



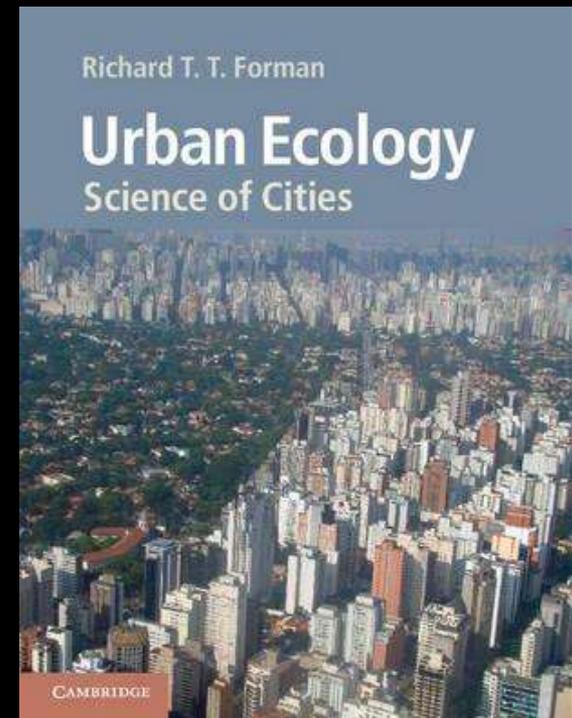
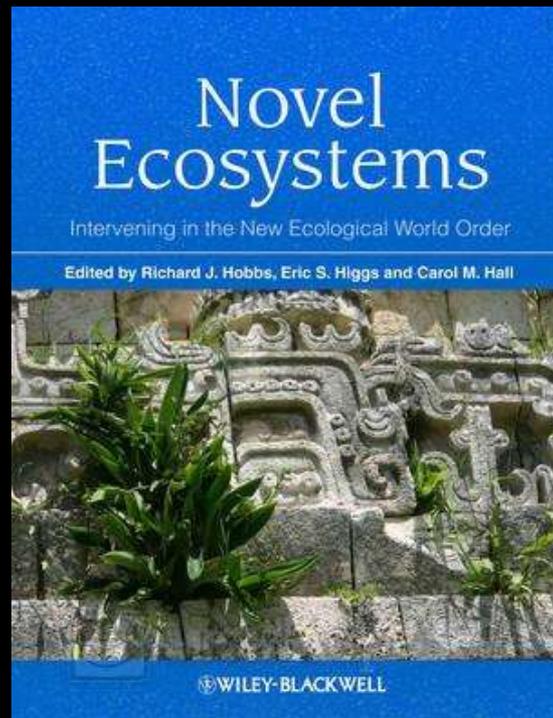
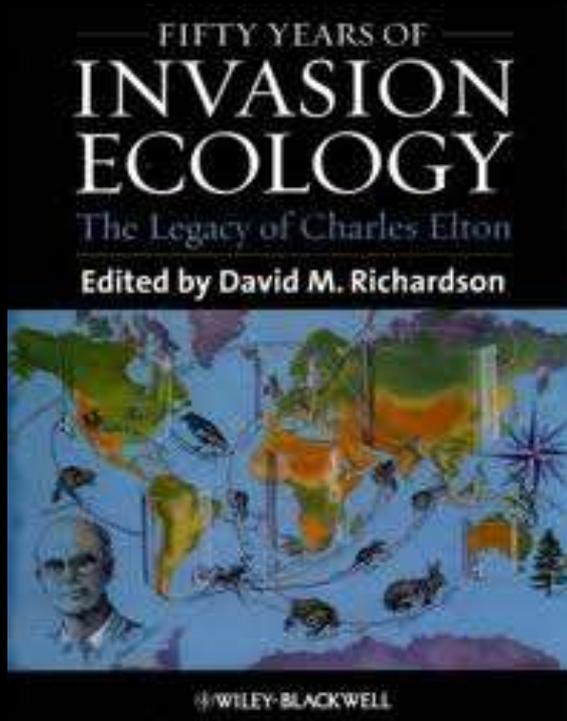
Center for Environmental Research at Hornsby Bend



Nature Out of Place: Invasive Species, Novel Ecosystems, and Urban Ecology

Kevin M. Anderson, Ph.D.

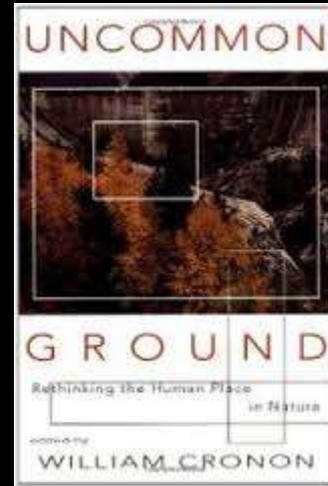
Austin Water – Center for Environmental Research



Rethinking the Human Place in Nature

We need to embrace the full continuum of a natural landscape that is also cultural, in which the city, the suburb, the pastoral, and the wild each has its proper place, which we permit ourselves to celebrate without needlessly denigrating the others.

William Cronon “The Trouble with Wilderness or, Getting Back to the Wrong Nature”
in *Uncommon Ground: Rethinking the Human Place in Nature* (1995)



The Socioecological Problem

- In American cities, we perceive nature in the urban landscape filtered through a conceptual framework that prejudices its ecological and cultural value.
- Our understanding of what constitutes good urban nature in American cities is shaped by culturally dominant metaphors of nature.

Wilderness

Pastoral

Urban Nature?



Perspectives on Urban Nature and the American City

The Sacred and the Mundane

Wilderness and the City

Nature and Humans

Natural and Artificial

Pristine and Degraded

Native and Non-native



Invasive
Non-Native
Species



Once a rock dove,
now the winged rat
of the city

Nature Out of Place

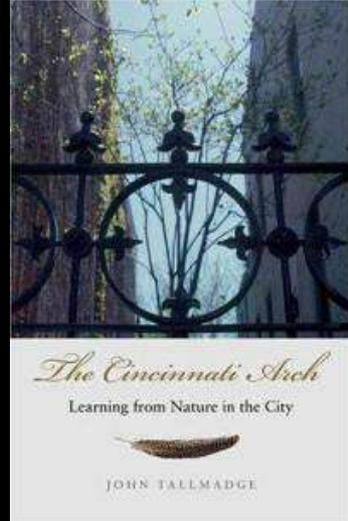
“Established Notions of Nature” and Urban Nature

The fact is that urban landscapes are just too mixed up, chaotic, and confused to fit our established notions of beauty and value in nature.

Maybe it's not really nature at all, not a real ecosystem, just a bunch of weeds and exotics mixed up with human junk.

John Tallmadge

The Cincinnati Arch: Learning from Nature in the City (2004)

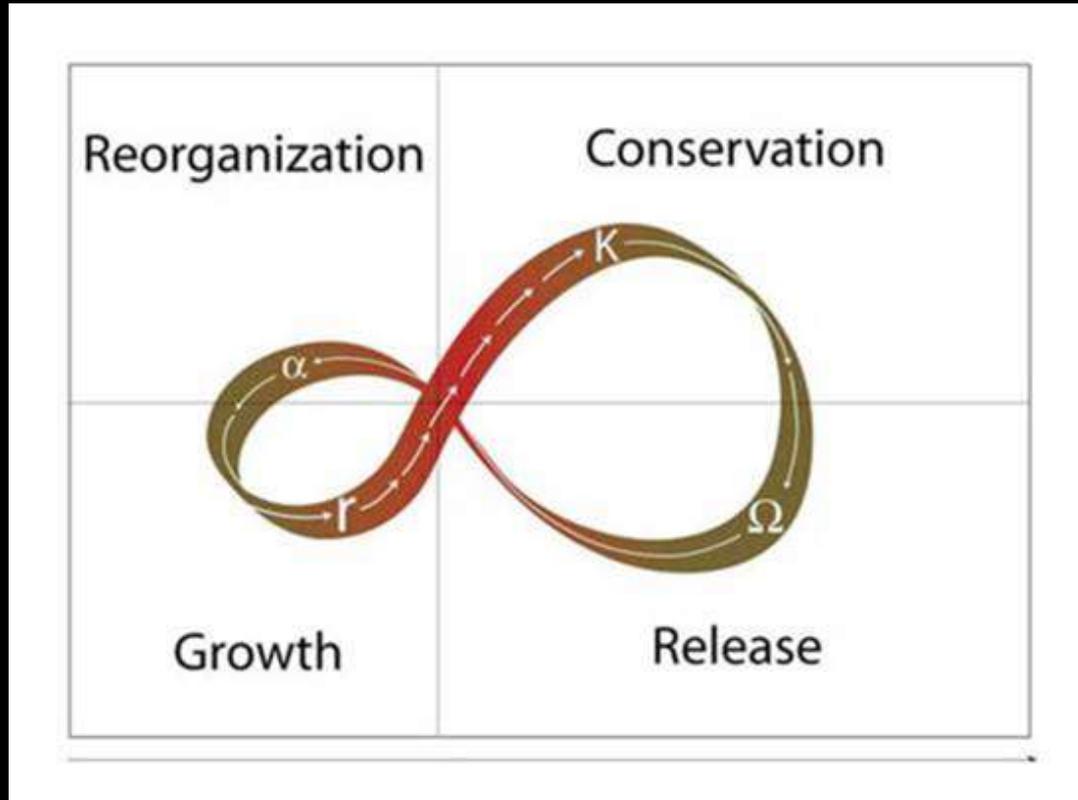


Nature Out of Place

Permanence and Change

Nothing Endures But Change

Heraclitus 540-480BC



Permanence and Change

Retrospective Ecology - Lament for A Lost Natural World

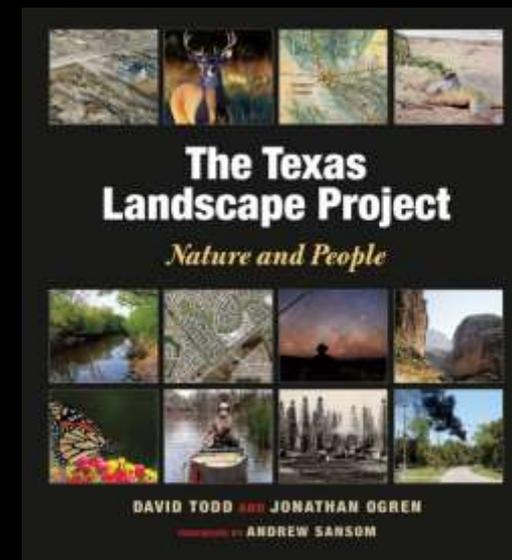
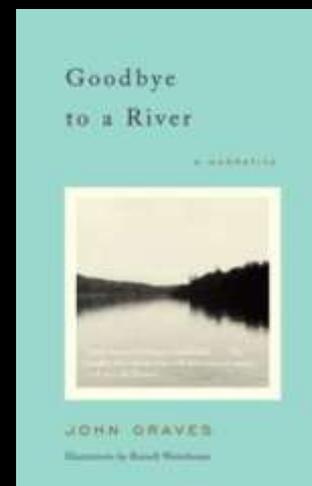
In recent decades it has become customary, and right I guess, and easy enough with hindsight, to damn the ancestral frame of mind that ravaged the world so fully and so soon.

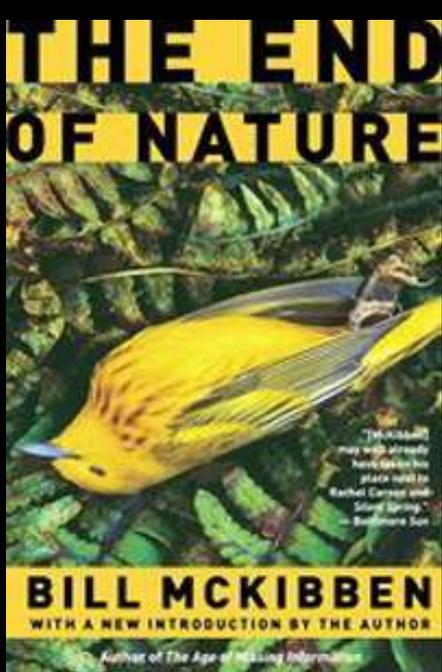
What I myself seem to damn mainly though, is just not having seen it.

Without any virtuous hindsight I would likely have helped in the ravaging as did even most of those who loved it best.

But God! To have viewed it entire, the soul and guts of what we had and gone forever now, except in books and such poignant remnants as small swift birds that journey to and from the distant Argentine, and call at night in the sky.

From *Self Portrait, with Birds: Some Semi-Ornithological Recollections* (1991)





Retrospective Ecology and Environmentalism

The Lament - *The End of Nature* (1989)

"The idea of nature will not survive the new global pollution –

We have changed the atmosphere, and thus we are changing the weather, we make every spot on earth man-made and artificial.

We have deprived nature of its independence, and that is fatal to its meaning."

"There's no such thing as nature anymore—and there is nothing except us alone"

"Having lost its separateness, it loses its special power. Instead of being a category like God – something beyond our control – it is now a category like the defense budget or the minimum wage, a problem we must work out...one of the possible meanings of the end of nature is that God is dead."

Nature – Human Dualism

We are not part of nature.



Permanence and Change

Learning *to* Die *in the* Anthropocene

REFLECTIONS ON THE
END OF A CIVILIZATION

Roy Scranton

"Scranton draws on his experiences in Iraq to confront the grim realities of climate change. The result is a fierce and provocative book."

