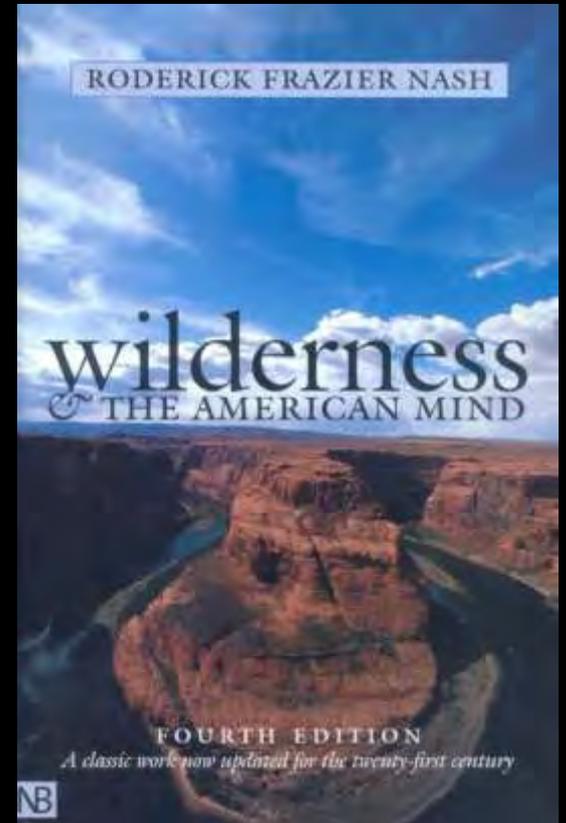


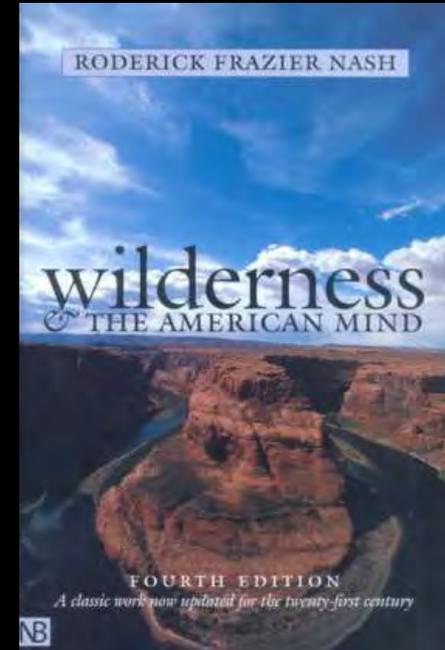
First Nature: The Pristine Myth and Wilderness

Kevin M. Anderson Ph.D.
Austin Water Center for Environmental Research



The Wilderness Myth

America was seen as a pristine wilderness by Europeans arriving in this New World
– intent on subduing the wilderness and cultivating the land.



“wilderness is a matter of perception – part of the geography of the American mind”

Roderick Nash, *Wilderness and the American Mind* (1967)



The Varieties of Possibility for American Nature

Myths are foundational narratives used by humans to make sense of the world.

Narratives

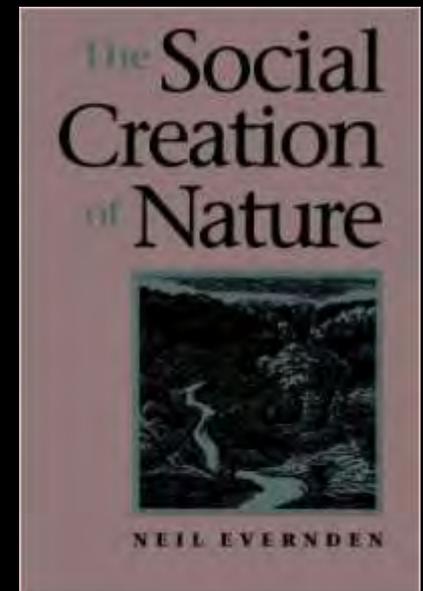
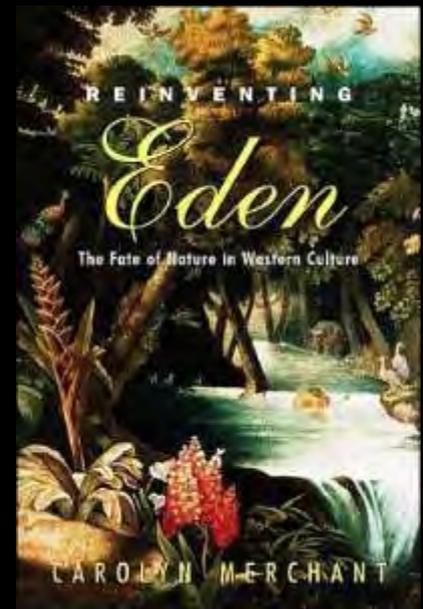
Narratives form our reality. We become their vessels. Stories find, capture, and hold us. Our lives are shaped by the stories we hear as children; some fade as we grow older, others are reinforced by our families, churches, and schools. From stories we absorb our goals in life, our morals, and our patterns of behavior.

- Carolyn Merchant (2003) *Reinventing Eden* p. 3.

Metaphor

We evolve, so to speak, through metaphor: one day the world is respoken, and a new being is released. Whether or not we have reached this point, whether there actually is the possibility of a re-imagining of things, we cannot know: perhaps our constant mass-media chatter is sufficient to drown out any rival vocabularies.

- Neil Evernden (1992) *The Social Creation of Nature* p. 124.

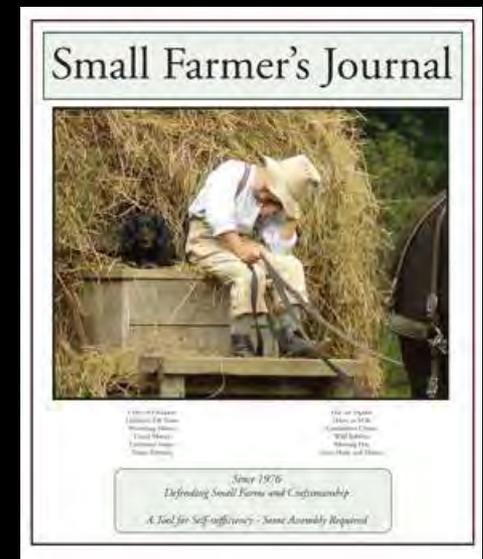
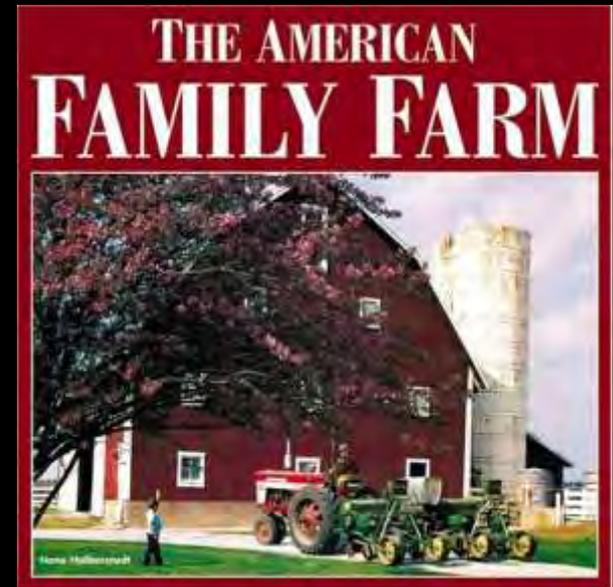


The Modern/Postmodern/Metamodern View of American Nature

In the United States, the foundational narratives of Nature are wilderness and pastoral arcadia.

