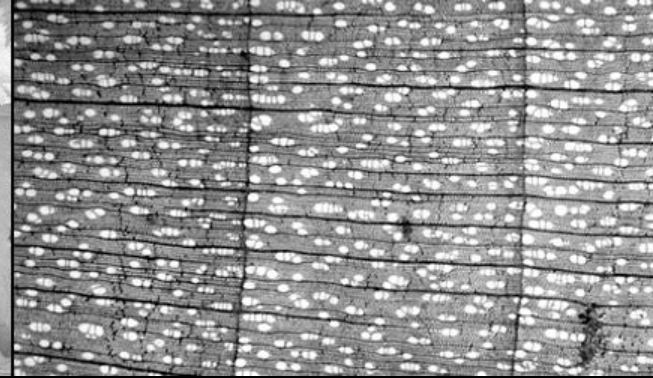


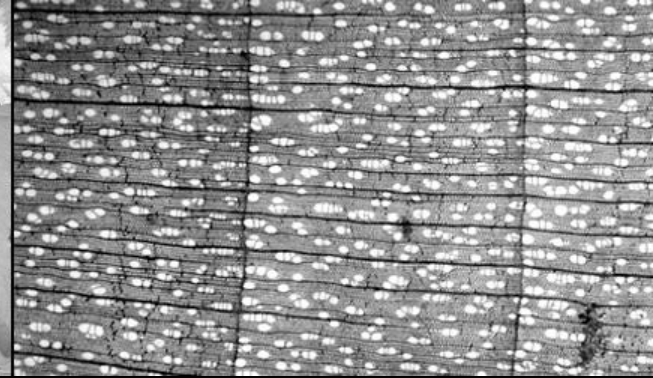




Site	Biomass	BA	n Density	ean DBH
	(kg ha ⁻¹)	(m ² ha ⁻¹)	trees ha ⁻¹)	(cm)
14	48504b	3.06±3.01	2430	5.57±11.16
14-16	71935a	3.80± 8.17	2150	5.85±14.44
43	40017b	1.09±2.52	2740	6.67±7.15
48	50362ab	3.53±4.64	2160	5.34±10.21