—Elizabeth Kolbert, author
of *The Sixth Extinction*

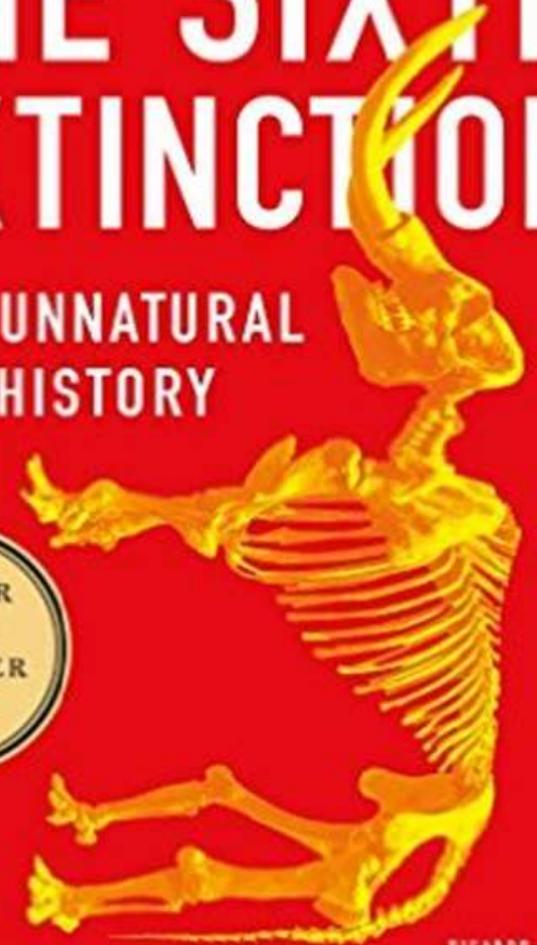


NEW YORK TIMES BESTSELLER

THE SIXTH EXTINCTION

AN UNNATURAL
HISTORY

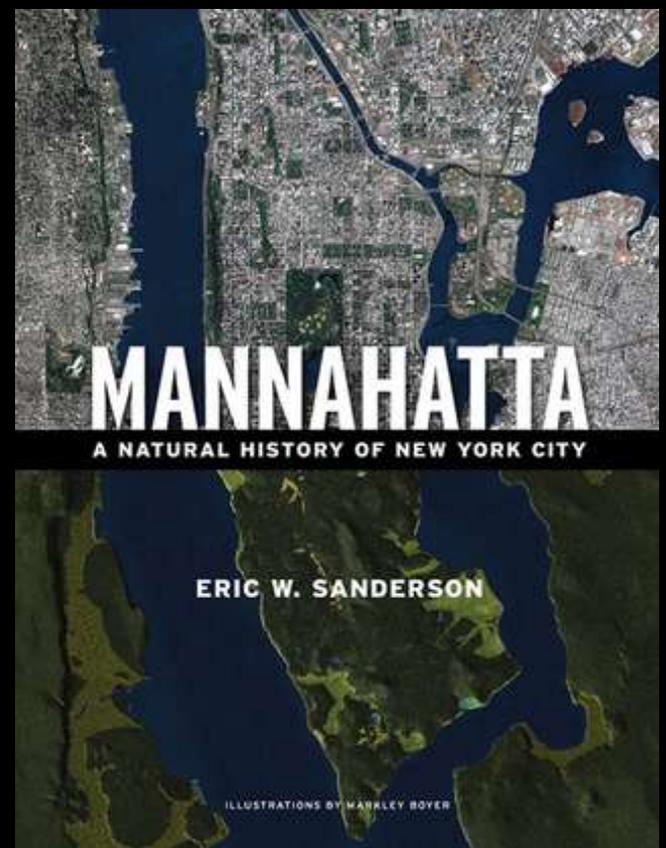
WINNER
of the
PULITZER
PRIZE



PICADOR

ELIZABETH KOLBERT

Author of *FIELD NOTES
FROM A CATASTROPHE*



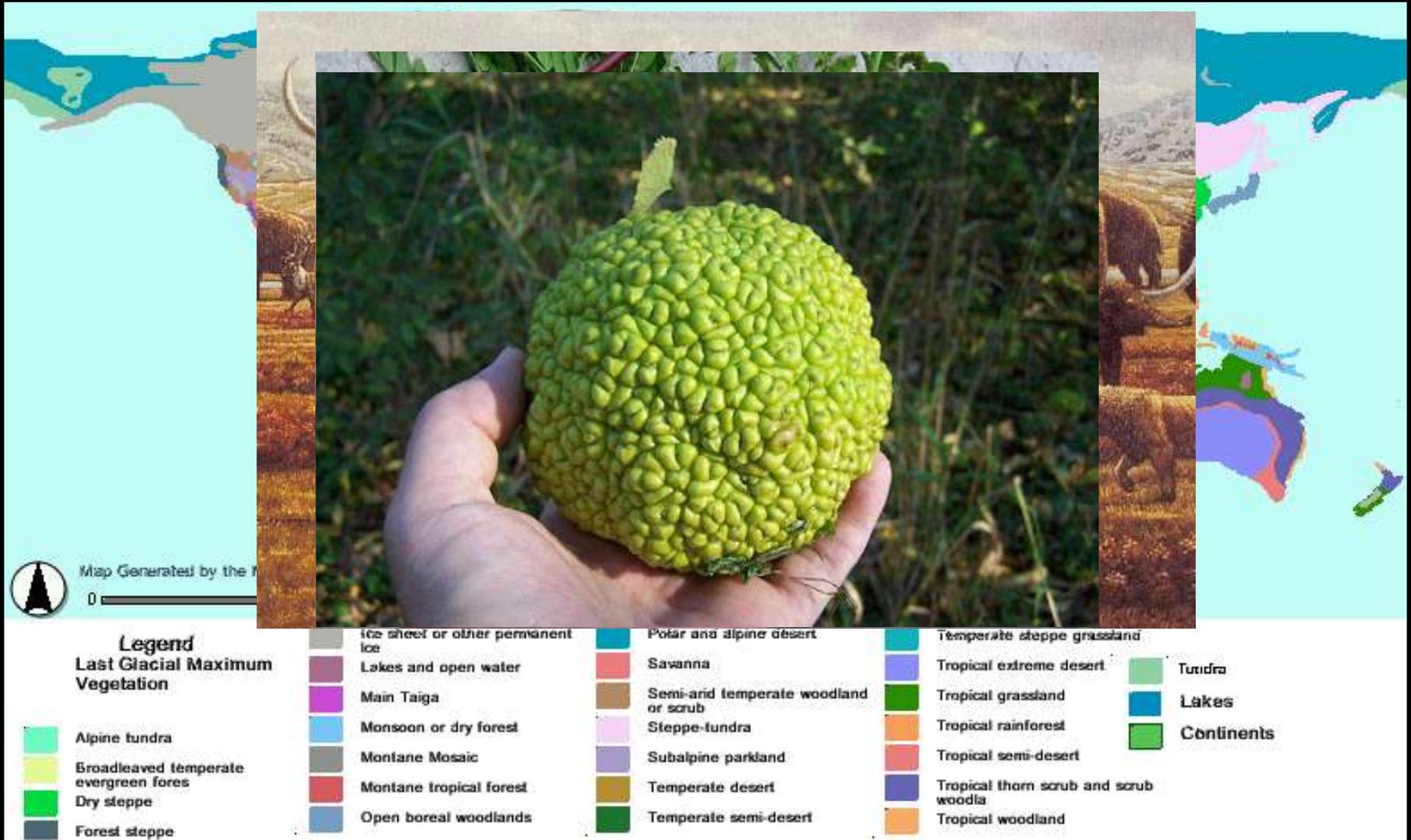
Retrospective Ecology, Historical Naturalness, and Urban Ecology

“The Mannahatta Project began in 1999, when landscape ecologist Dr. Eric Sanderson moved to New York City to work for the Wildlife Conservation Society. Dr. Sanderson realized that, to fully appreciate the concrete landscape of streets and buildings that was his new home, he would have to “go back in time” to recreate the its ecology from the “ground up.”

Going back to 1609 allows us to see what New York City was before it was a city and to reimagine the city’s development in a way that would incorporate more of the natural cycles and processes (such as the hydrological cycle) that made the island the ecological gem that it was.”

Which Historical Naturalness? Which “Entire”?

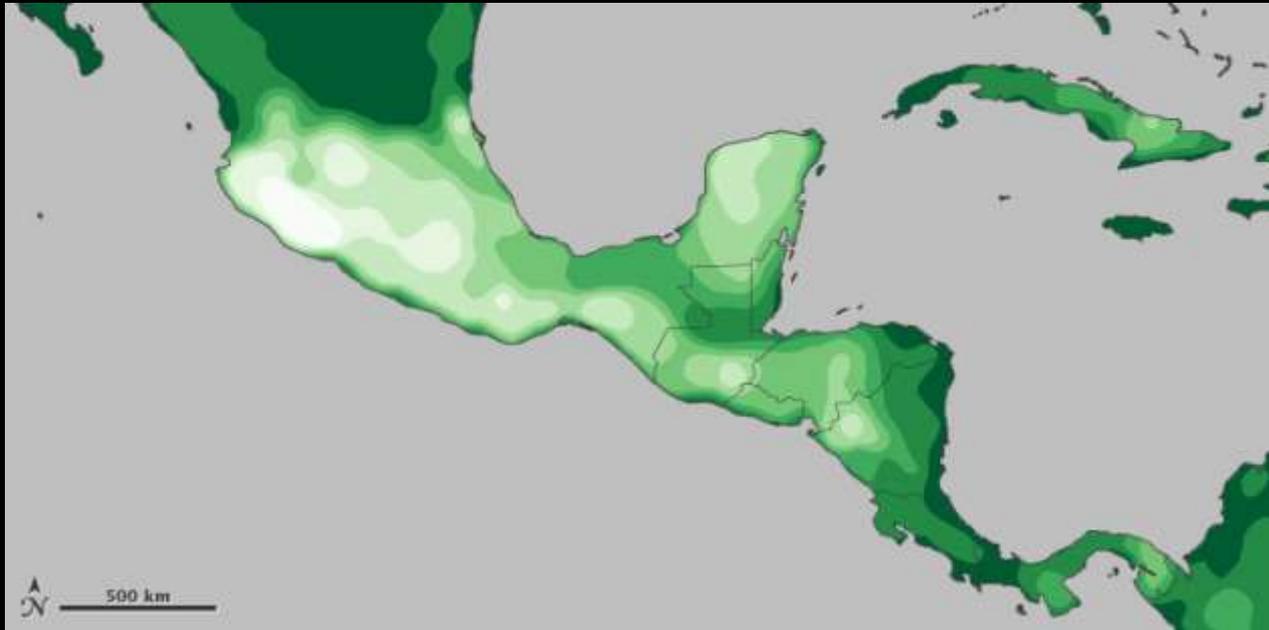
The Last Glacial Maximum (LGM) refers to a period in the Earth's climate history when ice sheets were at their maximum extension, between 26,500 and 19,000–20,000 years ago



Transformation
950 A.D.



How little native forest (dark green) remained at the end of the Mayan period around 950 AD.
By cutting down the forest, the Mayans changed their local climate.

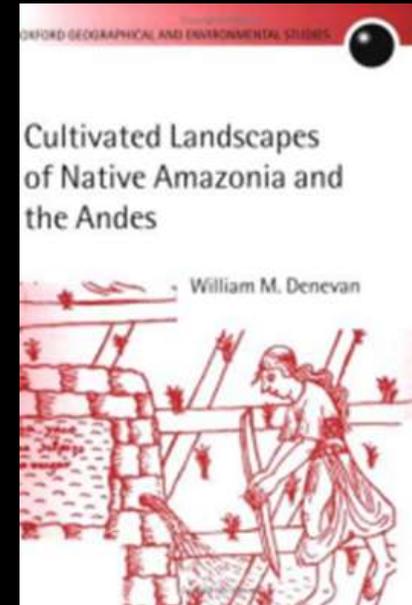


The Pristine Myth: The Landscape of the Americas in 1492

William M. Denevan

Department of Geography, University of Wisconsin

Abstract. The myth persists that in 1492 the Americas were a sparsely populated wilderness, “a world of barely perceptible human disturbance.” There is substantial evidence, however, that the Native American landscape of the early sixteenth century was a humanized landscape almost everywhere. Populations were large. Forest composition had been modified, grasslands had been created, wildlife disrupted, and erosion was severe in places. Earthworks, roads, fields, and settlements were ubiquitous. With Indian depopulation in the wake of Old World disease, the environment recovered in many areas. A good argument can be made that the human presence was less visible in 1750 than it was in 1492.



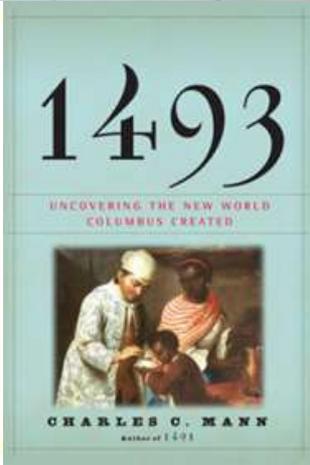
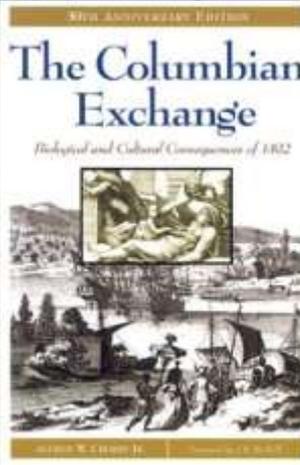
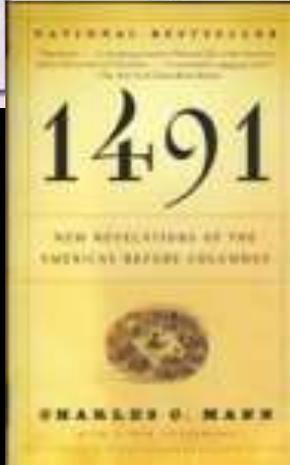
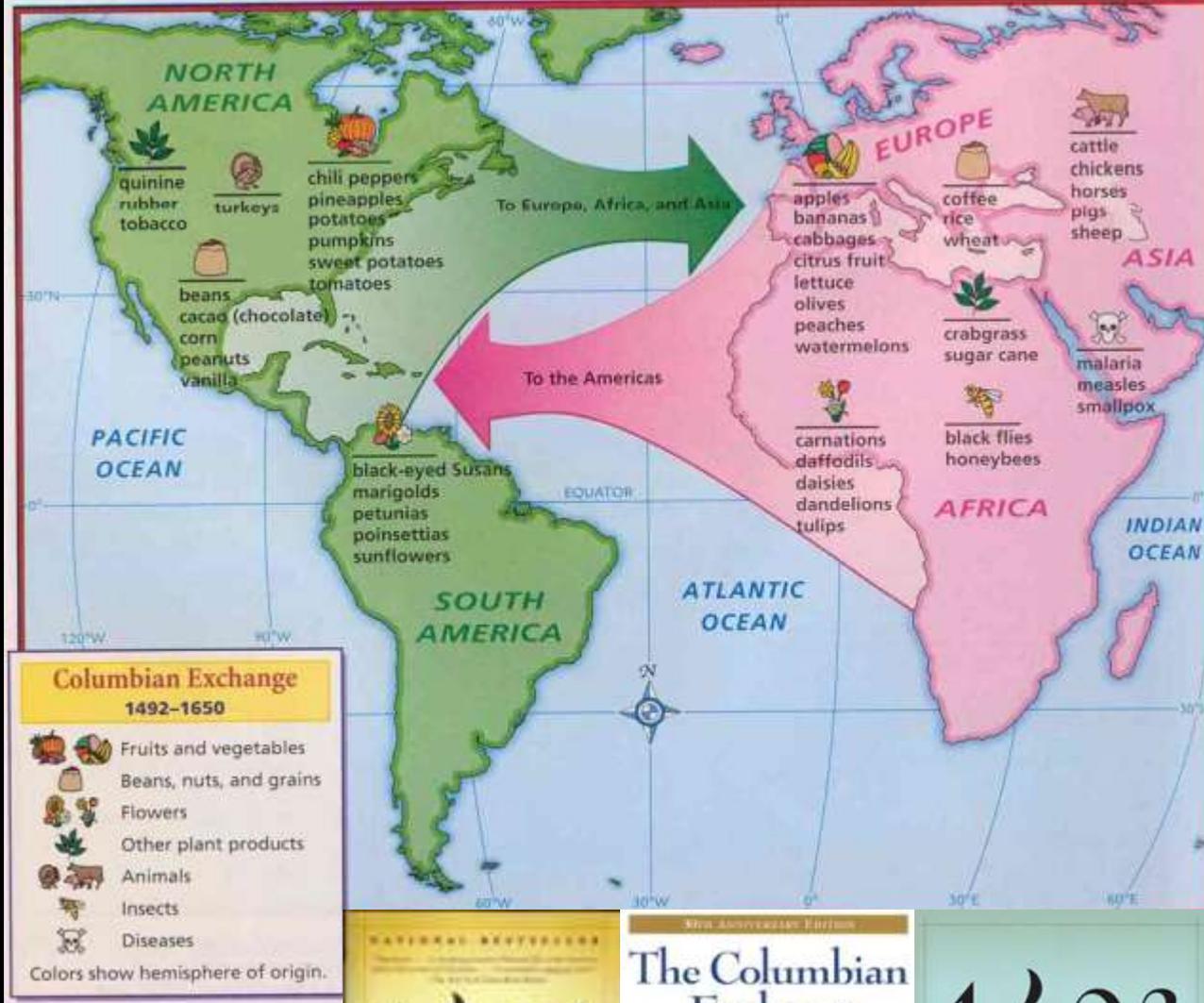
Annals of the Association of American Geographers, Vol. 82, No. 3, The Americas before and after 1492: Current Geographical Research. (Sep., 1992), pp. 369-385.

1492 The Columbian Exchange

“Until about 200 million years ago Eurasia and the Americas were a single landmass called Pangaea. It broke apart and for millions of years the parts had little communication. As Crosby put it, Columbus initiated the process of knitting back together the seams of Pangaea.

Ever since 1492, the hemispheres have become more and more alike, as people mix the world’s organisms into a global stew through the Columbian Exchange.”

Mann, 1491



Ecological Release and “Invasion”

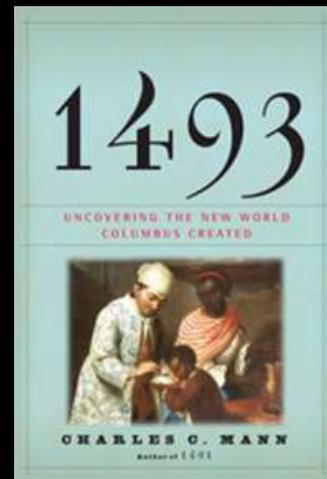
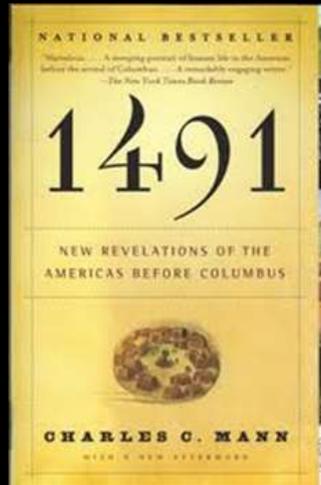
Ecological release occurs when a species expands its niche within its own habitat or into a new habitat where there is little competition for resources.

“Columbus set off an ecological explosion of a magnitude unseen since the Ice Ages.

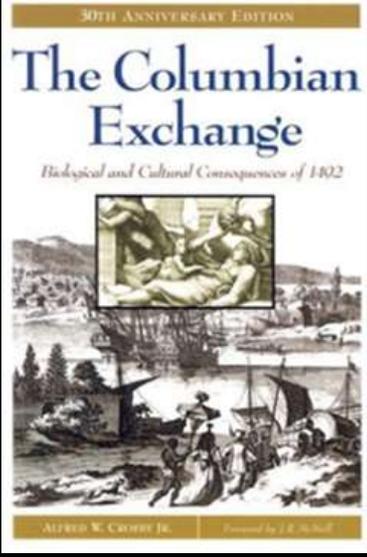
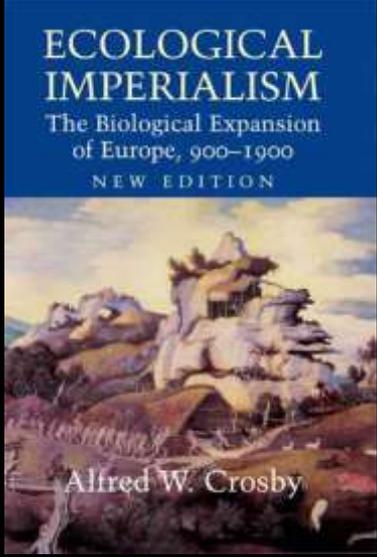
Some species were shocked into decline (most prominent among them *Homo sapiens*, which in the century and a half after Columbus lost a fifth of its number, mainly to disease).

Others stumbled into new ecosystems and were transformed into environmental overlords: picture-book illustrations of what scientists call “ecological release.” Mann, 1491

- Not all released species will become “invasive”.
- Most released species that don’t immediately die out tend to find a small niche in the local ecosystem.