They are the myths of American nature from which we assess the value of nature in America.

**“In wilderness
is the preservation
of the world.”
Thoreau**



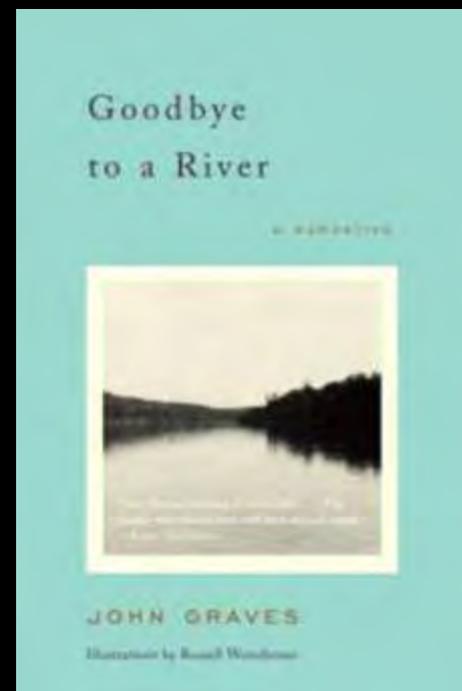
Ecological Change and the Narrative of Loss

To Have Viewed It Entire – John Graves

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)



First Nature as Wilderness Classical Western Ideas of Nature

Cicero and the Iterative Natures

First nature - wilderness - is the realm of the gods, but it is also the raw material for second nature.

In *De natura deorum* Cicero wrote,

"We sow corn, we plant trees, we fertilize the soil by irrigation, we dam the rivers and direct them where we want. In short, by means of our hands we try to create as it were a second nature within the natural world."

Jacopo Bonfadio wrote in 1541 that formal gardens make a "third nature, which I would not know how to name."

The illustration shows a distant mountain (first nature) giving way to cultivated agricultural land (second nature) and then a formal garden (third nature).



Frontispiece to l'Abbé de Vallemont's *Curiositez de la nature et de l'art* (1705)

Iterative natures – First and Second Nature

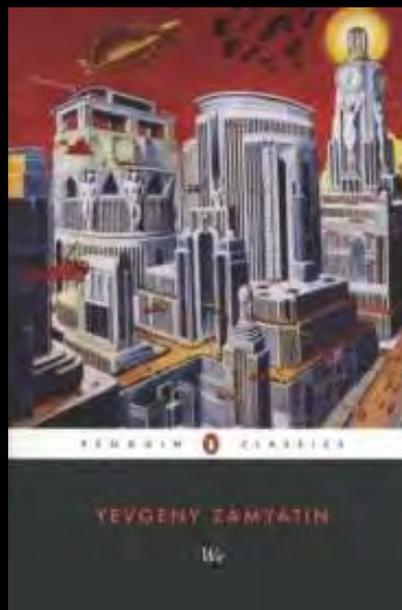
First Nature and Culture

Oh, how great and divinely limiting is the wisdom of walls.

This Green Wall is, I think, the greatest invention ever conceived.

Man ceased to be a wild animal the day he built the first wall;
Man ceased to be a wild man only on the day when the
Green Wall was completed, when, by this wall we isolated
our machine-like, perfect world from the irrational, ugly
world of trees, birds, and beasts.

- Eugene Zamyatin, *We* (1921)



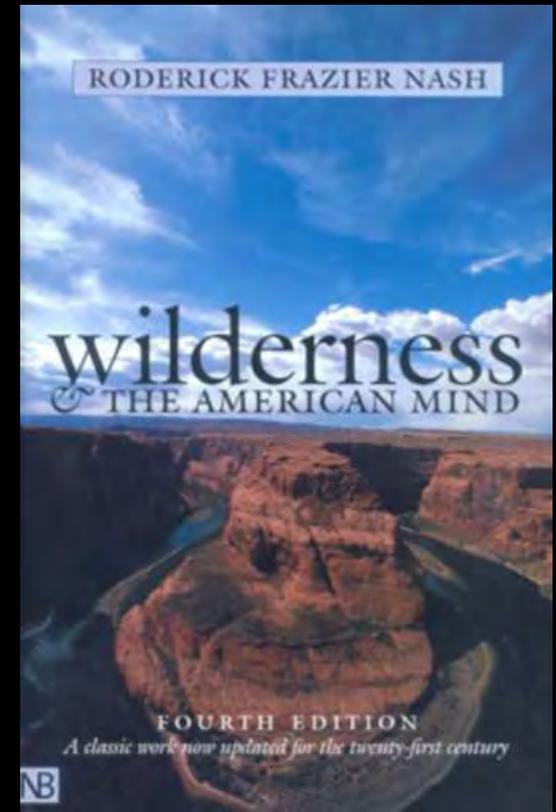
Wilderness - a noun that acts like an adjective

The word derives from the notion of "wildness"—in other words, that which is not controlled by humans.

The word's etymology is from the *wildeornes* meaning land inhabited only by wild animals, which in turn derives from *wildeor* meaning wild beast (wild + deor = beast, deer)

Nash – “The difficulty is that while the word is a noun it acts like an adjective. There is no specific material object that is wilderness.”

However, it was used to refer to specific material objects...