Trajectory

Herb/Grasses

Pioneer Forest

Mature Urban Forest

64173

Bare
Ground

Grasses
Herbs

Shrubland

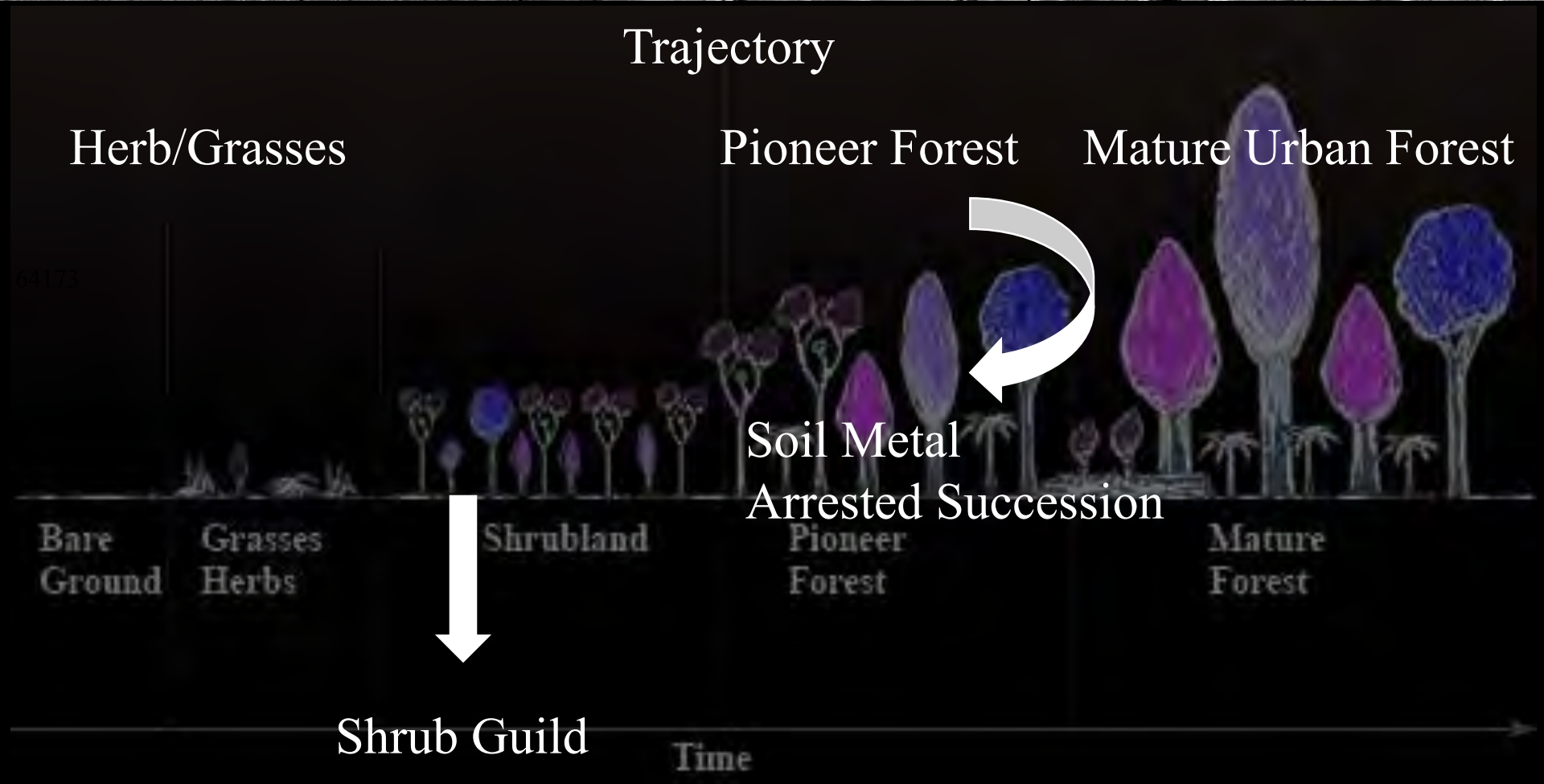
Pioneer
Forest

Mature
Forest

Soil Metal
Arrested Succession