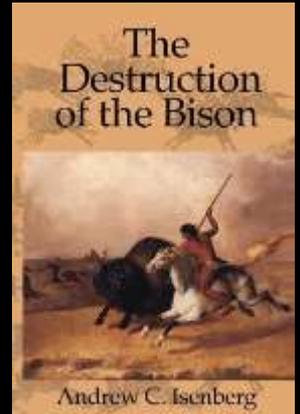
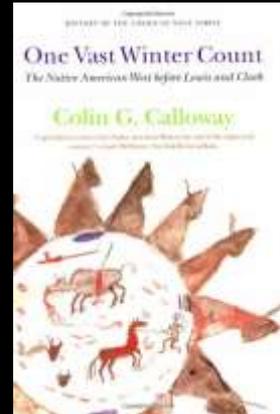
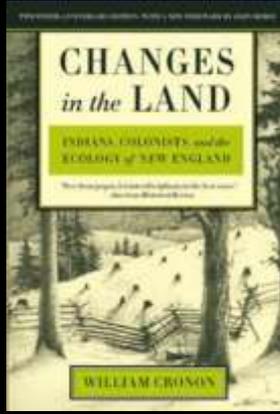
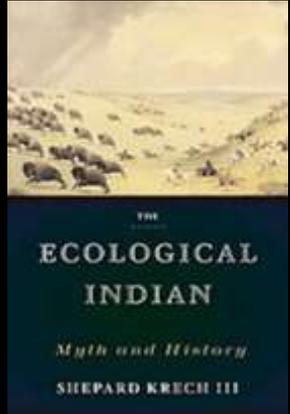
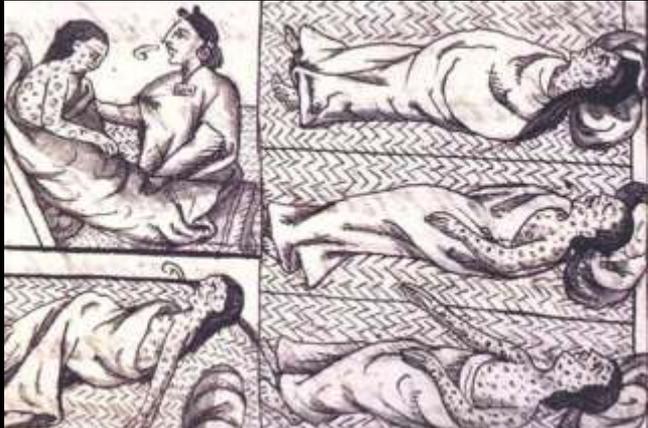
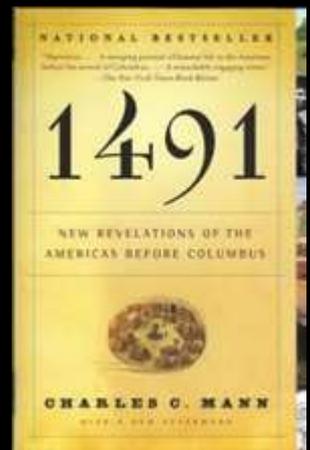
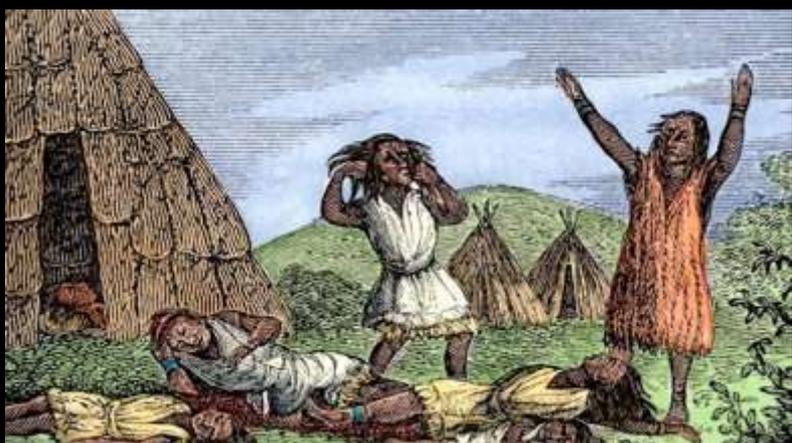
- Jamestown – rats, clover, bluegrass
- Endive and spinach escaped from colonial gardens and grew into impassable six foot thickets on the Peruvian coast
- Mint overwhelmed Andean valleys
- In the Pampas of Argentina Charles Darwin found hundreds of square miles strangled by feral artichoke in the 1830s.
- Darwin found that peach wood from invasive peach trees was the main supply of firewood for Buenos Aires.
- Peaches invade the Southeast – 1700s farmers worried that the Carolinas and Georgia would be a “wilderness of peach trees”



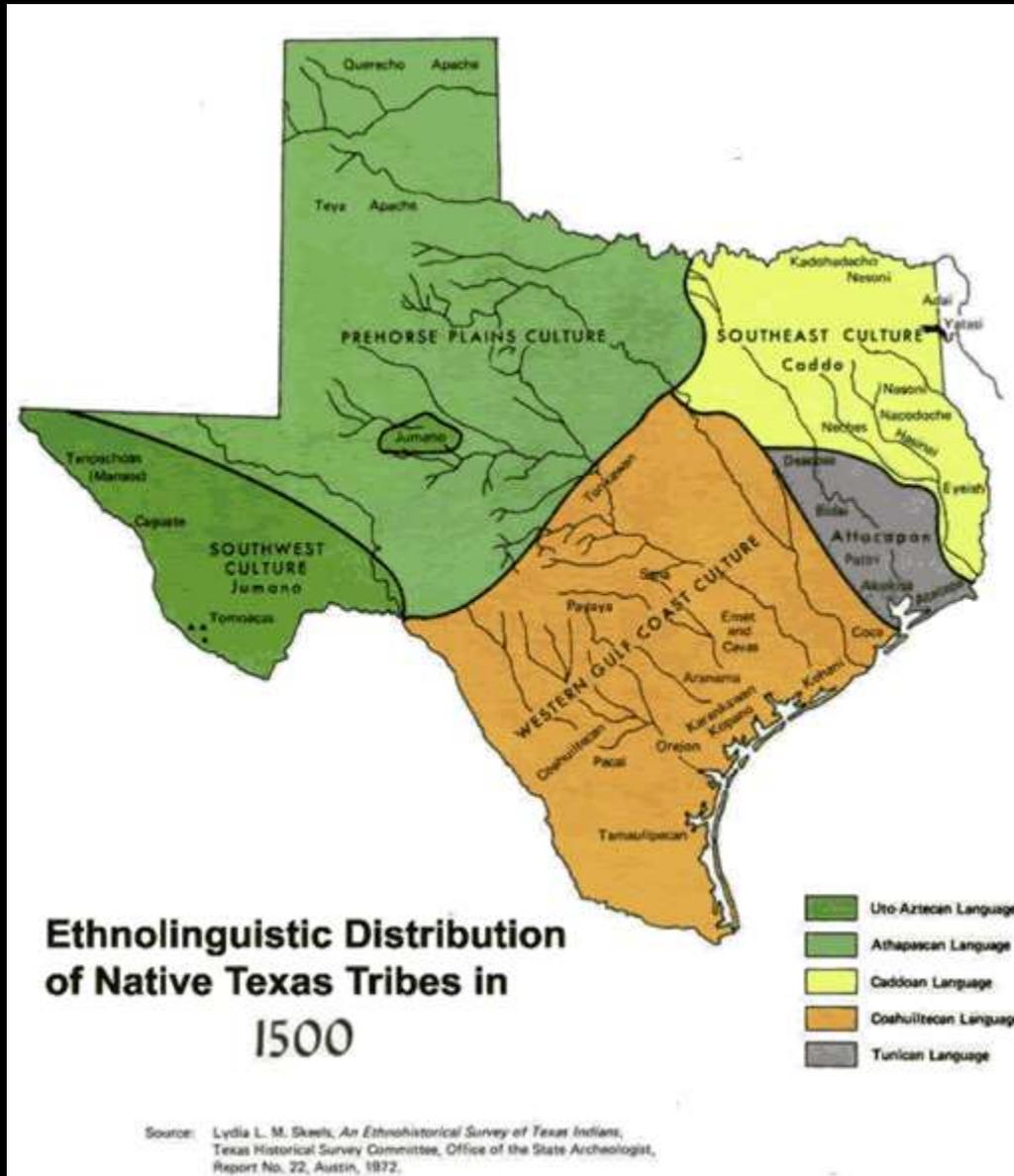
Native Americans as Keystone Species

“Until Columbus, Indians were a keystone species in most of the hemisphere. Annually burning undergrowth, clearing and replanting forests, building canals and raising fields, hunting bison and netting salmon, growing maize, manioc, and the Eastern Agricultural Complex.

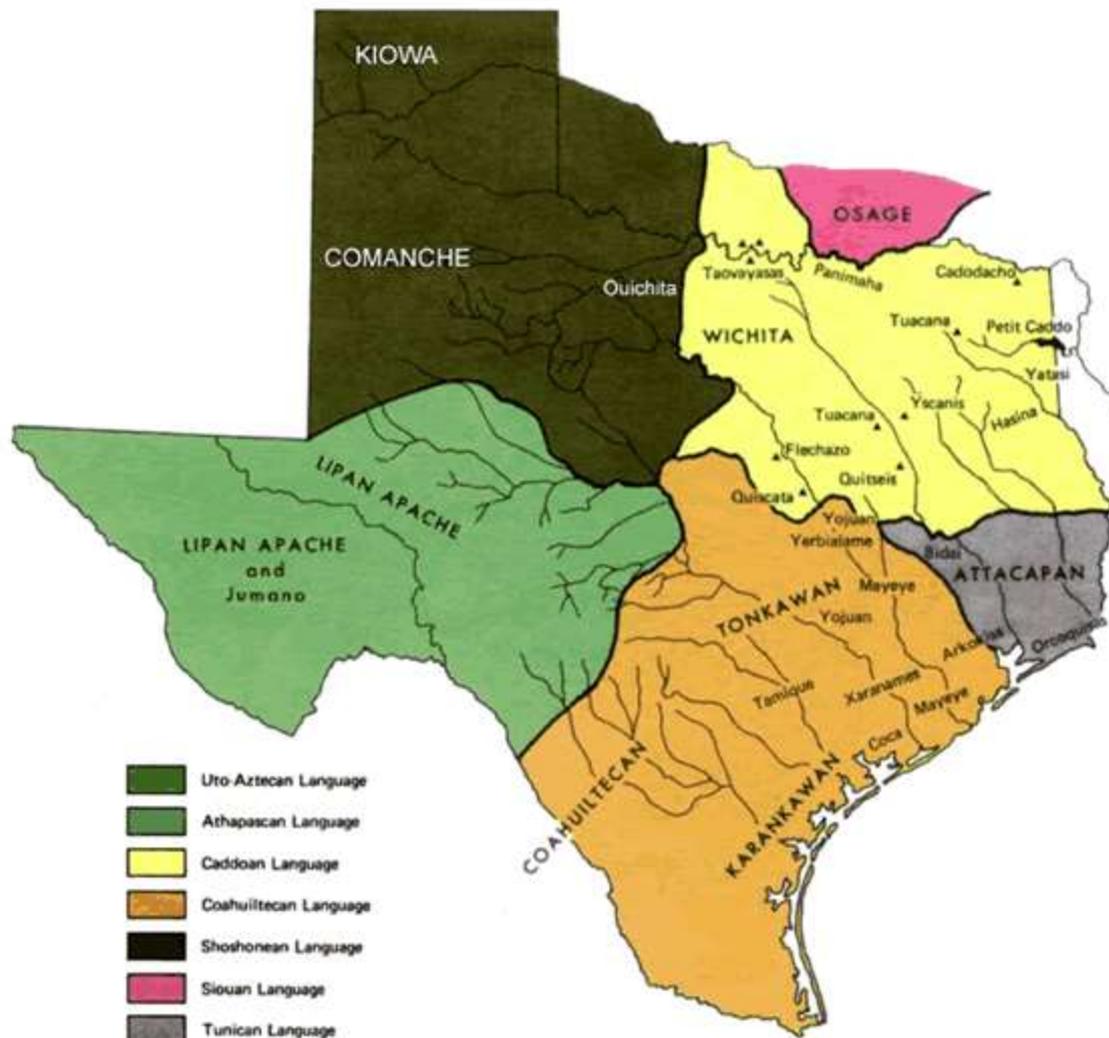
Native Americans had been managing their environment for thousands of years...But all of these efforts required close, continual oversight. In the sixteenth century, epidemics removed the boss... Not only did invading endive and rats beset them, but native species, too, burst and blasted, freed from constraints by the disappearance of Native Americans.” Mann, 1491



The Columbian Exchange and Texas When it was Entire?



Ethnolinguistic Distribution of Indians in Texas in 1776

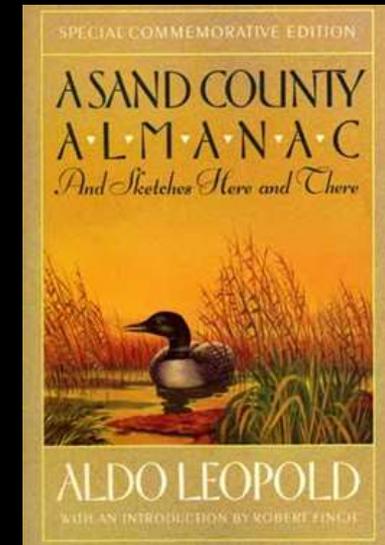
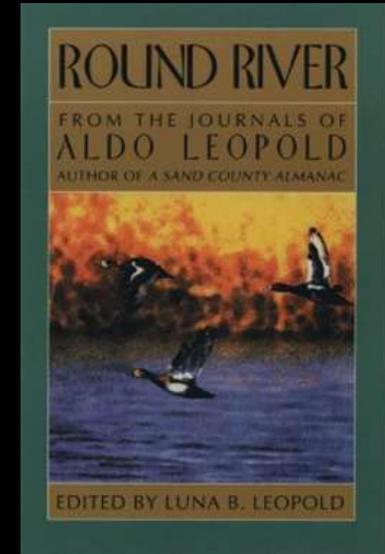


The History of the Science of Ecology

Ecology is an infant just learning to talk, and, like other infants, is engrossed with its own coinage of big words.

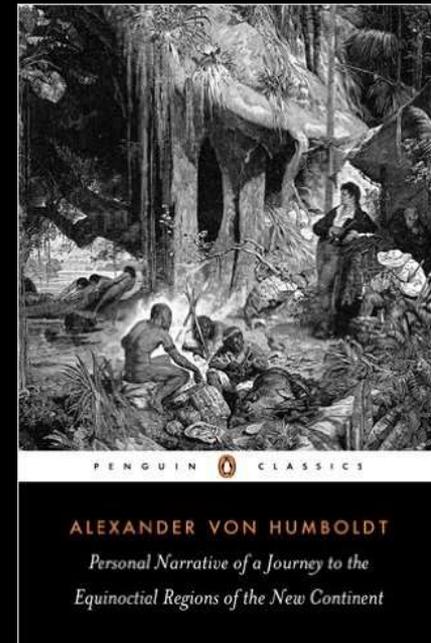
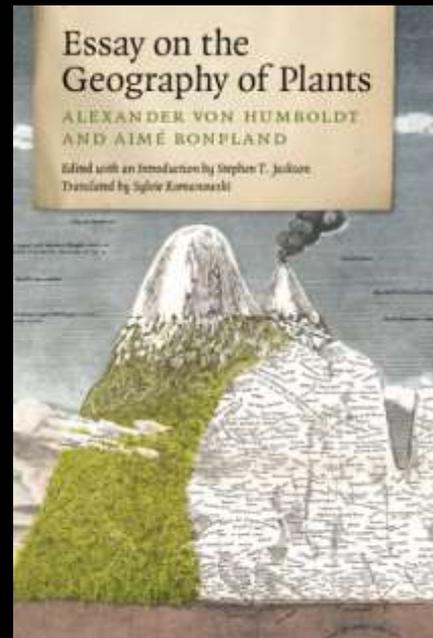
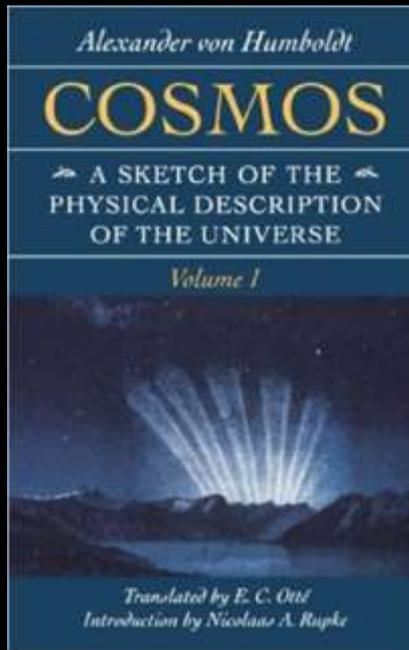
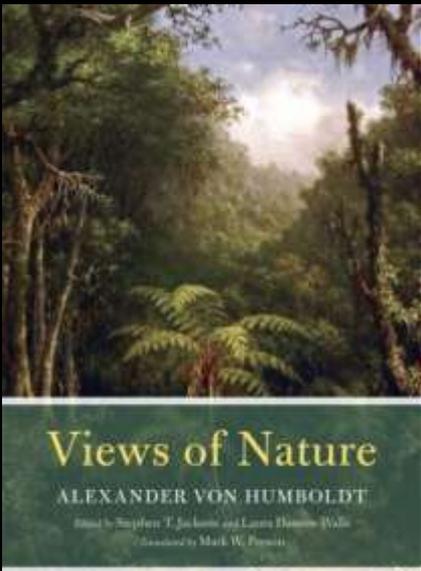
Its working days lie in the future.