The Desolate Wilderness

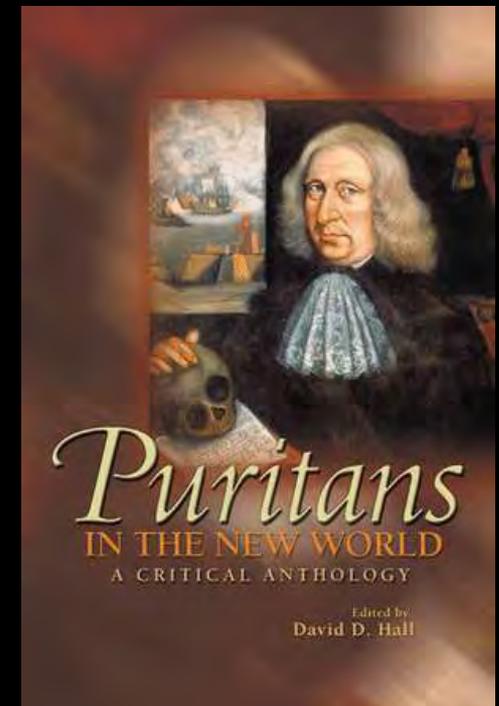
Samuel Johnson Dictionary of the English Language 1755 “a desert; a tract of solitude and savageness” [wasteland]

The Pilgrim leader William Bradford’s well-known description of the forbidding Cape Cod shoreline as seen from the deck of the Mayflower in 1620. He depicts it as

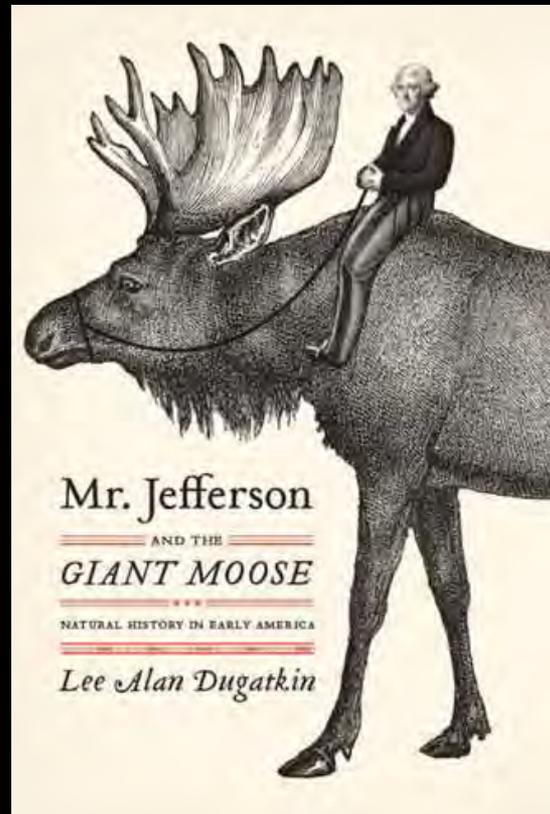
“a hideous and desolate wilderness, full of wild beasts and wild men.”

Here the bias inherent in the Christian idea of nature as fallen – as Satan’s domain – effectively erases the humanity of the indigenous Americans. To Bradford they are more like wild beasts than white men.

The concept of satanic nature provided a useful foil for the sacred mission of the Puritan colonists.



The Theory of Degeneracy of American Nature and Jefferson's Moose



Comte de Buffon 1707–1788

French naturalist, mathematician, cosmologist, and encyclopedia author.

Theory of Degeneracy of American Nature

In his massive encyclopedia of natural history, Buffon laid out what came to be called the theory of degeneracy.

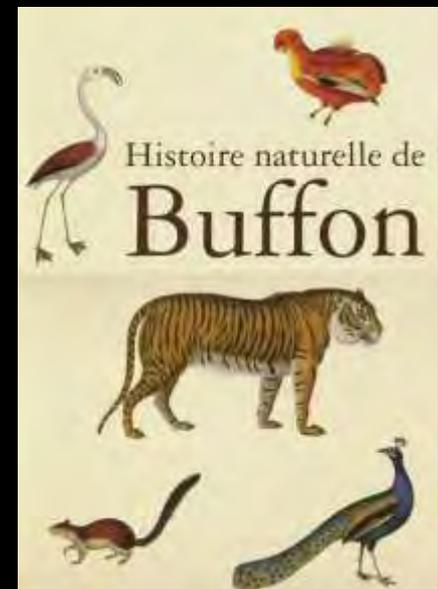
He argues that, as a result of living in a cold and wet climate, all species found in America were weak and feeble.

What's more, any species imported into America for economic reasons would soon succumb to its new environment and produce lines of puny, feeble offspring, which applied equally well to transplanted Europeans and their descendants in America.

America is a land of swamps, where life putrefies and rots.

If the theory of American degeneracy took hold in Europe the long-term consequences could impact trade with and immigration too the United States.

Dugatkin, 2009



Jefferson's Moose

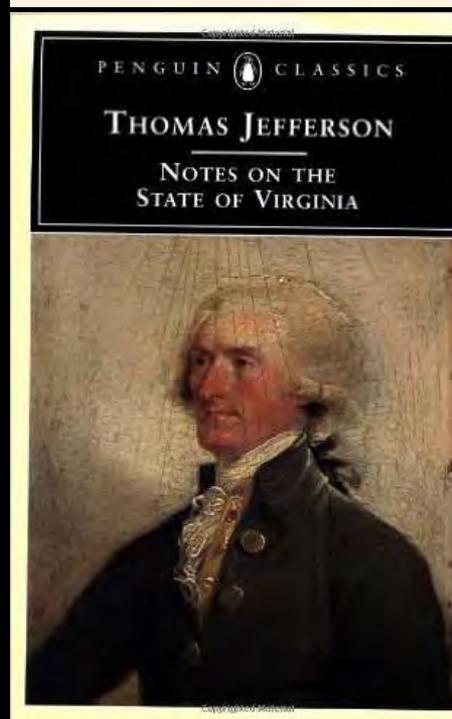
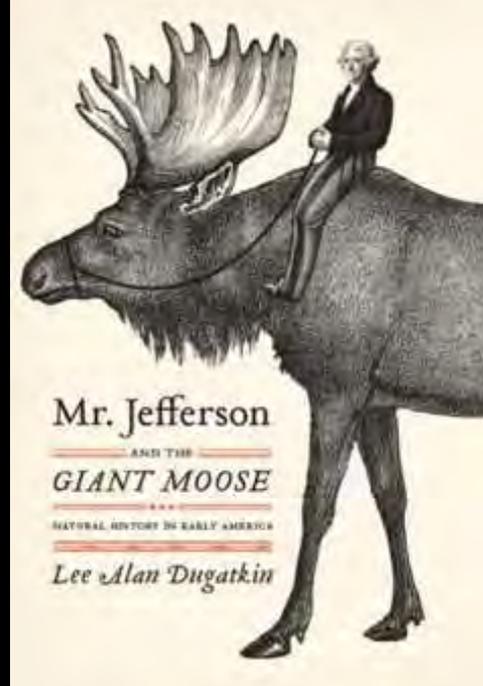
In his *Notes on the State of Virginia* (1785) Thomas Jefferson responded to Buffon's claims.