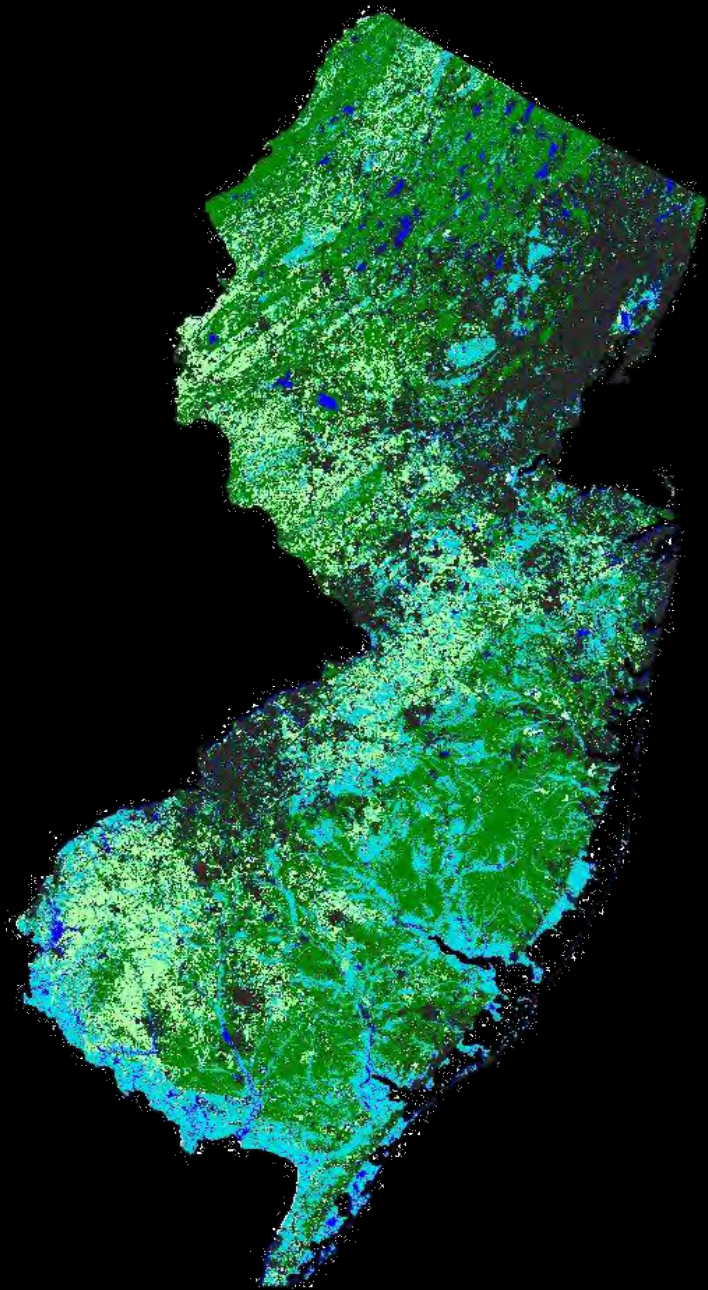
Shrub Guild

Time





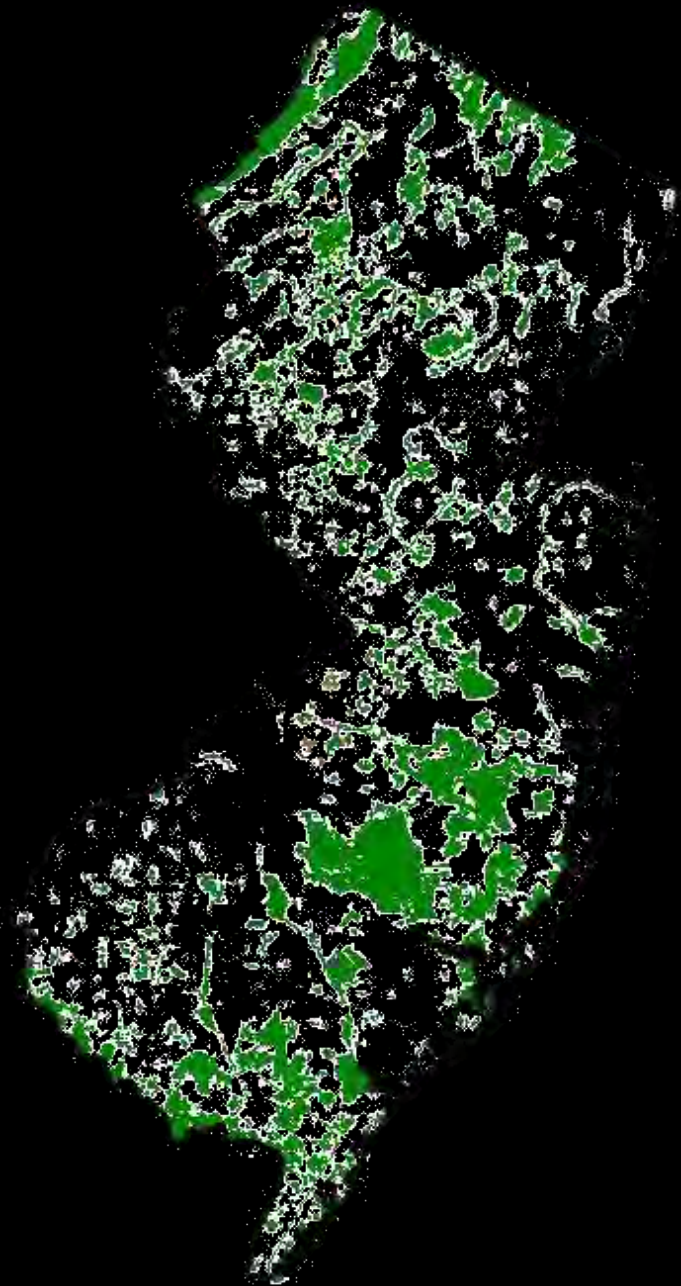
Why trees, why open space?



6,769 (-11%)

LARGEST INCREASE
Lakewood, up
32,491 (+54%)