Aldo Leopold, *Round River* 1941



Origins of the Science of Ecology

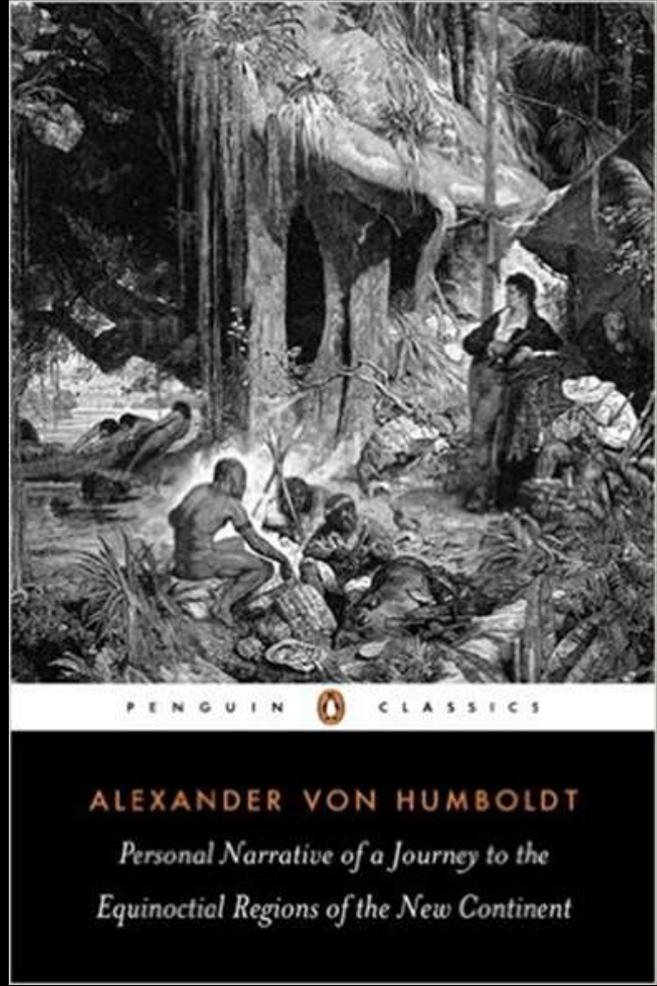
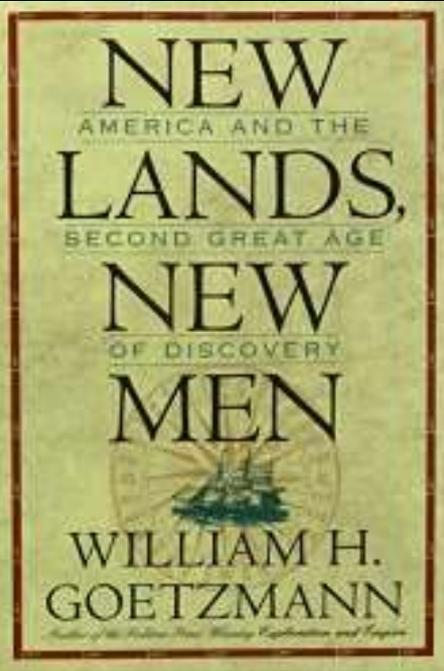
Alexander von Humboldt 1769 – 1859





Humboldt's Progeny – *Personal Narrative* 1814

Inspires “Humboldt's Children” Darwin to Muir



“I believe that you are fully right in calling Humboldt the greatest scientific traveler who ever lived. You might truly call him the parent of a grand progeny of scientific travelers, who taken together have done much for science.”

Charles Darwin 1881

Humboldtian Science – Science of Dynamic Change (the Economy of Nature)

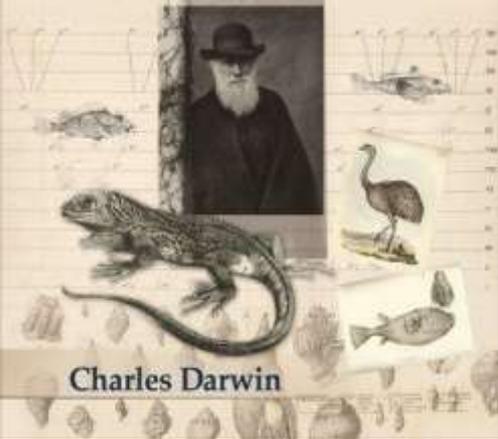
One concept that is central to Humboldtian science is that of a general equilibrium of forces amidst change.

Not balance and stability, but ordered dynamic change.

The Economy of Nature “The general equilibrium which reigns amongst disturbances and apparent turmoil, is the result of infinite number of mechanical forces and chemical attractions balancing each other out.” so that the universe persists amidst constant change



ON THE
**ORIGIN
 OF SPECIES**
 BY MEANS OF NATURAL SELECTION



The Economy of Nature
On the Origin of the Species 1859
 Charles Darwin 1808-1882

Darwin claims that "all organic beings are striving, it may be said, to seize on each place in the economy of nature."

"the varying offspring of each species will try (only few will succeed) to seize on as many and as diverse places in the economy of nature, as possible.

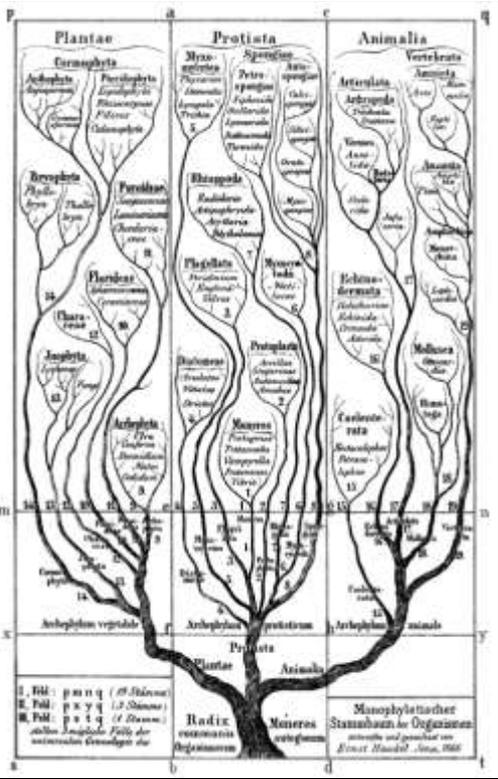
Each new variety or species, when formed will generally take the places of and so exterminate its less well-fitted parent.

This, I believe, to be the origin of the classification or arrangement of all organic beings at all times.

These always seem to branch and sub-branch like a tree from a common trunk; the flourishing twigs destroying the less vigorous,—the dead and lost branches rudely representing extinct genera and families"

Order and Change over Time – Evolution of Life

Niche – each place in the economy of nature



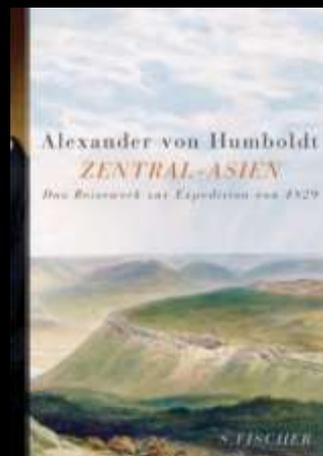
Humboldt and Human Impacts on the Environment

In his book *Central Asia*, Humboldt listed ways in which the human species was even then affecting the climate:

“Through the destructions of forests, through the distribution of water (irrigation and drainage), and through the production of great masses of steam and gas at the industrial centers.”

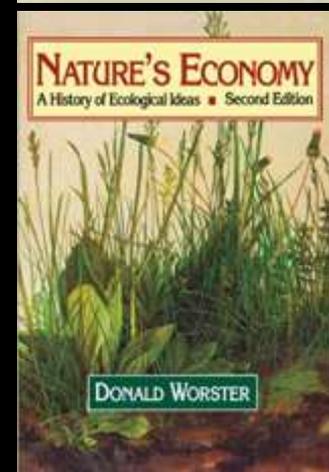
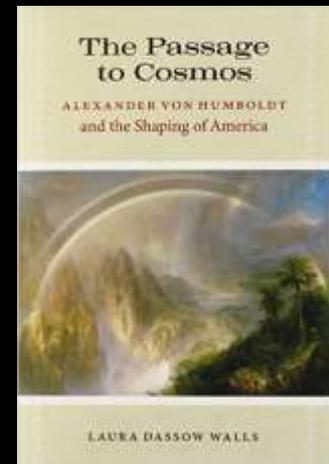
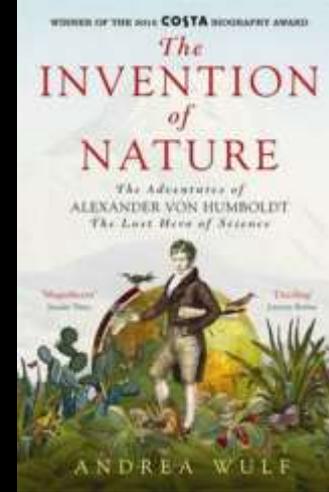
“The wants and restless activity of large communities of men gradually despoil the face of the Earth.”

Alexander von Humboldt
1769 – 1859



- Humans are part of nature
- Nature/Cosmos is bigger than us
- Most human impacts are unintended consequences
- Limits of human understanding of nature should encourage caution

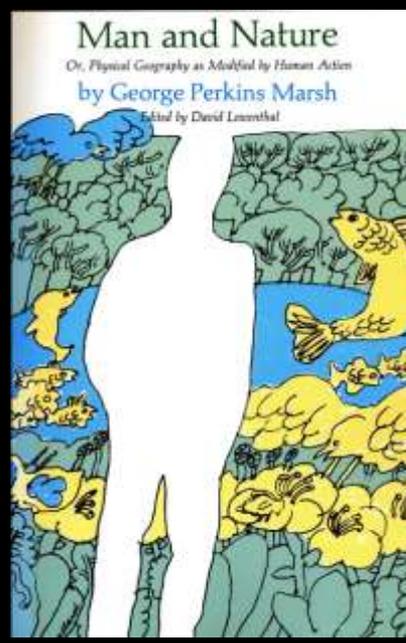
Humboldt said it was the duty of scientists to examine the changeable elements in the “economy of nature” to understand human impacts.



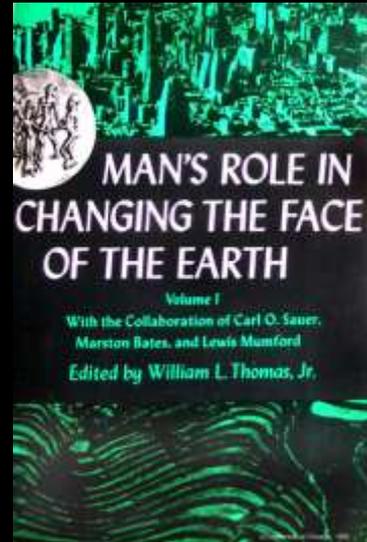
Man and Nature, or, Physical Geography as Modified by Human Action 1864
George Perkins Marsh

"Man is everywhere a disturbing agent. Wherever he plants his foot, the harmonies of nature are turned to discord"

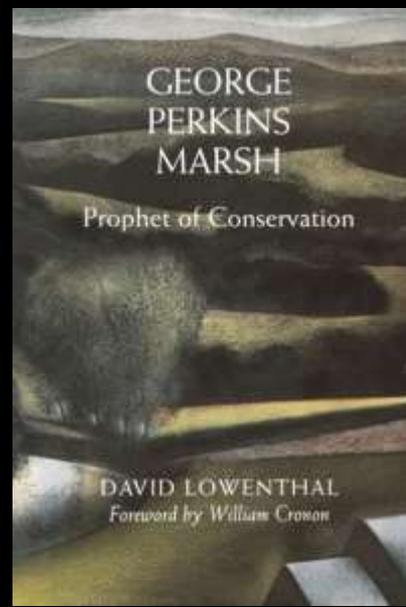
- Engendered worldwide awareness of the ill-effects of human agency, along with efforts to repair the damage and conserve the fabric of nature.
- Most noteworthy was Marsh's stress on the unforeseen and unintended consequences, as well as the heedless greed of technological enterprise.
- Wallace Stegner "the rudest kick in the face that American initiative, optimism and carelessness had yet received."



1801-1882



1956

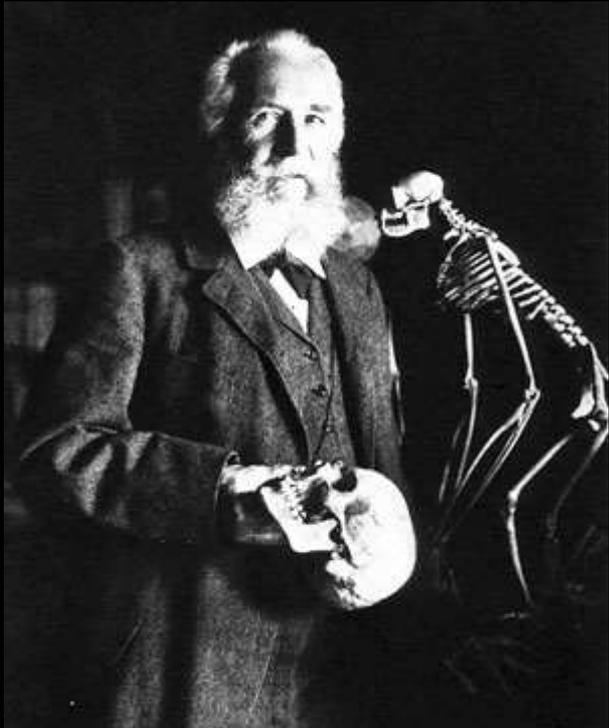
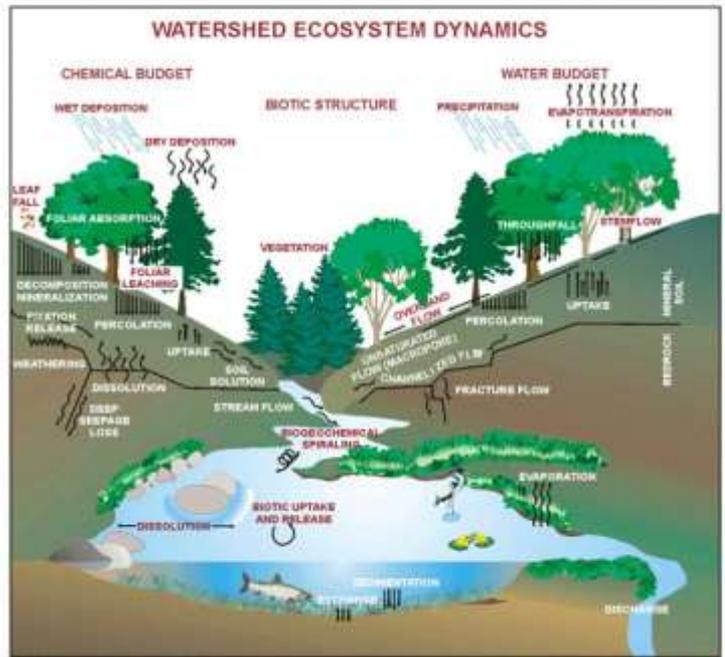


Naming a new Science – Ecology - 1866
Organisms and their Environment – an Ecosystem
Ernst Haeckel (1834–1919)

“By ecology we mean the body of knowledge concerning the economy of nature—the investigation of the total relations of the animal both to the inorganic and to its organic environment”

The word comes from the Greek oikos, meaning “household,” “home,” or “place to live.” Thus, ecology deals with the organism and its environment.