In addition, "Jefferson also wanted to present Buffon with tangible evidence...He tried with the skin of a panther, and then the bones of a hulking mastodon...but Buffon didn't budge.

Jefferson's most concerted effort in terms of hands-on evidence was to procure a very large, dead, stuffed American moose – antlers and all – to hand Buffon personally, in effect saying, "see."

This moose became a symbol for Jefferson – a symbol of the quashing of European arrogance in the form of degeneracy."

Dugatkin, 2009



19th Century Cultural Impact of the Theory of American Degeneracy

great unerring Nature once seems wrong

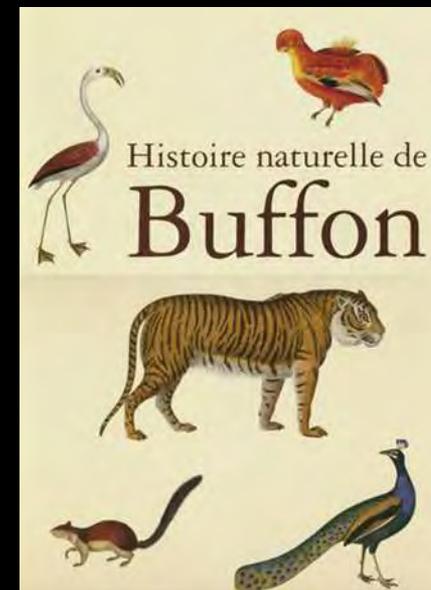
Hegel (1816)

– “America has always been and still shows itself physically and spiritually impotent.” and animals in the New World are “in every way smaller, weaker and more cowardly” This inferiority applied to domesticated animals as well as wild ones, “a piece of European beef is a delicacy” compared to American beef. American birds were mostly mute and would only sing when they lived in a land that no longer “resounds with almost inarticulate tones of degenerate men.”

Keats – *Lines to Fanny* (1819)

Where shall I learn to get my peace again?
To banish thoughts of that most hateful land,
Dungeoner of my friends, that wicked strand
Where they were wreck'd and live a wrecked life;
That monstrous region, whose dull rivers pour
Ever from their sordid urns unto the shore,
Unown'd of any weedy-haired gods;
Whose winds, all zephyrless, hold scourging rods,
Iced in the great lakes, to afflict mankind;

Whose rank-grown forests, frosted, black, and blind,
Would fright a Dryad; whose harsh herbag'd meads
Make lean and lank the starv'd ox while he feeds;
There flowers have no scent, birds no sweet song,
And great unerring Nature once seems wrong.



Defense of American Nature - Wildness and Wilderness

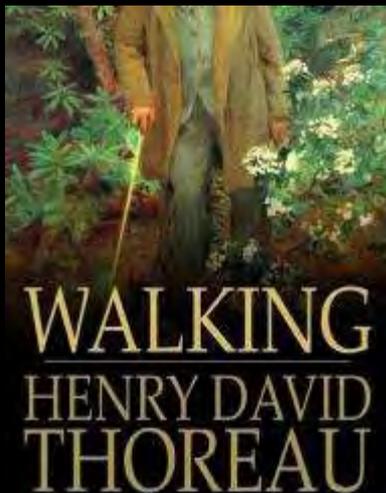
Henry David Thoreau, "Walking" (1862)

The West of which I speak is but another name for the Wild; and what I have been preparing to say is, that in Wildness is the preservation of the world.

Life consists with Wildness. The most alive is the wildest. Not yet subdued to man, its presence refreshes him. One who pressed forward incessantly and never rested from his labors, who grew fast and made infinite demands on life, would always find himself in a new country or wilderness, and surrounded by the raw material of life. He would be climbing over the prostrate stems of primitive forest trees.

Hope and the future for me are not in lawns and cultivated fields, not in towns and cities, but in the impervious and quaking swamps.

"This statement will do at least to set against Buffon's account of this part of the world and its productions."



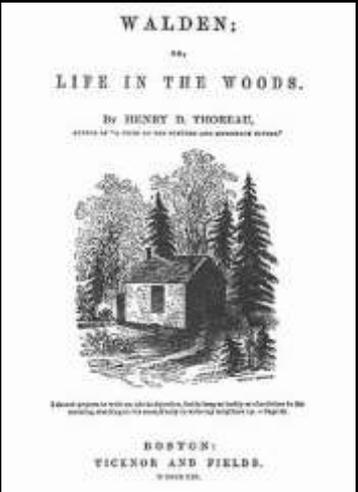
Creation of the American Wilderness Myth – Climate Reacts On Man

For I believe that climate does thus react on man — as there is something in the mountain air that feeds the spirit and inspires. Will not man grow to greater perfection intellectually as well as physically under these influences?

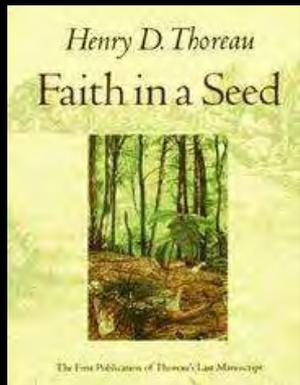
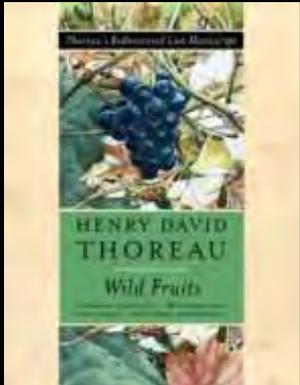
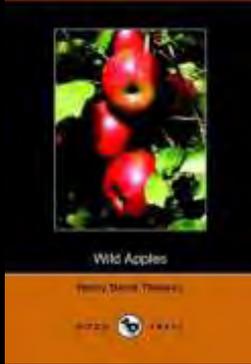
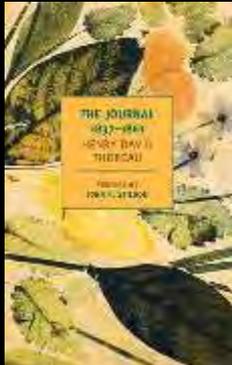
Yes; though you may think me perverse, if it were proposed to me to dwell in the neighborhood of the most beautiful garden that ever human art contrived, or else of a dismal swamp, I should certainly decide for the swamp.

When I would recreate myself, I seek the darkest wood, the thickest and most interminable, and, to the citizen, most dismal swamp.

I enter a swamp as a sacred place — a *sanctum sanctorum*. There is the strength — the marrow of Nature. The wild wood covers the virgin mould, — and the same soil is good for men and for trees.