CHANGE IN
POPULATION
BY MUNICIPALITY
2000 TO 2010



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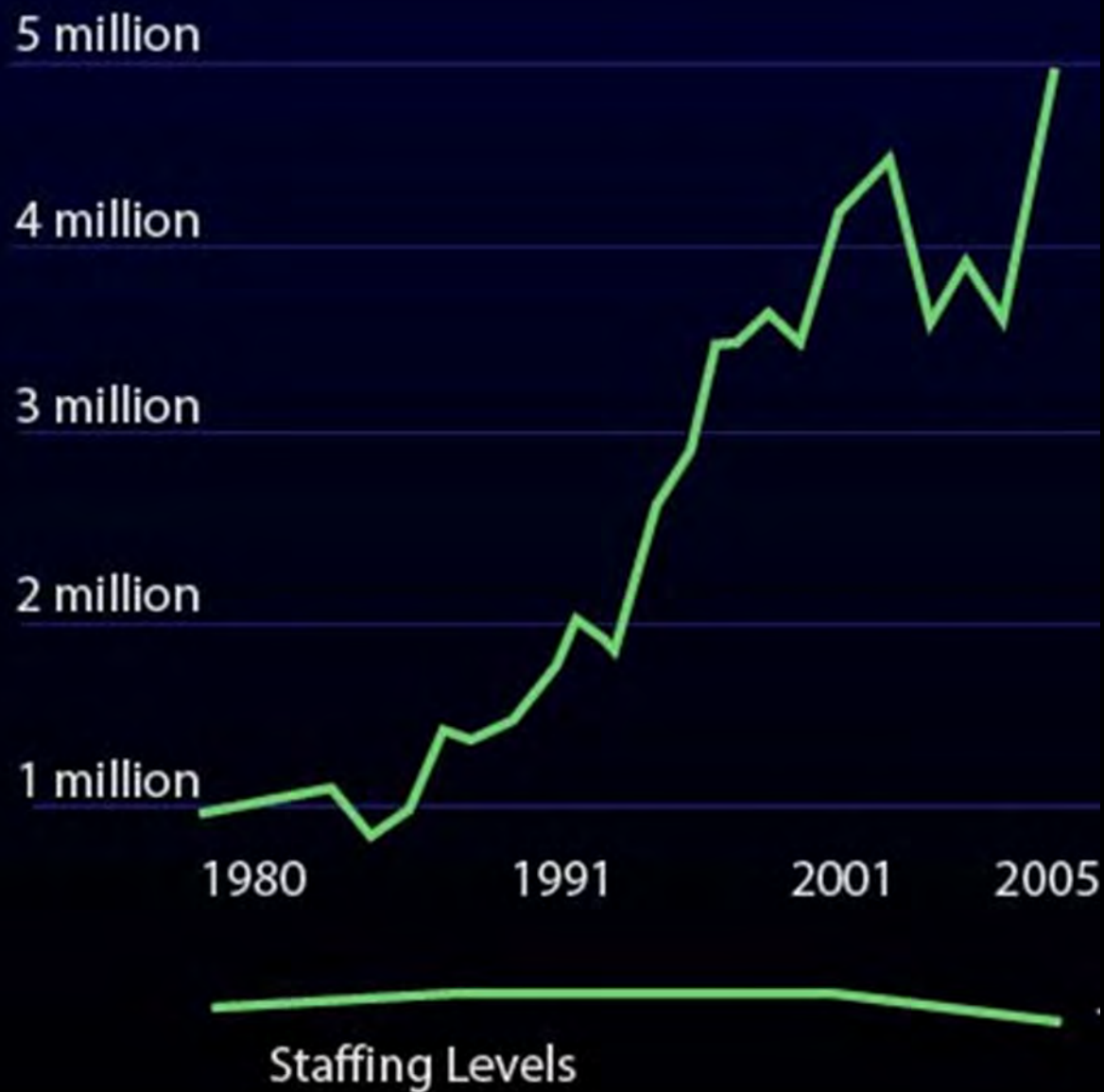


New Jersey's State parks and forests provide total annual gross benefits estimated at between \$953 million and \$1.4 billion, with a central estimate of \$1.2 billion (all figures in 2004 dollars). These annual benefit flows translate into present value amounts of between \$31.8 billion and \$45.4 billion of natural capital (central estimate \$38.5 billion) based on discounting at a societal discount rate of 3%/year over an unrestricted time horizon. Since some benefits could not be quantified, these estimates are believed to be conservative

Table 2. Economic Impacts of Visitor Spending : Direct & Secondary Effects

Sector/Spending category	Direct Sales \$000's	Jobs	Personal Income \$000's	Value Added \$000's
Motel, hotel cabin or B&B	-	-	-	-
Camping fees	1,193	13	145	345
Restaurants & bars	94,653	2,050	38,265	43,170
Admissions & fees	35,172	700	12,953	21,727
Gambling	-	-	-	-
Other vehicle expenses	4,010	49	814	1,870
Local transportation	190	5	92	103
Grocery stores	11,391	207	4,799	6,411
Gas stations	13,654	161	5,679	7,379
Other retail	30,447	564	14,371	20,075
Wholesale Trade	12,759	485	6,215	6,911
Local Production of goods	-	-	-	-
Total Direct Effects	203,468	4,234	83,333	107,990
Secondary Effects	125,539	885	40,468	73,269
Total Effects	\$ 329,008	5,118	\$ 123,801	\$ 181,259
Multiplier	1.62	1.21	1.49	1.68

Liberty State Park





GREEN ACRES FUNDING SUMMARY 1961–2009

Bond Acts and Other Sources

TOTAL: \$3.32 Billion

- 1961 \$60 Million (Land acquisition only)**
- 1971 \$80 Million (Land acquisition only)**
- 1974 \$200 Million (Funding for outdoor recreational development added)**
- 1978 \$200 Million**
- 1983 \$135 Million**
- 1987 \$35 Million* – for Green Trust loans only**
- 1989 \$230 Million***
- 1992 \$200 Million**
- 1995 \$250 Million (plus \$30 Million for Blue Acres)***
- 1999 Garden State Preservation Trust \$98 million per year for 30 years (10 years for new projects, 20 years for bond debt service)**
- 2003 \$120 million**
- 2007 \$109 million (plus \$12 million for Blue Acres)**
- 2009 \$218 million (plus \$24 million for Blue Acres)***