Ecosystem – Biotic and Abiotic



Twentieth Century Development of Ecology – Equilibrium and Succession

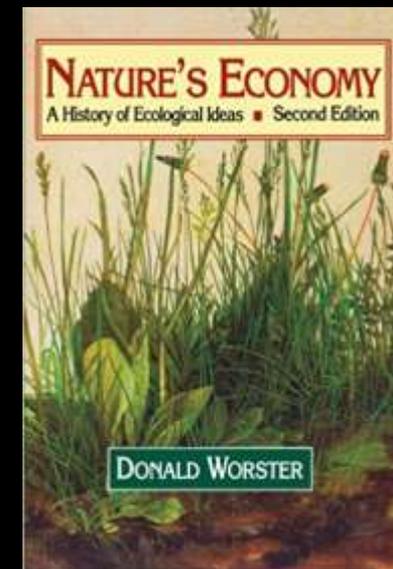
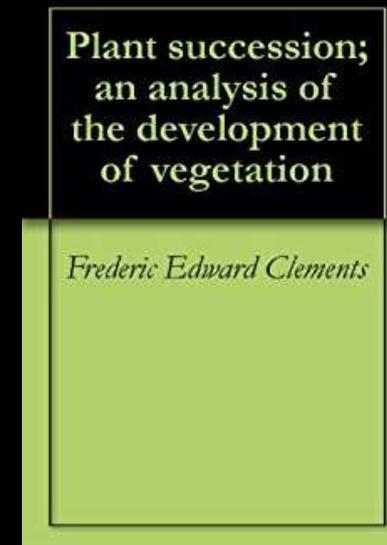
Frederic Clements 1874-1945

The Development and Structure of Vegetation (1904)

Plant Succession (1916)



- Vegetation is dynamic
- Succession and climax stage
- Monoclimax – any region of Earth can have only one mature stage based on climate
- Assumes a natural state with no human interference – natural equilibrium
- “Nature’s course, he contended, is not an aimless wandering to and fro but a steady flow toward stability that can be exactly plotted by the scientist.” Worster

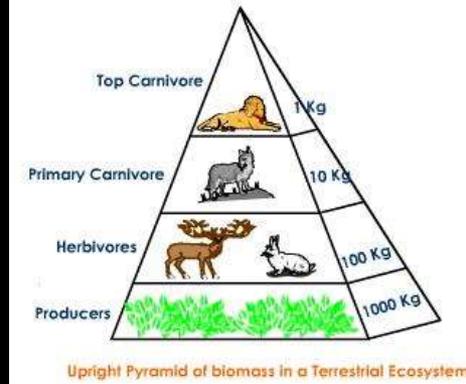


Food Web, Trophic Levels, Invasion Ecology

Charles Elton 1900-1991

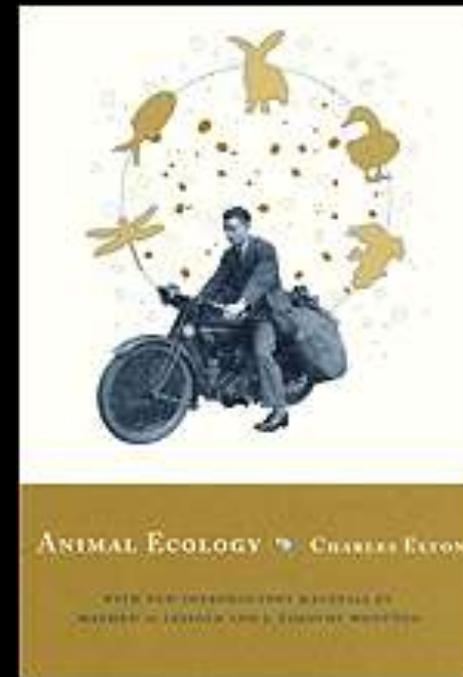
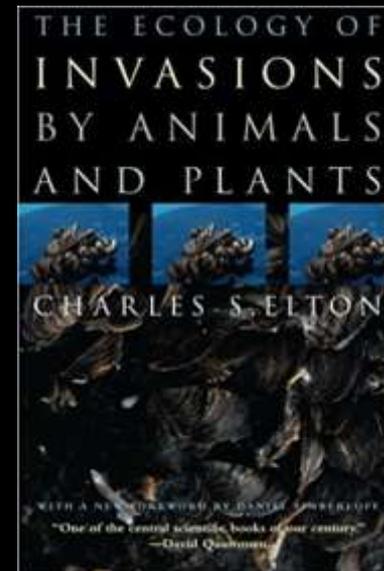
Animal Ecology (1927)

- Community Structure – an economy of nature
- Food chain, food web
- Plants = producers, Animals = consumers (reducers, decomposers)
- Niche – the status or occupation of an organism in a community
- One species to one niche (competition)



The Ecology of Invasions (1958)

- Invasion Biology – Invasive Species
- DIH – the Diversity-Invasibility Hypothesis
- More Biodiversity Less Likely to be Invaded
- (all niches filled)
- Disturbance is the prerequisite for invasion



Ecosystem, Stability, and the Equilibrium Paradigm

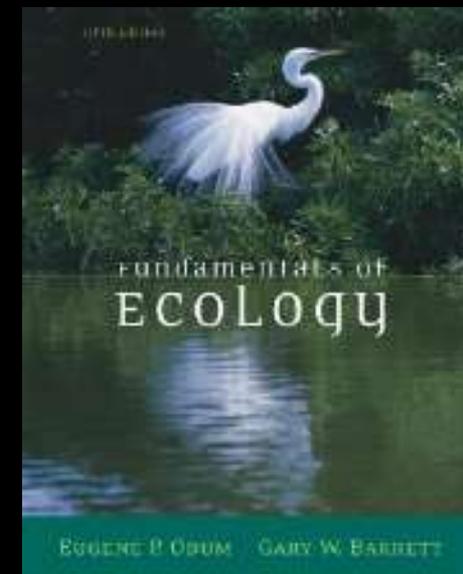
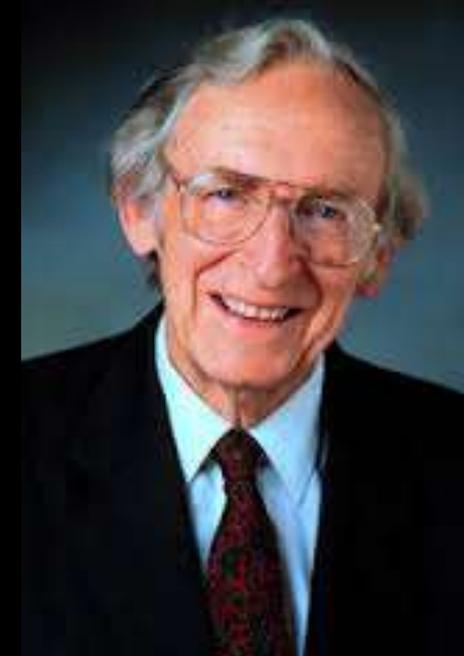
Eugene Odum

Fundamentals of Ecology (1953)

- The law of organic nature is to bring order and harmony out of chaotic materials of existence
- Nature is a series of balanced ecosystems – the basic functional unit of ecology, and so a need for a unified theory of the ecosystem [a pond, a watershed, a meadow]
- Rather than climax stage he used “mature ecosystem” – the ecosystem was often disturbed but fluctuated around a single homeostatic point = health = stability/equilibrium
- Humans the Great Disrupters

By the 1960s, these scientific beliefs are questioned...

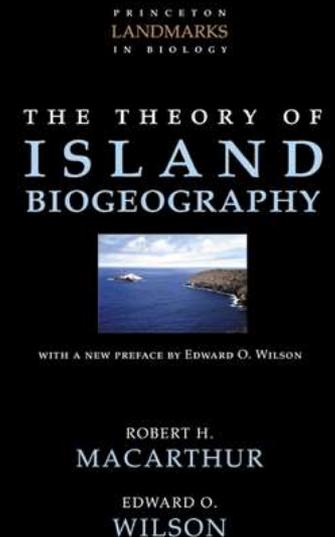
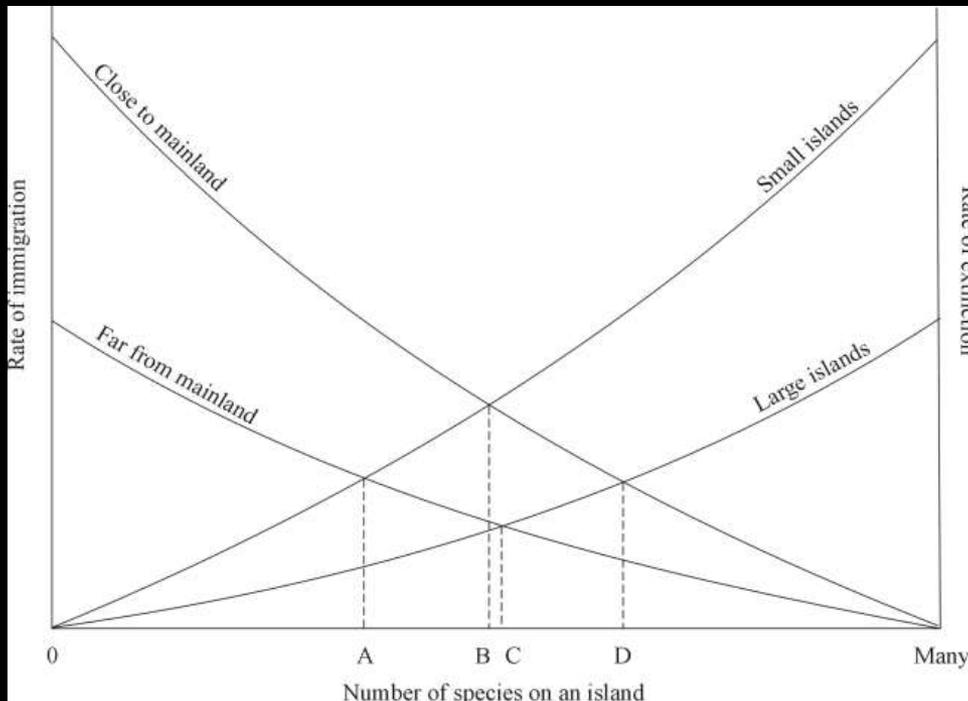
1. But is an ecosystem a reality or an abstraction?
2. Are ecosystems inherently stable?
3. How does disruption fit in?
4. How do the great disrupters – Humans - fit in?



Equilibrium and Biodiversity

Robert MacArthur and Edward O. Wilson
The Theory of Island Biogeography (1967)

- Community structure focus rather than ecosystem
- An ecology that makes no testable predictions is not yet a science
- Mathematical modeling and islands
- The number of species represented on an island depends on size and location – limited number of niches
- Number of species always reaches an equilibrium point – species diversity does not continue to develop indefinitely, new colonization must be matched by extinction



The “new ecology” post-Odum - No inherent stability

Robert May

Stability and Complexity in Model Ecosystems (1973)

- Mathematical models demonstrate that the more species there were, the more fragile was the system
- Chaos theory and complexity, “Confronted with disturbances beyond their normal experience” complex systems like rainforests tended to crumple.

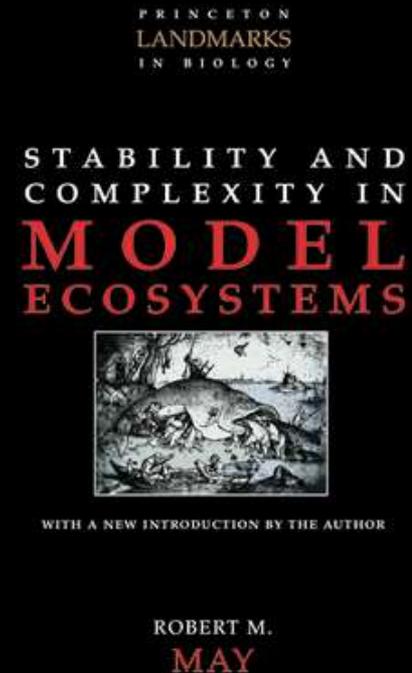
Instability of biodiversity and invasion biology

The new ecology emphasizes

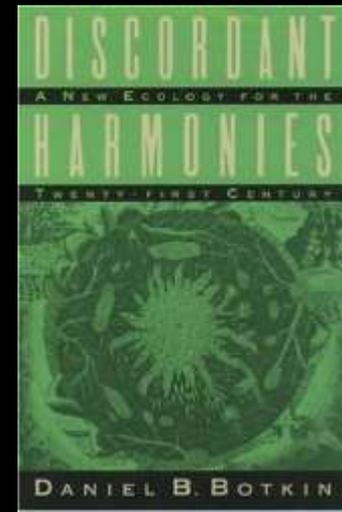
- Disequilibria
- Instability
- Chaotic fluctuations

in ecosystems both “natural” and human impacted

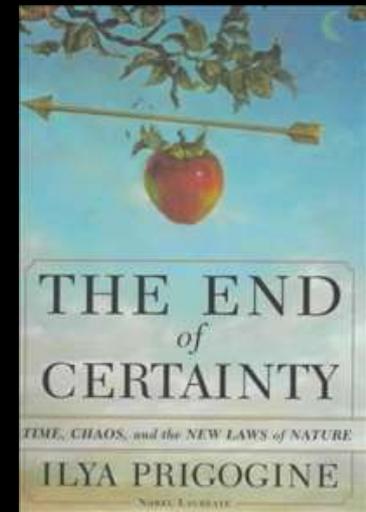
If 20th-century ecology was marked by an infatuation with balance, then our era is one of disturbance, disruption, non-equilibrium, chaos, and randomness. – Daniel Botkin



1990



1996



Permanence and Change

The Balance of Nature: Ecology's Enduring Myth 2009

John Kricher

“The existence of a balance of nature has been a dominant part of Western philosophy since before Aristotle.

But the science of ecology and evolutionary biology together demonstrate that there is no balance of nature—not today and not at anytime in Earth's long history.

The paradigm is based on belief, not data; it has no scientific merit.

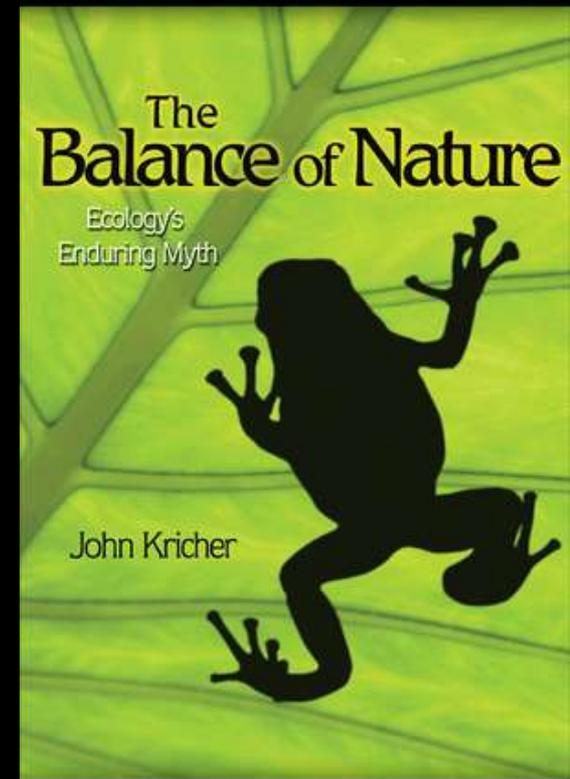
Nature is constantly in flux varying in scales of space and time, and most of that flux is due entirely to natural causes. At this time of extraordinary human influence on Earth's ecosystems and biota, I argue that it is essential for humanity to understand how evolution occurs and why ecology is far more dynamic than static.”

Nothing Endures But Change

Heraclitus 540-480BC

Biodiversity Ecosystem Function Paradigm

“Many species are better than some species and some species are better than just a few species”



Don't judge species on their origins

Conservationists should assess organisms on environmental impact rather than on whether they are natives, argue **Mark Davis** and 18 other ecologists.

BIOLOGICAL BIAS

Nativeness is not a sign of evolutionary fitness or of a species having positive effects. The insect currently suspected to be killing more trees than any other in North America is the native mountain pine beetle *Dendroctonus ponderosae*. Classifying biota according to their adherence to cultural standards of belonging, citizenship, fair play and morality does not advance our understanding of ecology. Over the past few decades, this perspective has led many conservation and restoration efforts down paths that make little ecological or economic sense.

We are not suggesting that conservationists abandon their efforts to mitigate serious problems caused by some introduced species, or that governments should stop trying to prevent potentially harmful species from entering their countries. But we urge conservationists and land managers to organize priorities around whether species are producing benefits or harm to biodiversity, human health, ecological services and economies. Nearly two centuries on from the introduction of the concept of nativeness, it is time for conservationists to focus much more on the functions of species, and much less on where they originated. ■

Mark A. Davis is *De Witt Wallace professor of biology at Macalester College, St Paul, Minnesota, USA*. **Matthew K. Chew, Richard J. Hobbs, Ariel E. Lugo, John J. Ewel, Geerat J. Vermeij, James H. Brown, Michael L. Rosenzweig, Mark R. Gardener, Scott P. Carroll, Ken Thompson, Steward T. A. Pickett, Juliet C. Stromberg, Peter Del Tredici, Katharine N. Suding, Joan G. Ehrenfeld, J. Philip Grime, Joseph Mascaro, John C. Briggs.**

“The Rise and Fall of Biotic Nativeness: a Historical Perspective”

Matthew K. Chew and Andrew L. Hamilton in *Fifty Years of Invasion Ecology: The Legacy of Charles Elton* (2011)

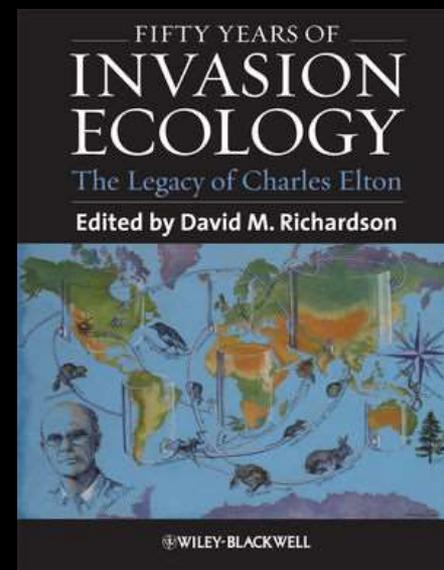
The idea of a native species was first defined in 1847.

“Nativeness is an organizing principle of numerous scientific studies and findings, and the *sine qua non* invoked by many management policies, plans, and actions to justify intervening on prevailing ecosystem processes.

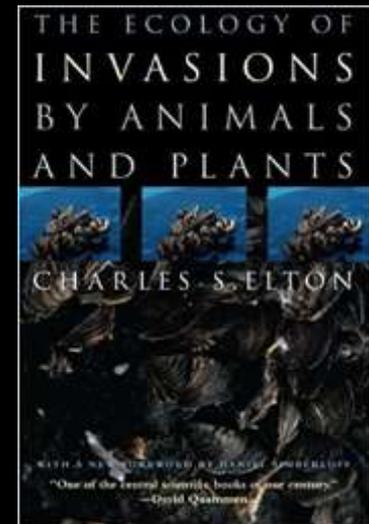
1. Is nativeness conceptually defensible?
2. Does it accomplish any theoretical work?

In answering, we conclude that its categorical meaning and significance both dissolve under scrutiny.

- Biotic nativeness is theoretically weak and internally inconsistent, allowing familiar human desires and expectations to be misconstrued as essential belonging relationships between biota, places and eras.
- We believe much well-intended effort is wasted on research contrasting ‘ native ’ and ‘ alien ’ taxa, and by conservation projects focused primarily on preserving or restoring natives.”