Published 1854



...And today wilderness is a noun referring to these “sacred” places



The Myth of Wilderness as Pristine Nature

The Wilderness Act of 1964

“A wilderness, in contrast with those areas where man and his works dominate the landscape, is hereby recognized as an area where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain”



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.

Pre-Columbian Central America

- Home to over 19 million people
- Sedentary agricultural societies
- Major population crash after European conquest
- Landscape probably looked less like this →



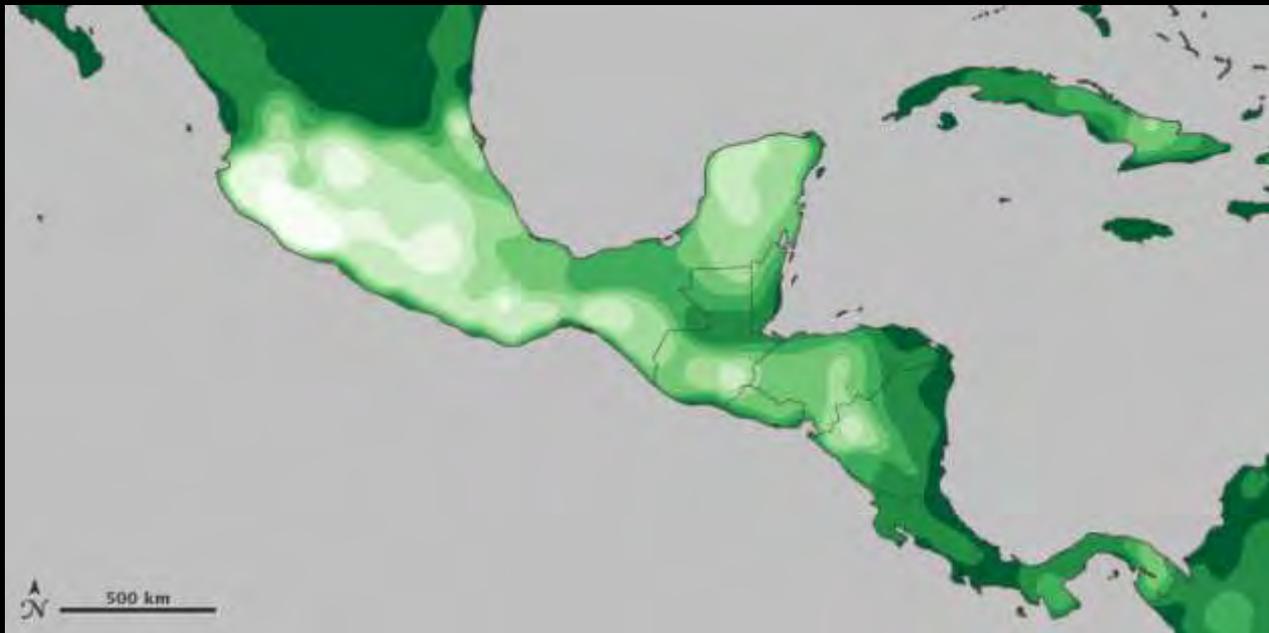
And more like this



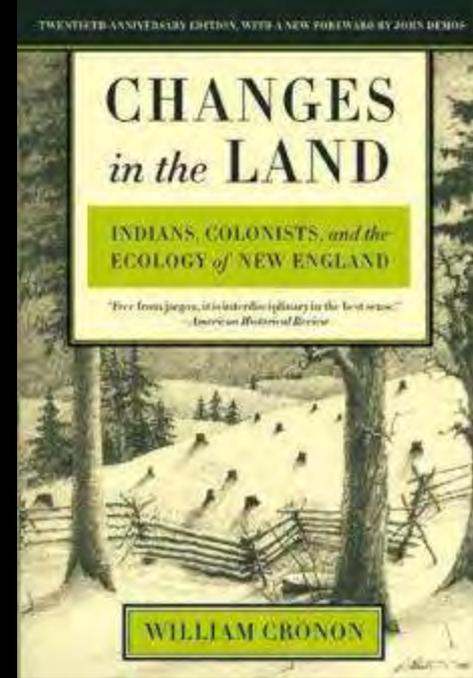
Transformation
950 A.D.



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.







Changes in the Land – New England and Appalachian Mountains

In southern New England they would burn large areas of the surrounding forest once or twice a year, creating forests that Europeans saw as “open and park-like.”

The fires would consume all the undergrowth so that the result was “a forest of large, widely spaced trees, few shrubs, and much grass and herbage.”

” Wherever Native Americans in southern New England lived, the English traveler (1633) William Wood noted, “there is scarce a bush or bramble or any cumbersome underwood to be seen in the more champion ground.”

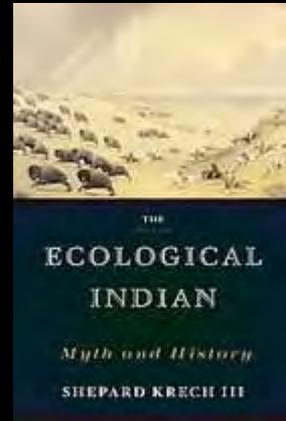
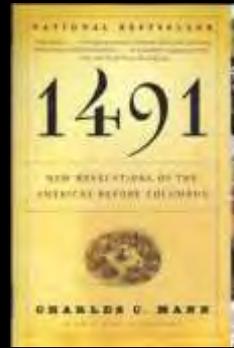


Ecological Impacts of Native Americans

In the first millennium A.D., the Indians who had burned undergrowth to facilitate grazing began systematically replanting large belts of woodland, transforming them into orchards for fruit and mast (the general name for hickory nuts, beechnuts, acorns, butternuts, hazelnuts, pecans, walnuts, and chestnuts)...

In Colonial times, one out of every four trees in between southeastern Canada and Georgia was a chestnut...

Within a few centuries, the Indians of the eastern forest reconfigured much of their landscape from a patchwork game park to a mix of farmland and orchards. Enough forest was left to allow for hunting, but agriculture was an increasing presence. The result was a new balance of nature." Mann, 1491



Indian Corn-Hills in Massachusetts



“The next day [July 9, 1605] Sieur de Monts and I landed to observe their tillage on the bank of the river [Saco river]. We saw their Indian corn, which they raise in gardens. Planting three or four kernels in one place, they then heap about it a quantity of earth with shells of the signoc before mentioned [the horseshoe crab, *Limulus polyphemus*]. Then three feet distant they plant as much more, and thus in succession. With this corn they put in each hill three or four Brazilian beans [the kidney bean, *Phaseolus vulgaris*], which are of different colors. When they grow up, they interlace with the corn, which reaches to the height of from five to six feet; and they keep the ground very free from weeds. We saw there many squashes, and pumpkins, and tobacco, which they likewise cultivate.