2011

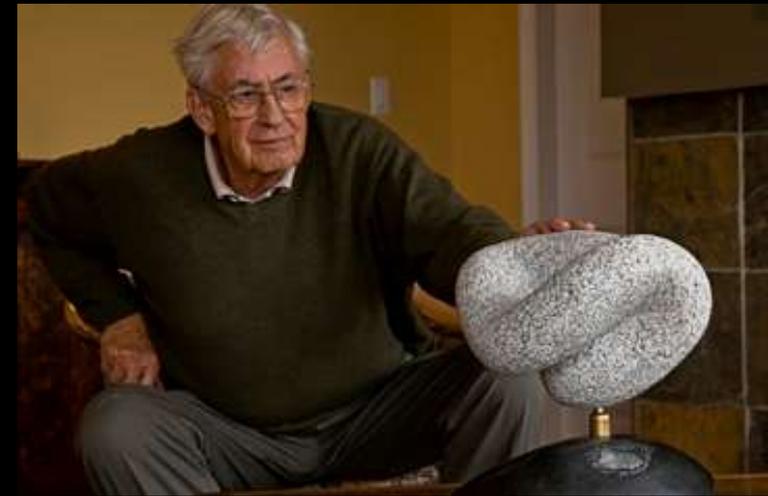
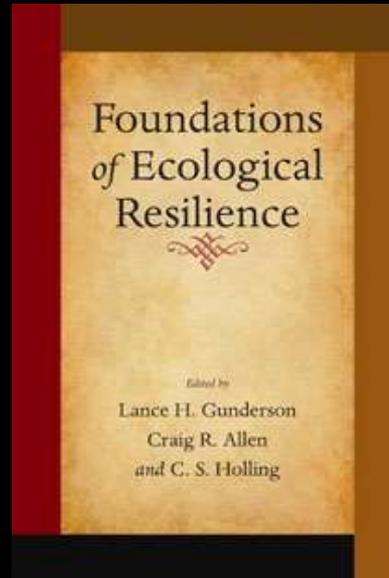
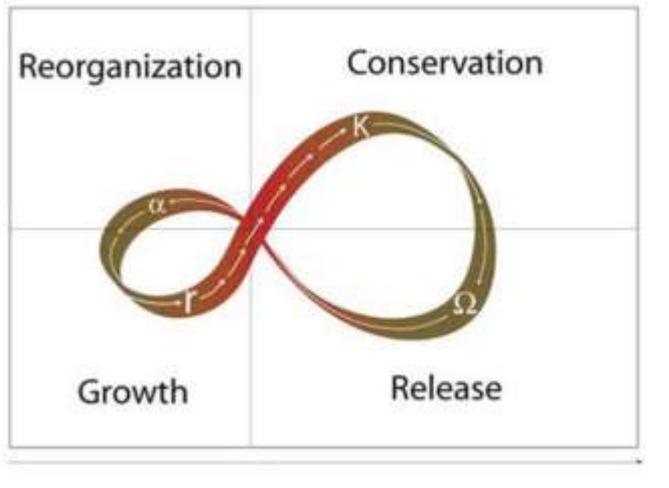


1958

The New Ecology of Change - Ecological Resilience

- The general meaning of resilience, derived from its Latin roots 'to jump or leap back', is the ability to recover from or adjust easily to misfortune or change.
- The concept of resilience in ecological systems was first introduced by the Canadian ecologist C.S. Holling in order to describe the persistence of natural systems in the face of changes in ecosystem variables due to natural or anthropogenic causes.
- Holling argued that complex adaptive systems did not tend toward equilibria, but toward maximizing diversity over deeper evolutionary time through an “adaptive cycle”.
(Biodiversity Ecosystem Function Paradigm)

Holling, C.S. (1973). "Resilience and stability of ecological systems". *Annual Review of Ecology and Systematics* 4: 1–23.



New Nature - Novel Ecosystems

- Assemblages of species in a given area that have not previously occurred.
- They lack historically natural analogs
- Novel ecosystems are not really all that novel, except in their species composition.
- We need to develop a new ecology that is not prejudiced by the human-nature dualism.

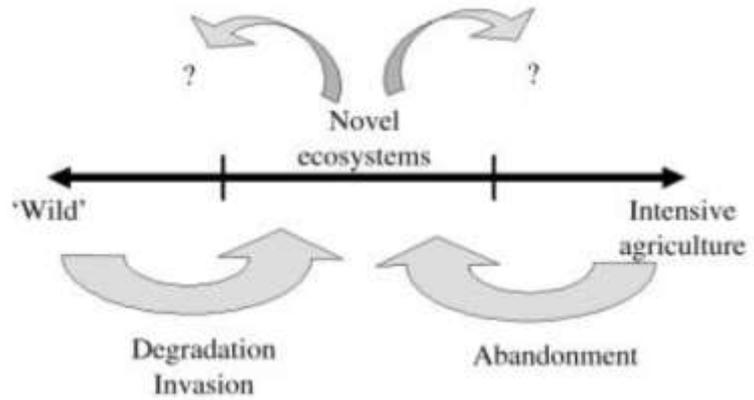
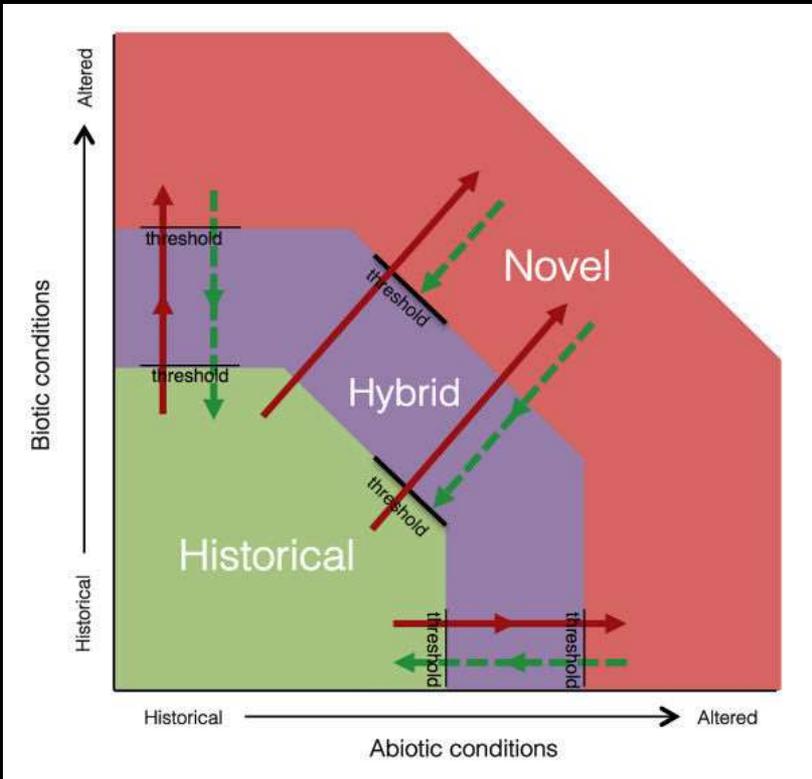
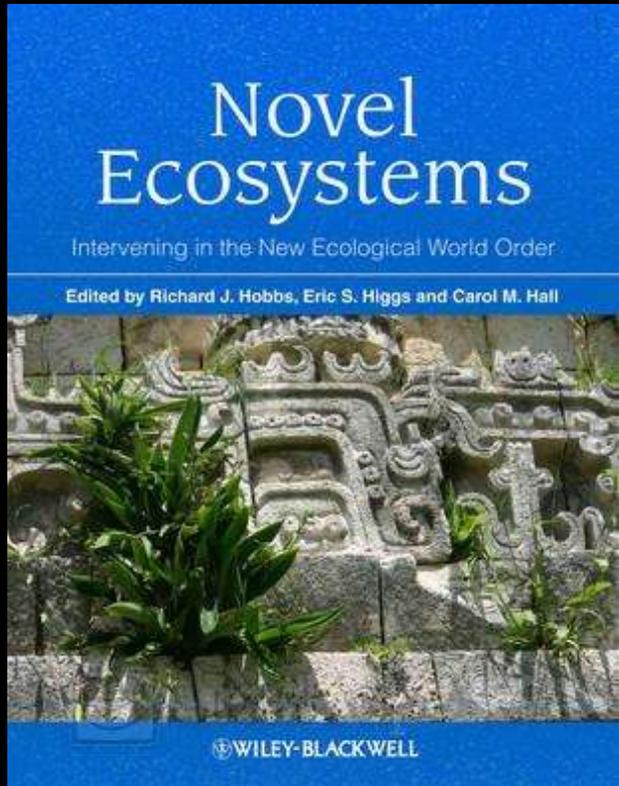


Figure 1 Novel ecosystems arise either from the degradation and invasion of 'wild' or natural/seminal systems or from the abandonment of intensively managed systems.

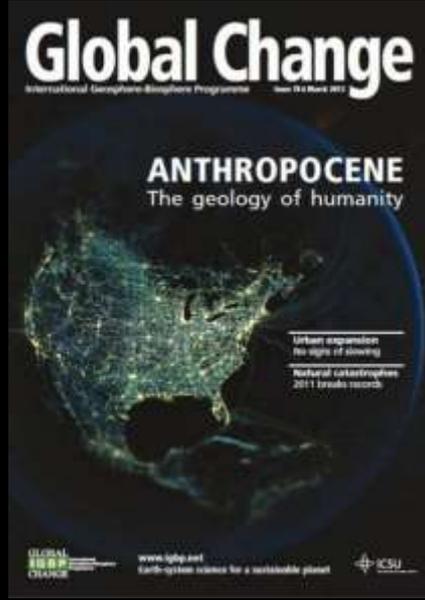
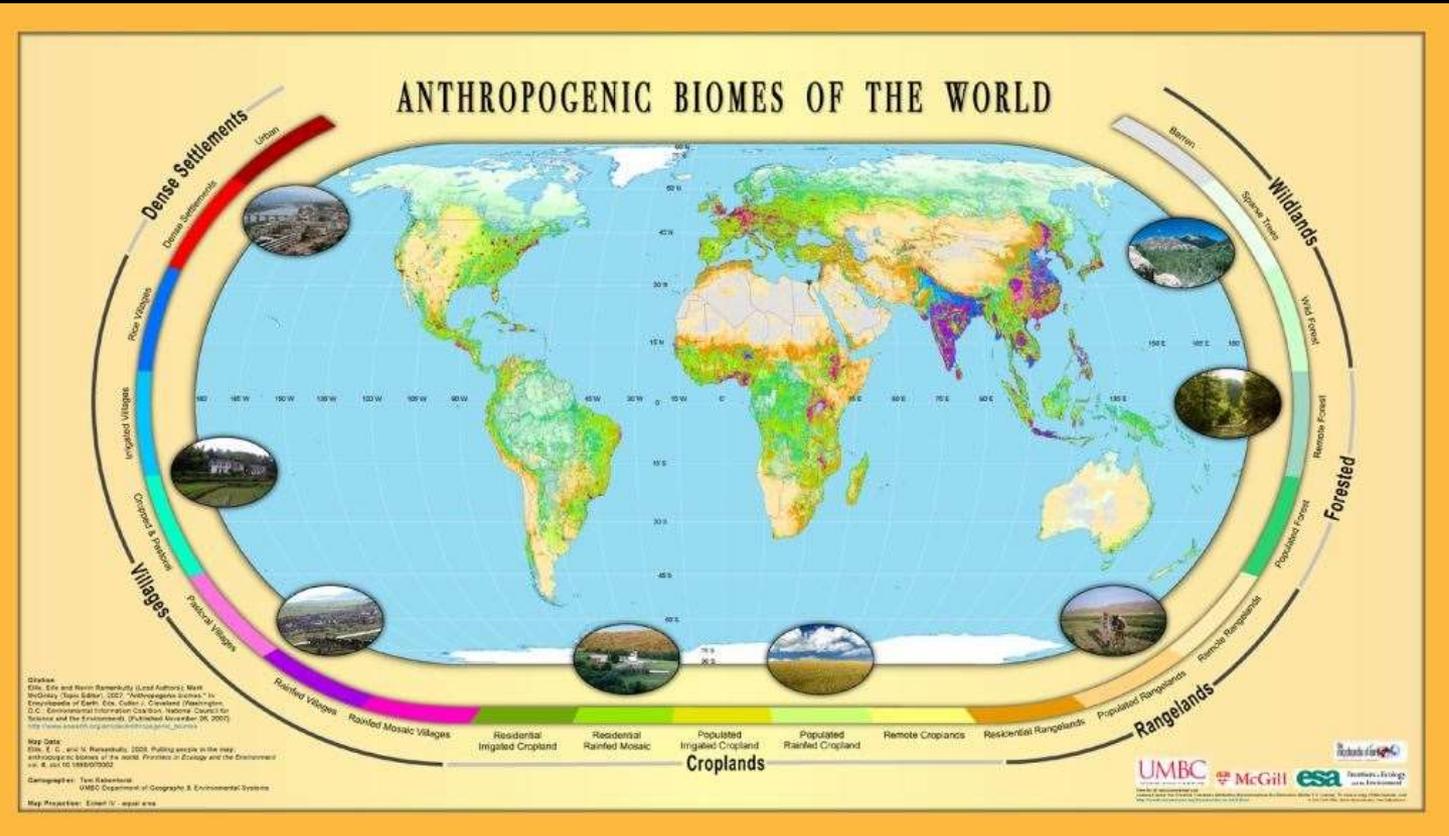


Anthropogenic Landscapes, or "Human Landscapes"

<http://ecotope.org/> Dr. Erle Ellis

Areas of Earth's terrestrial surface where direct human alteration of ecological patterns and processes is significant, ongoing, and directed toward servicing the needs of human populations for food, shelter and other resources and services including recreation and aesthetic needs.

Anthropogenic Biomes ("Anthromes"), describe the globally-significant types of anthropogenic landscapes.

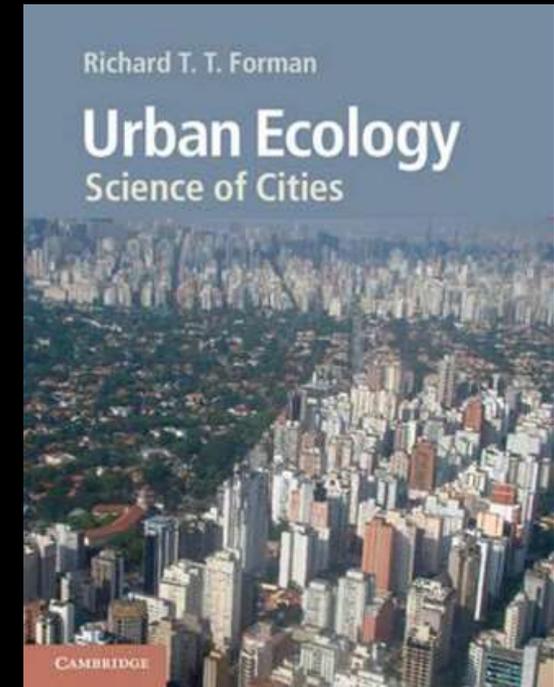
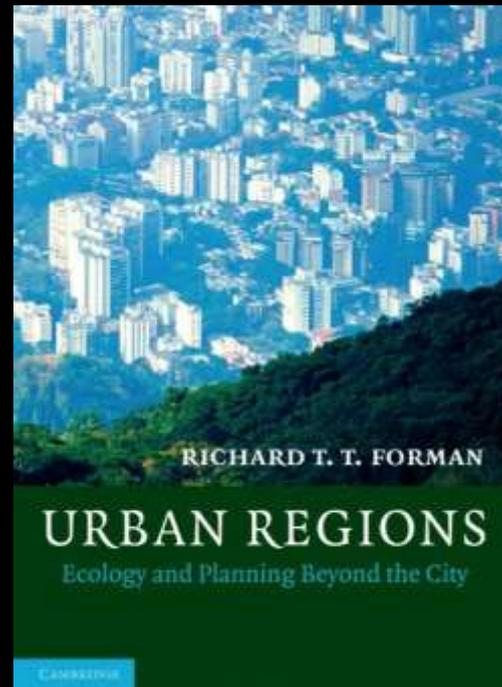
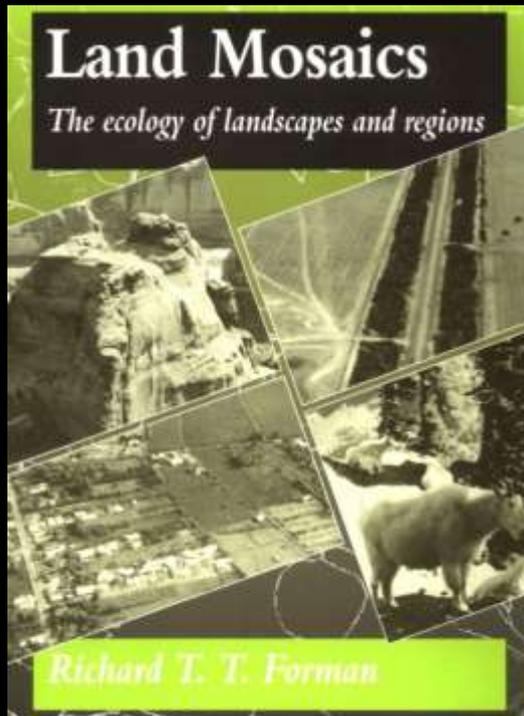


Contemporary American Approaches to Urban Ecology Ecology “of” Cities

Landscape Ecology to Urban Ecology
Richard Forman – Harvard University

Spatial Patterns – Cities as heterogeneous mosaics

In short, then, it takes the whole region to make the city.
Patrick Geddes, *Cities in Evolution*, 1914



Nature “in” cities - Distinctive attributes, hierarchical scales, and gradients

1. Habitats and species

- Usually diverse intermixed greenspaces and built patches cover the area.
- Small sites tend to have few species, whereas large areas are often species rich.
- Planted ornamentals, as well as spontaneous colonized species, are widespread.
- Generalist species survive and predominate in urban conditions.