The Indian corn which we saw was at that time about two feet high, some of it as high as three. The beans were beginning to flower, as also the pumpkins and squashes. They plant their corn in May, and gather it in September.”

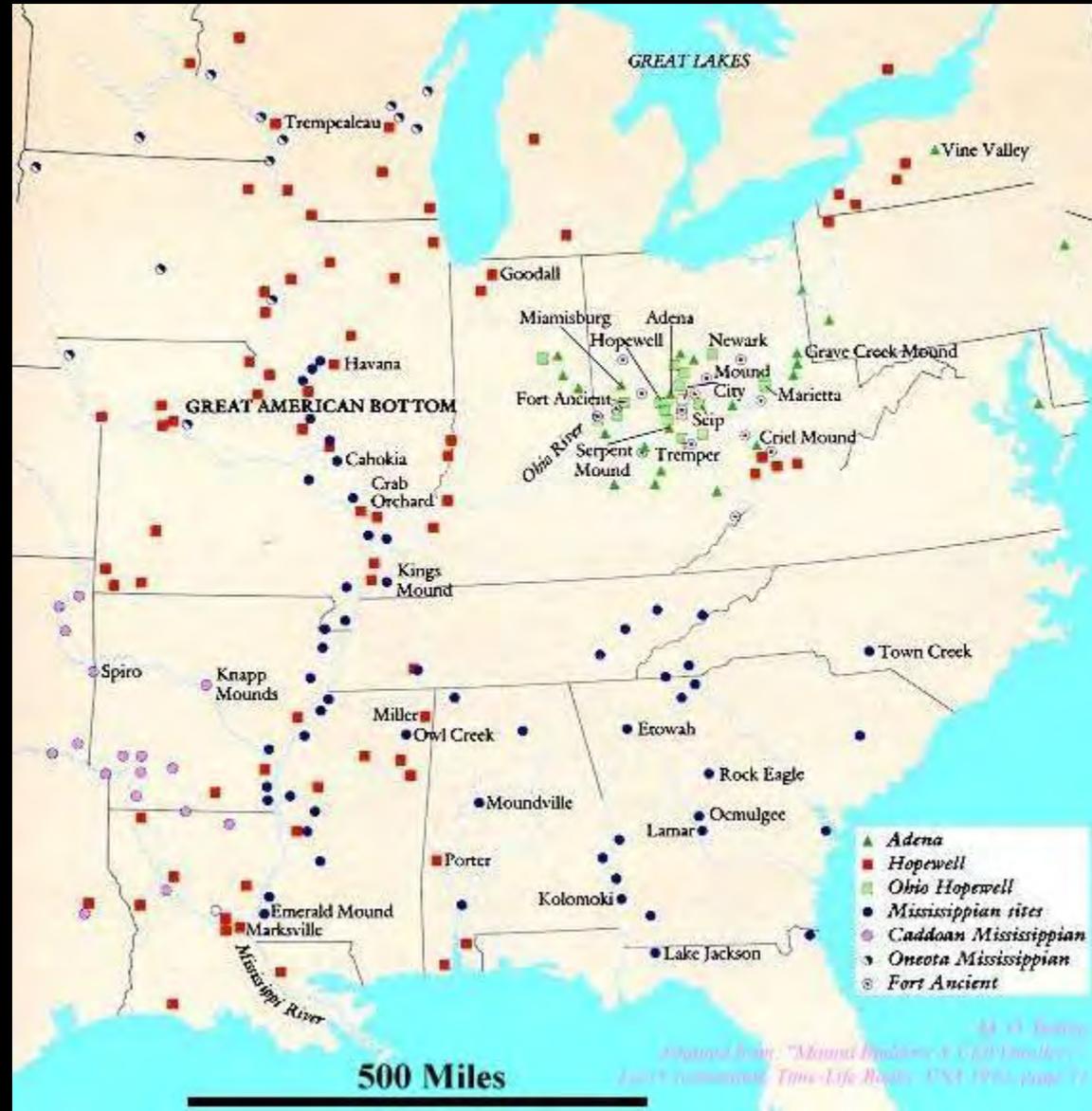
From *American Anthropologist* "Indian Corn-Hills in Massachusetts,"
Delabarre and Wilder, July 1920.

The North American Cultural Landscape 5000 years

They had a strong suggestion of influence from Mesoamerica.

Beginning with the construction of Watson Brake about 3400 B.C. in present-day Louisiana, nomadic indigenous peoples started building earthwork mounds in North America nearly 1000 years before the pyramids were constructed in Egypt.

Serpent Mound in southern Ohio is a 1,348-foot mound built about 1070 A.D.



The Mississippian Culture reached its climax about 1500 A.D.

Cahokia



Southwest Culture Area

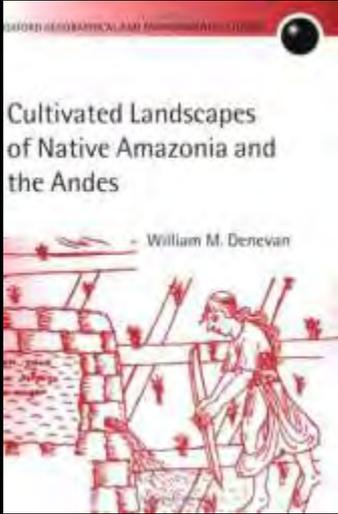
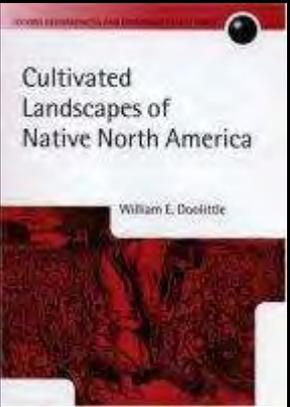
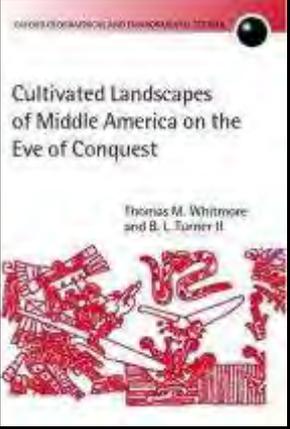


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1491 Cultivated Landscapes of the Americas - Geography

Denevan argued in 1976 that the American population in 1492 was around 55 million and that the population north of Mexico was under 4 million but current estimates range from 8-10 million.