2. Patches and areas

- Housing developments and house plots emphasize rectilinear repetition.
- Boundaries are overwhelmingly straight, abrupt, and in high density.
- Mowed grassy areas range from abundant to essentially absent.
- Widespread impervious surfaces absorb solar radiation, generate heat, and greatly increase stormwater runoff.
- Air and water are often heavily polluted.

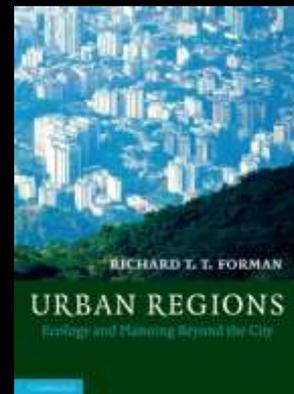
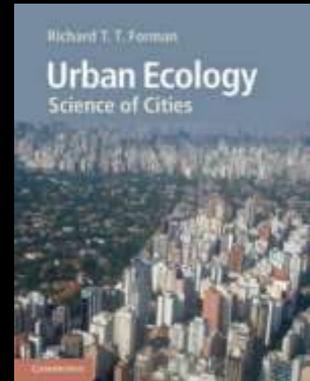
3. Corridors and flows

- Rectilinear road networks channel hordes of moving vehicles and people.
- Underground branching conduits permeate and connect the place.
- Animal movement is often along stepping stones rather than continuous strips.
- Watercourses are channelized and flood-prone areas common.

4. Change

- Many ecological changes are human-caused, rapid, and drastic.
- Abundant species from afar endlessly arrive, while both native and non-native species disappear.
- The city expands directionally over suburbs, and suburbs over rural land.

For a natural or agricultural landscape, these patterns would be bizarre.
In urban areas, they predominate.



Humans as Disruptors - Narrative of Degraded Nature in American (Urban) Ecology

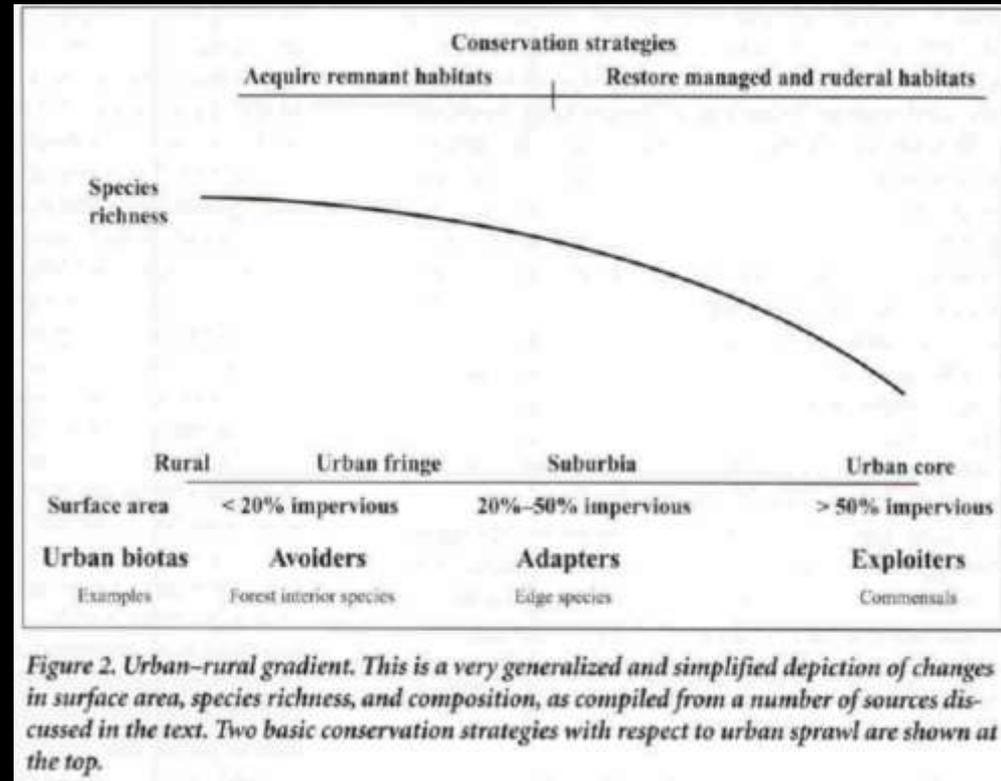
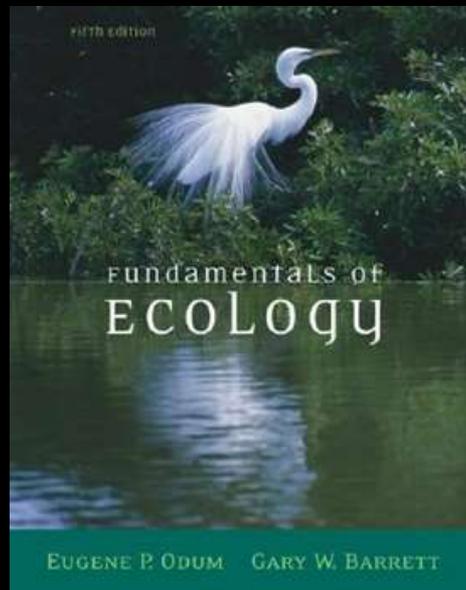
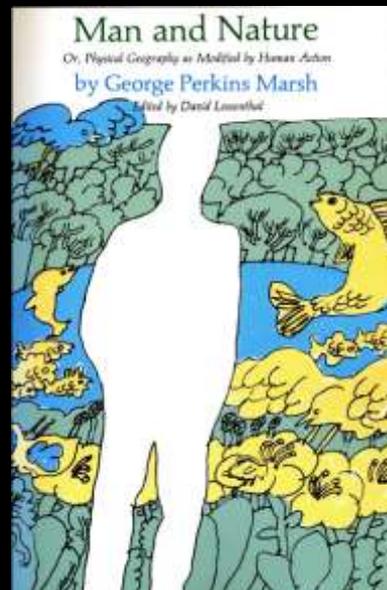
Perceptions of American Urban Biologists, Ecologists, and Environmentalists

Ecology “in” cities – “Bizarre” - A weedland community of inappropriate nature

(Urban growth) replaces the native species that are lost with widespread “weedy” nonnative species. This replacement constitutes the process of biotic homogenization that threatens to reduce the biological uniqueness of local ecosystems.

Michael L. McKinney, “Urbanization, biodiversity, and conservation”. *Bioscience* 52(10), (2002), 883–890.

the human-nature dualism



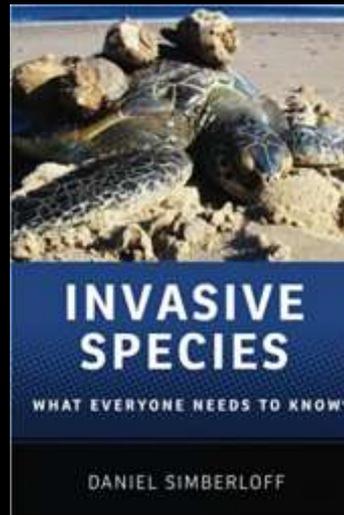
Contemporary Urban Invaders – Plants vs. Birds

Invaders of Texas

a Citizen Science Program to Detect and Report Invasive Species

“Invaders of Texas” website was created by the Lady Bird Johnson Wildflower Center as a tool for mobilizing the public against non-native invaders and the website employs the rhetoric of war and a resistance composed of “citizen scientists” defending the homeland.

The Invaders of Texas Program is a campaign whereby volunteer "citizen scientists" are trained to detect the arrival and dispersal of invasive species in their own local areas.



Narratives of Nature – Good Native vs. Bad Non-native

Ailanthus the Celestial Tree (Tree of Heaven)

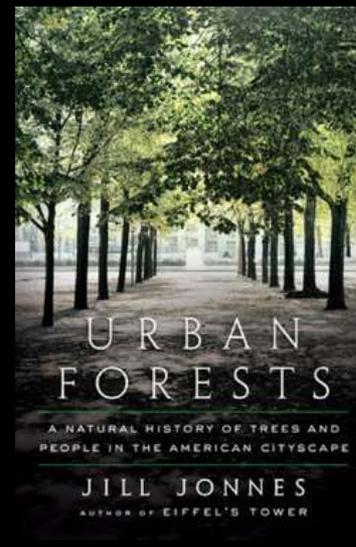
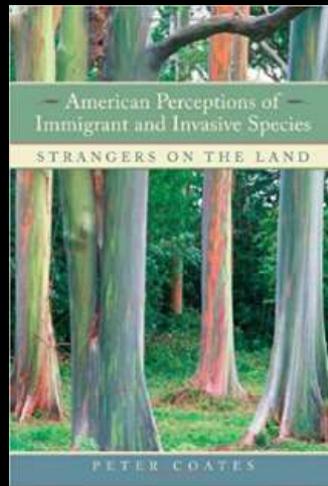
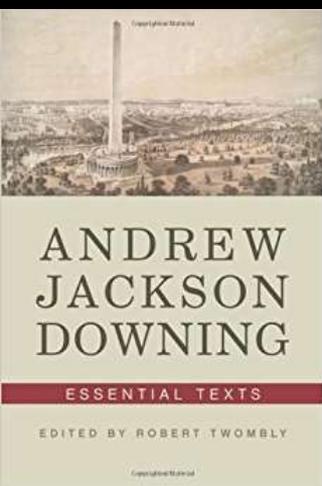
The Admirable Urban Tree - “the Ailanthus is more generally known by the name of Celestial Tree and is much planted in the streets and public squares. For such situations it is admirably adapted, as it will insinuate its strong roots into the most meager and barren soil, where few other trees will grow and soon produce an abundance of foliage and fine shade.”

A Treatise on the Theory and Practice of Landscape Gardening (1841)

The Invasive Immigrant - “Down with the ailanthus! The vices of the ailanthus...it smells horribly, both in leaf and flower...it suckers abominably, and there by over runs, appropriates and reduces to beggary all the soil of every open piece of ground.”

Downing then admitted that his was in part “a patriotic objection...This petted Chinaman or Tartar, who has played us so falsely...has drawn away our attention from our own more noble native American trees, to waste it on this miserable pigtail of an Indiaman.”

“Shade Trees in the City” *The Horticulturalist (1852)*



For the Old-World Sparrow is welcome here.

The insects legions that sting our fruit
And strip the leaves from the growing shoot,
A swarming, skulking, ravenous tribe,
Which Harris and Flint so well describe
But cannot destroy, may quail with fear,
For the Old-World Sparrow, their bane, is here.

The Old-World Sparrow - William Cullen Bryant 1869



The English Sparrow.

In 1860 a dozen English sparrows were imported by Mr. Eugene Schieffelin, of New York. He set them free near Madison Square, and this he did for several successive years. A number of others followed his example, among them the Park Commissioners of New York. In 1868 the City Government of Boston imported about 200. These all died, and the next year more were brought over, of which but ten lived. The City Government of Philadelphia imported 1,000 in 1869 and about the same time two dozen were let loose in Monumental Square, Charleston, S. C. A history of North American birds says:

At the time of their introduction the shade trees in the parks and squares of New York, Philadelphia, Brooklyn, Newark and other places were greatly

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Good Native Birds and Bad Urban Non-Native Birds

The Sparrow War

Invasive Species - In 1889, the U.S. Bureau of Biological Survey devoted its first bulletin entirely to “The English Sparrow in North America” and compiler Walter Barrows concluded that these “foreigners” were “a curse of such virulence” that they should be systematically and completely destroyed.

Furthermore, it should be a crime to kill the shrike, sparrow hawk, screech owls, bluejays, or grackles, since they eat English sparrows.

- An official sparrow-killing day, with Boy Scouts taking the lead, was proposed in 1916.
- “The English sparrow...is a bird of the city, rich in city vices, expedients, and miseries.”
Frank Bolles, Nuttall Ornithological Club, 1892

The Poet may sing in the sparrow's praise,
But our great ornithologist, Dr. Coues, says,
In the language of truth and very plain prose,
That the sparrow's a nuisance and the sooner he goes,
The better we're off, so to me it's quite clear,
That the Old World sparrow is not needed here.
Fred Mather, Forest and Stream Magazine 1881

GOOD-BYE SPARROWS!



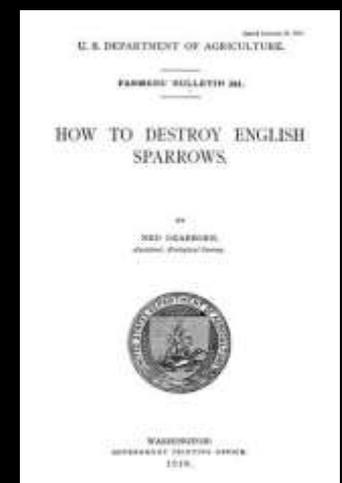
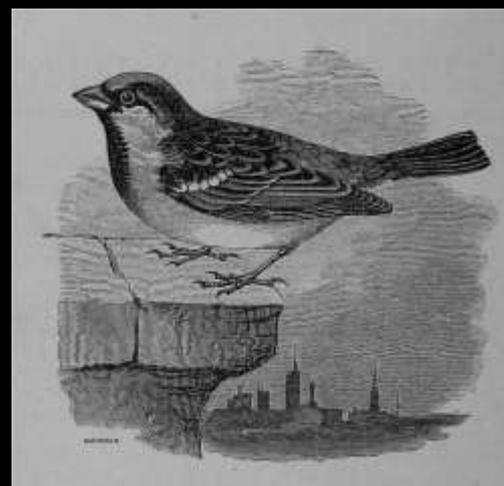
Sparrows drive away the song birds and spoil your flower garden. An Ever-Set Trap is a positive way to get rid of them.

Send for one today. The new low price direct to you is only \$4.75 pre-paid. Costs nothing to operate. Never fails to work. Lasts indefinitely. Your money back if you are not unqualifiedly satisfied. More information mailed upon request.

Also other traps for destructive animals.

EVERSET TRAP CO.
DAVENPORT, IOWA

Dept. A



Sparrows to right of them –
Sparrows to left of them –
Sparrows in front of them –
Copulate freely.

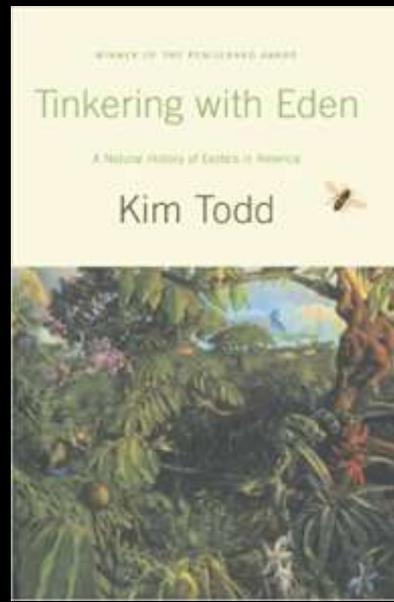
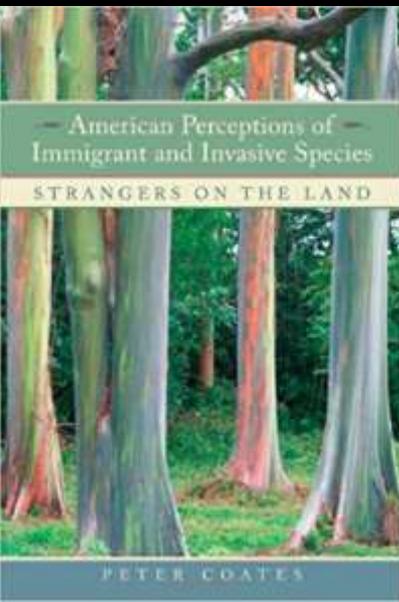
Eliot Coues, "The English Sparrow" 1877

Fears that a tightly woven racial, social, moral,
economic, and sexual order was jeopardized by mass
immigration and burgeoning cities were thus projected
onto these "disgusting exotics"

Peter Coates, *Strangers On The Land* 2006

"I could whip all my featherless foes, but the Sparrows
proved too many for me, by a large majority."

Eliot Coues American Ornithologist's Union 1897



THE WILD PARROTS OF TELEGRAPH HILL

A FILM BY JUDY IRVING

TOP 10 FILM OF THE YEAR

— *San Francisco Chronicle National Film Critics PW*

"...that rare documentary that has
romance, comedy, and a
surprise ending that makes you feel
as if you could fly out of the theater!"

— *San Jose Mercury News*

"This is a Gem!"

— *Richard Roeper,
Ebert & Roeper*

"Gorgeous!"

— *The New York Times*

DVD
VIDEO

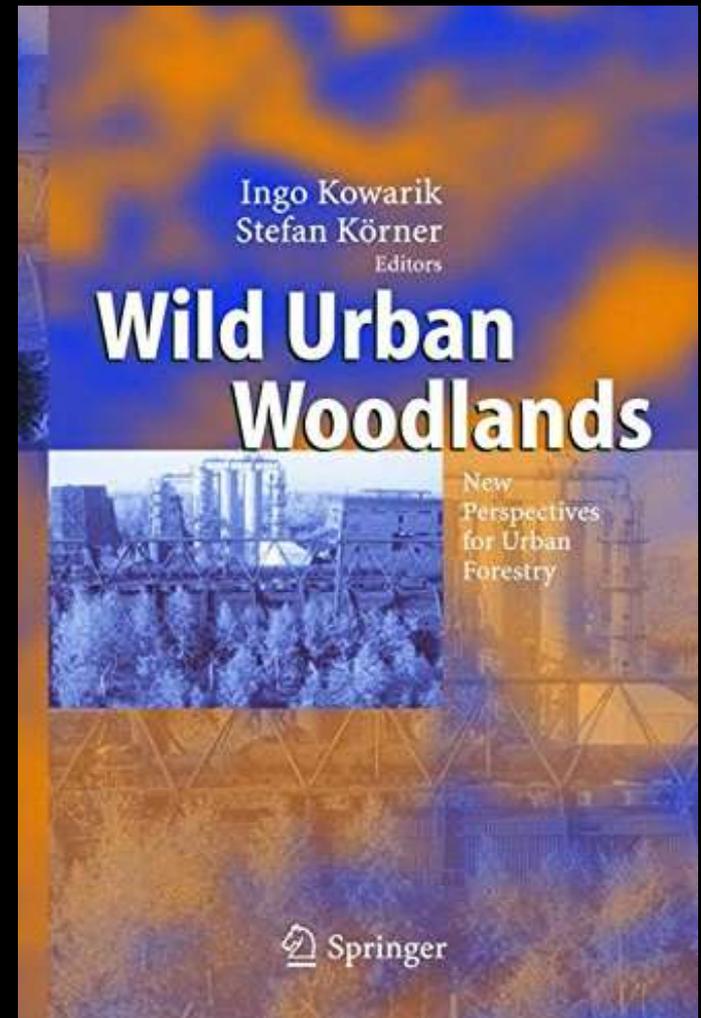
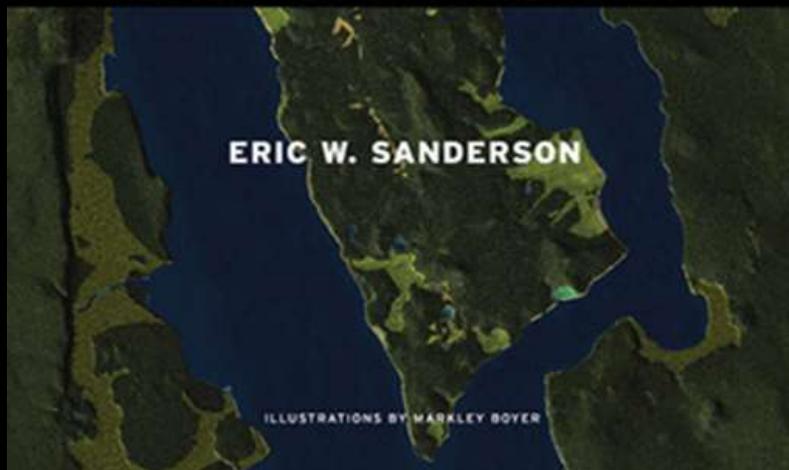


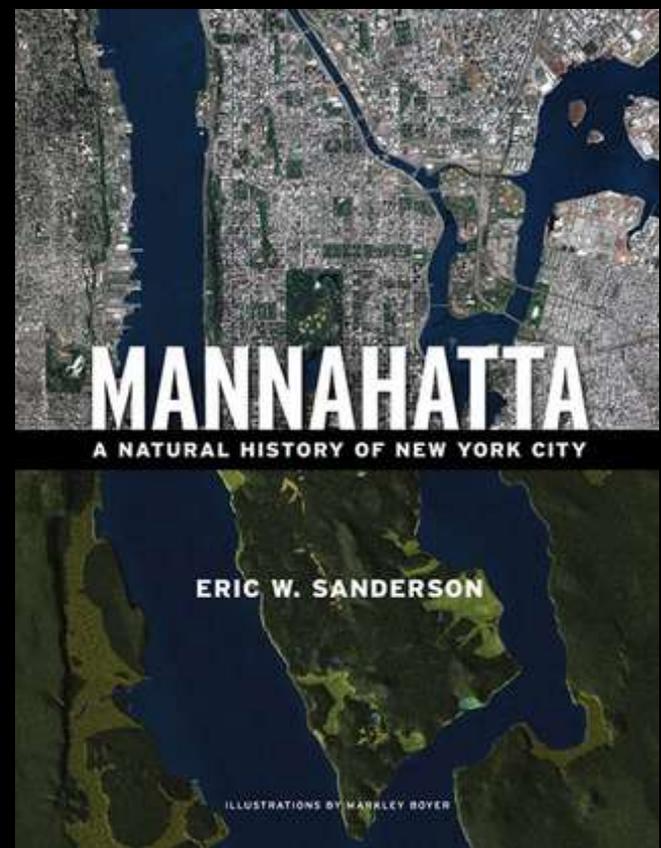
Cherry-headed (red-masked) conures



Contemporary Ecology and the City Retrospective vs. Prospective Ecology

Scientific Knowledge and Urban Ecology

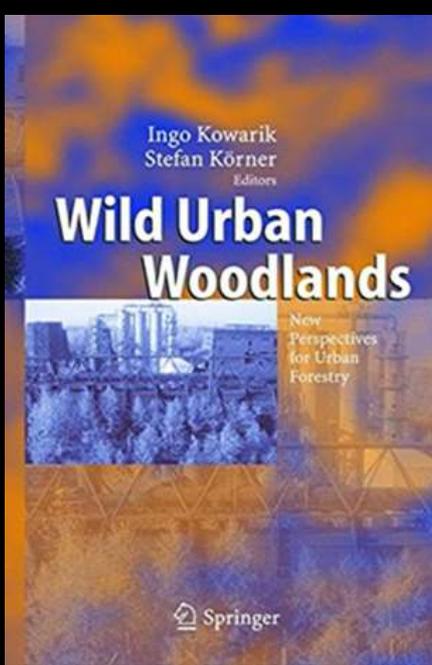




Retrospective Ecology, Historical Naturalness, and Urban Ecology

“The Mannahatta Project began in 1999, when landscape ecologist Dr. Eric Sanderson moved to New York City to work for the Wildlife Conservation Society. Dr. Sanderson realized that, to fully appreciate the concrete landscape of streets and buildings that was his new home, he would have to “go back in time” to recreate the its ecology from the “ground up.””

“Going back to 1609 allows us to see what New York City was before it was a city and to reimagine the city’s development in a way that would incorporate more of the natural cycles and processes (such as the hydrological cycle) that made the island the ecological gem that it was.”



Reassessing scientific approaches to naturalness

Retrospective naturalness vs. Prospective naturalness

Wild Urban Woodlands Ingo Kowarik 2005

Retrospective naturalness

- The point of reference is therefore, pristine vegetation uninfluenced by humans. Based on the cultural history of the relevant area, the reference period may lie decades or a few millennia in the past.
- In the retrospective perspective of naturalness, remnants of pristine woodlands are most natural and woodlands used for forestry are at least semi-natural.
- This means that from the retrospective perspective the development back to nearly natural or natural woodlands can be analyzed well.

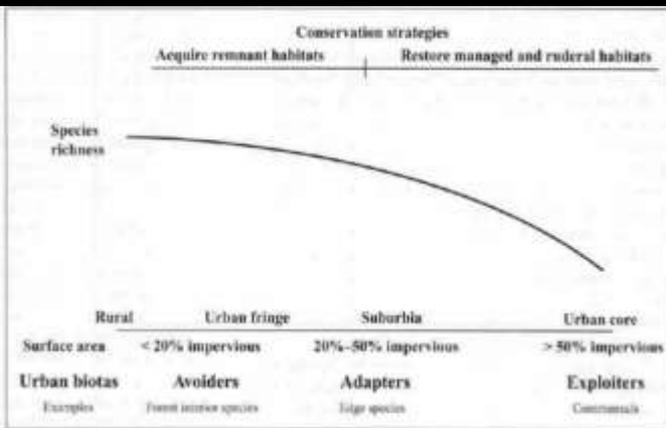


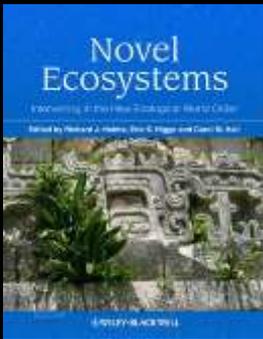
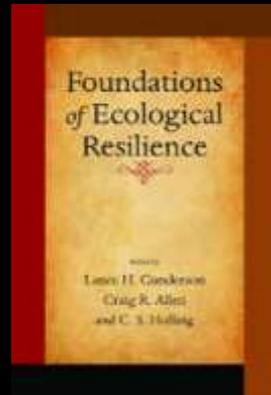
Figure 2. Urban-rural gradient. This is a very generalized and simplified depiction of changes in surface area, species richness, and composition, as compiled from a number of sources discussed in the text. Two basic conservation strategies with respect to urban sprawl are shown at the top.

With the evaluation of new development of “wild” urban woodlands, however, the traditional concept of naturalness oriented toward historical comparisons runs aground.

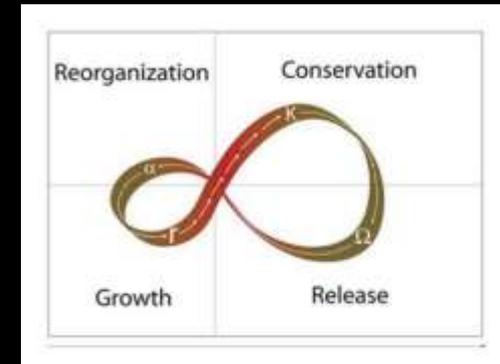
Resilience and Prospective Urban Ecology

A resilient ecosystem can withstand shocks and rebuild itself when necessary.

the natural capacity for *process* is the central point, not a *particular*, retrospectively determined and often idealized, *picture* of nature.



2017



2005



2007



2009



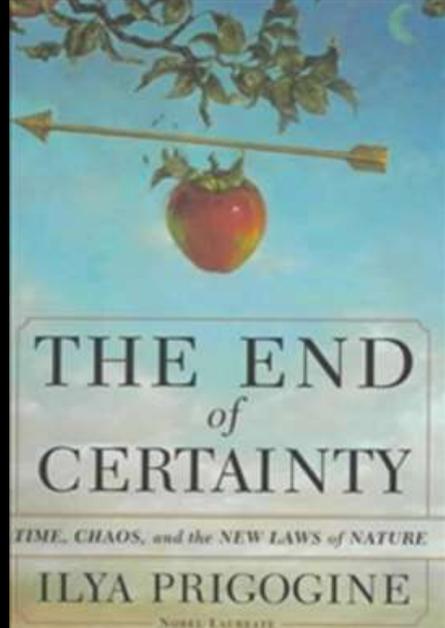
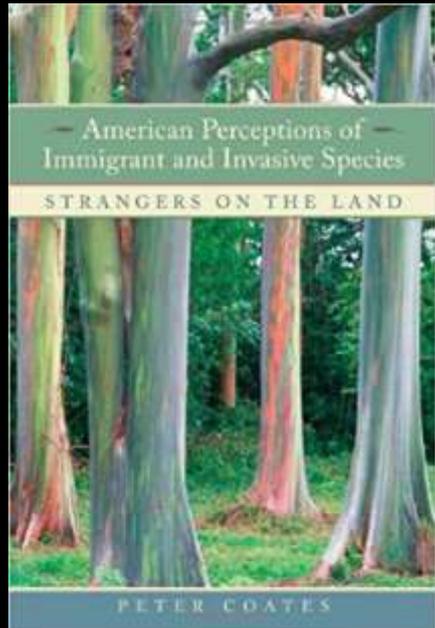
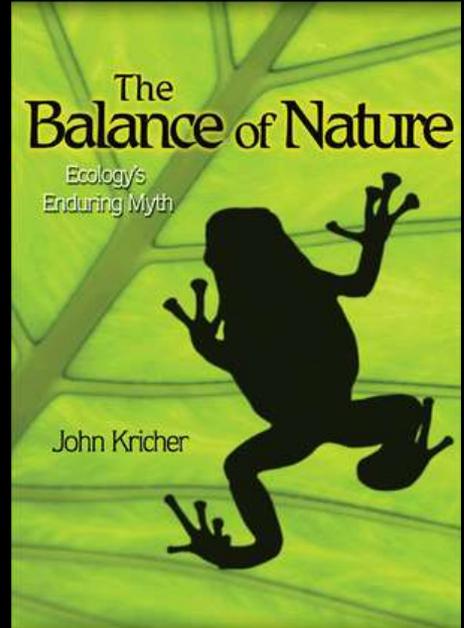
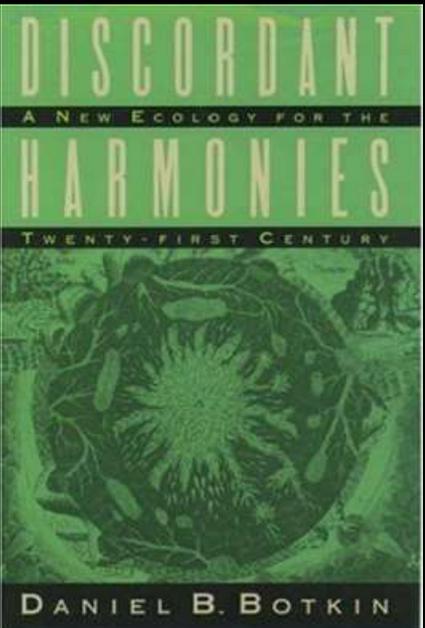
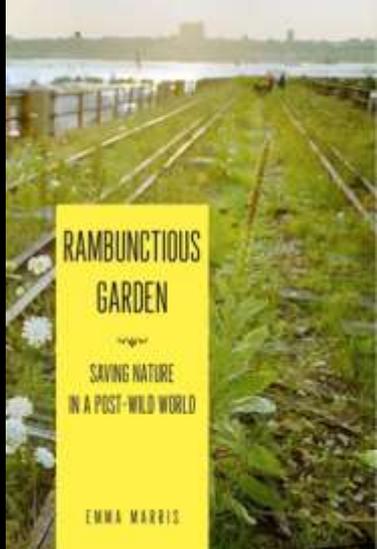
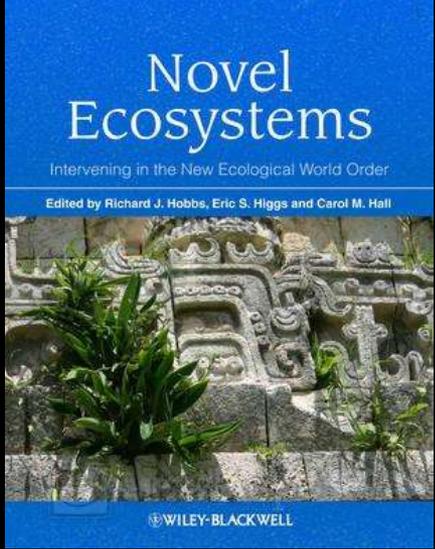
2012

New Nature

New Metaphors of Change and Permanence

“Clearly, to abandon a belief in the constancy of undisturbed nature is psychologically uncomfortable...The way to achieve a harmony with nature is first to break free of old metaphors and embrace new ones so that we can lift the veils that prevent us from accepting what we observe, and then to make use of technology to study life and life-support systems as they are.”

Botkin, *Discordant Harmonies*

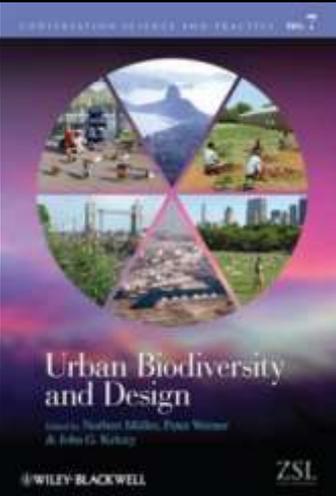
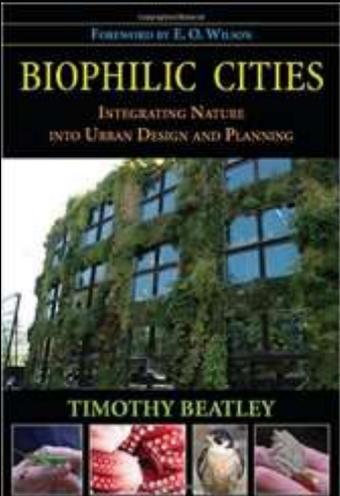
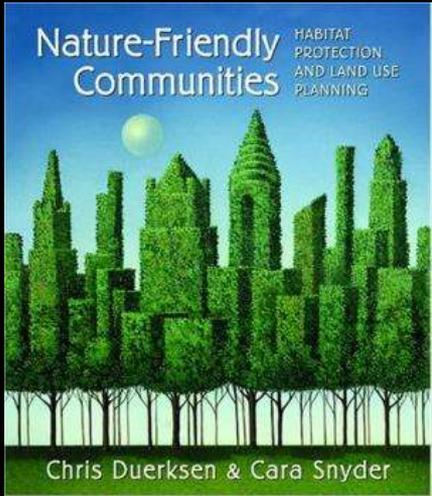
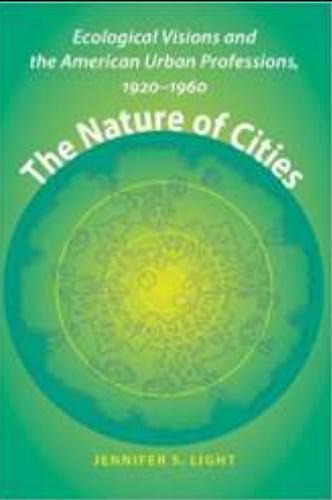


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Permanence and Change

Nothing Endures But Change

Heraclitus 540-480BC