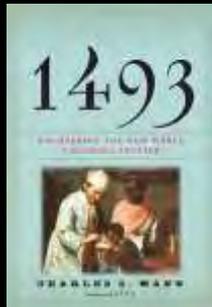
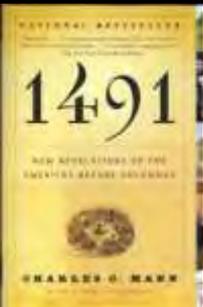
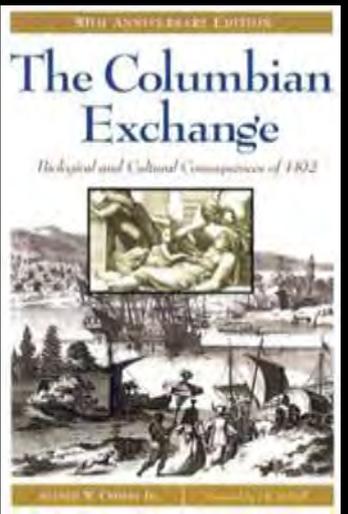


1492 The Columbian Exchange

“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.

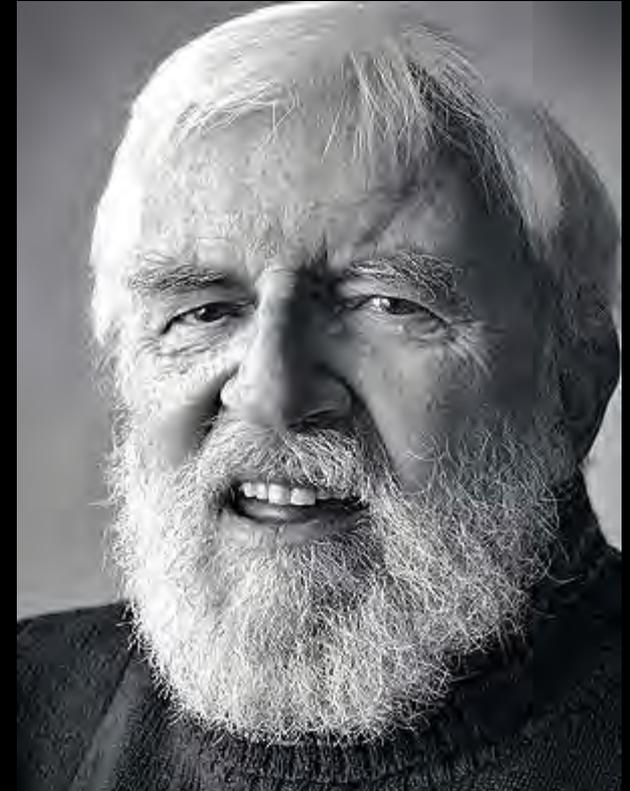
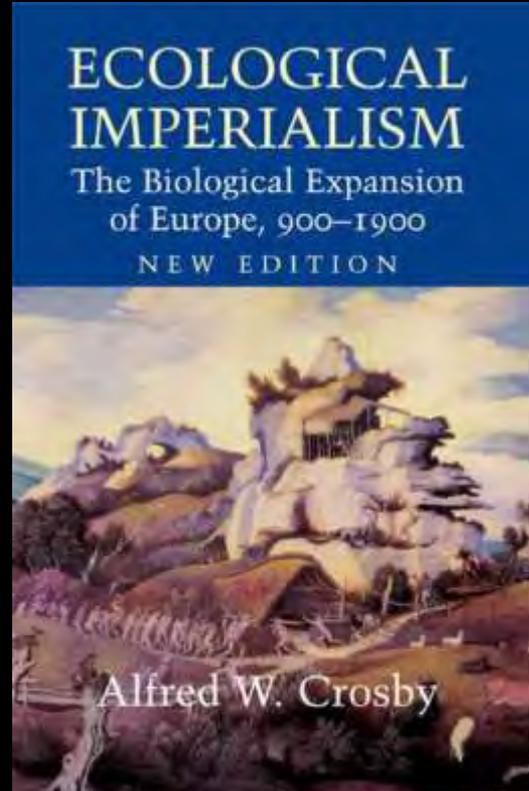
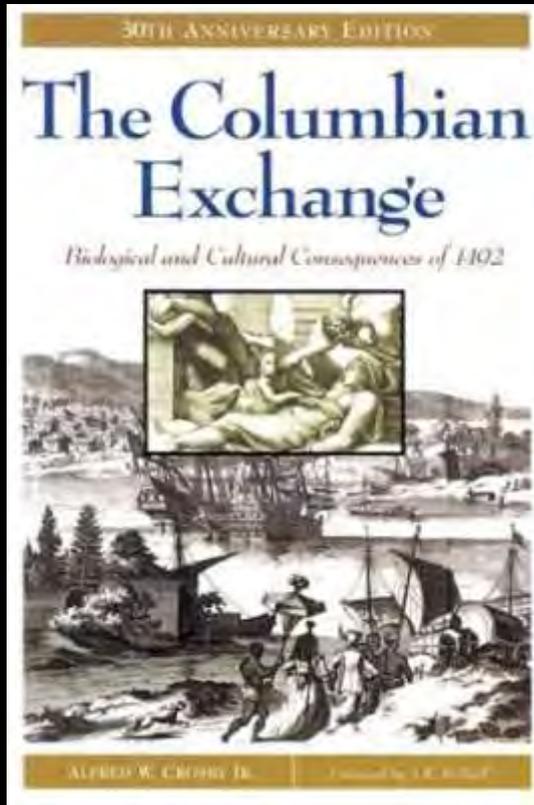
Ever since 1492, the hemispheres have become more and more alike, as people mix the world’s organisms into a global stew through the Columbian Exchange.”

Mann, 1491



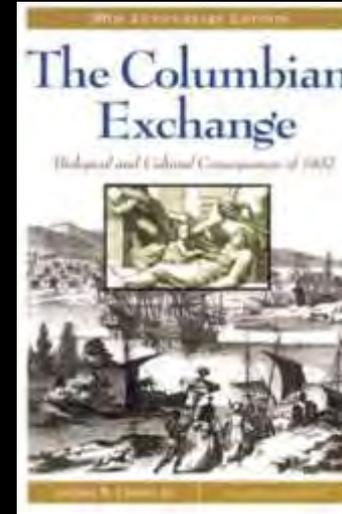
Ecological Imperialism - Environmental History

In 1972, Alfred Crosby described the near extinction of some tribes and the dramatic depopulation of others in *The Columbian Exchange* and the biological expansion of Europe in *Ecological Imperialism* published in 1986.



The Columbian Exchange - 1492

Disease and Depopulation



Depopulation of Native Americans in Florida, 1519-1617			
Year	Disease	Percent Decline	Estimated Population
1517			722,000
1520	Smallpox	-50	361,000
1528	Measles	-50	180,500
1545	Bubonic plague	-12.5	158,000
1559	Influenza	-5	150,000
1564-70	Influenza	-10	135,000
1585	Unidentified	-10	121,500
1586	Cape Verde Island fever	-20	97,200
1596	Measles	-25	72,900
1613-17	Bubonic plague	-50	36,450

Post 1492

Impacts of The Loss of the Keystone Species in North America

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.

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



Ecological Imperialism – Invasion or Ecological Release?

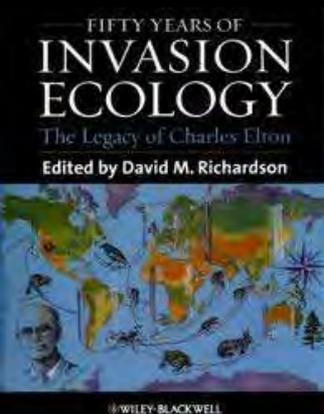
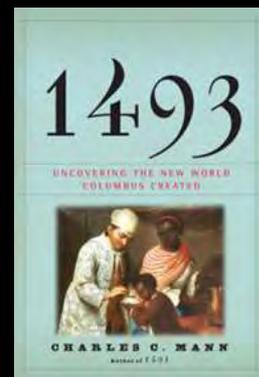
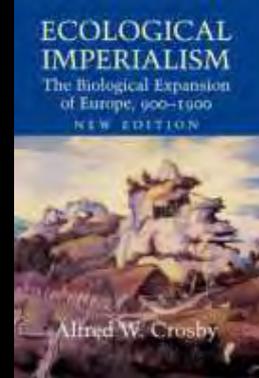
Columbus set off an ecological explosion of a magnitude unseen since the Ice Ages.

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”.

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. 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.

Mann, *1491*



- 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”

The Great Nations of Europe – Randy Newman

The Great Nations of Europe had gathered on the shore
they'd conquered what was behind them and now they wanted more
so they looked to the mighty ocean and took to the western sea
The great nations of Europe in the 16th century

Hide your wives and daughters, hide the groceries too
The great nations of Europe coming through

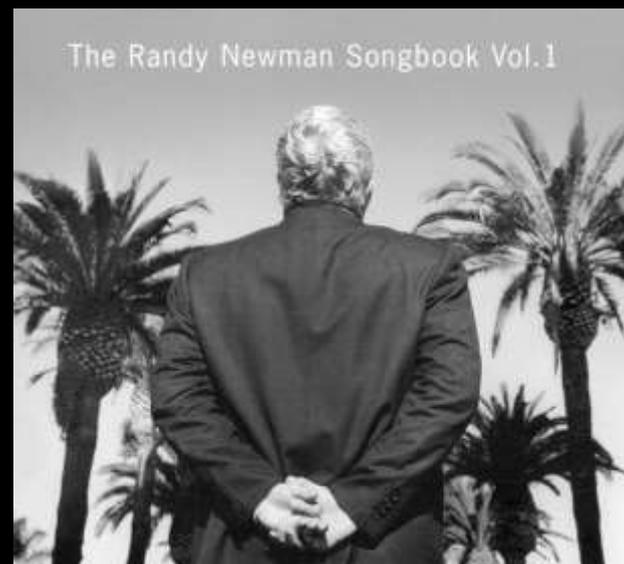
The Grand Canary Islands first land to which they came
they slaughtered all the canaries there which gave the land its name
there were natives there called Guanches, Guanches by the score
bullet's, disease the Portuguese, they weren't there any more

now they're gone, they're gone, they're really gone
you never seen anyone so gone
there's pictures in a museum, some lines written in a book
but you won't find a live one, no matter where you look

Hide your wives and daughters, hide the groceries too
The great nations of Europe coming through

Columbus sailed for India found Salvador instead
he shook hands with some Indians and soon they all were dead
they got tb and typhoid and athletes foot, diphtheria and the flu
'scuse me great nations coming through

On *Bad Love* (1999) and *Songbook Vol. 1* (2003)



The Disturbing Agent – von Humboldt and George Perkins Marsh

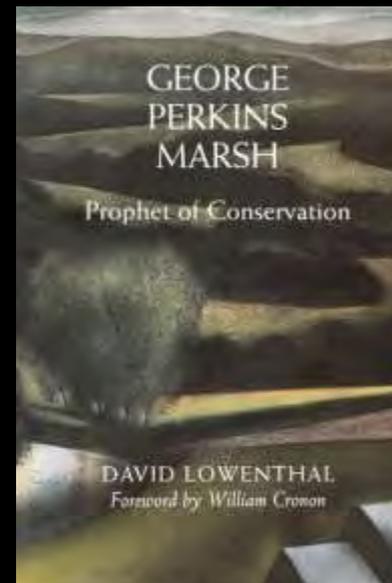
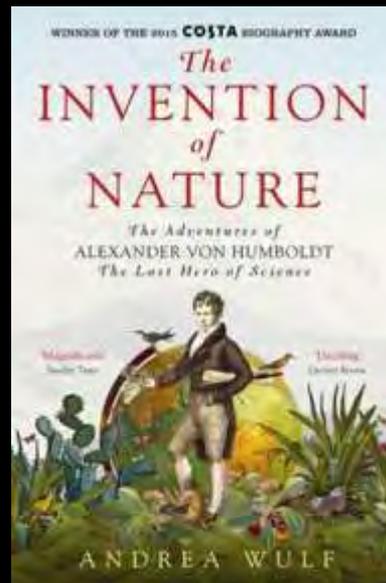
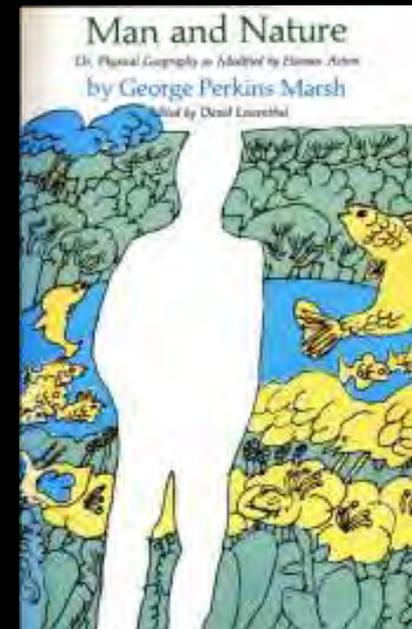
Humboldt wrote that the “wants and restless activity of large communities of men gradually despoil the face of the Earth.” In 1844, he prophetically listed three ways in which the human species was even then affecting the climate: “Through the destructions of forests, through the distribution of water, and through the production of great masses of steam and gas at the industrial centres.”

Man and Nature, or, Physical Geography as Modified by Human Action (1864)

George Perkins Marsh 1801 – 1882

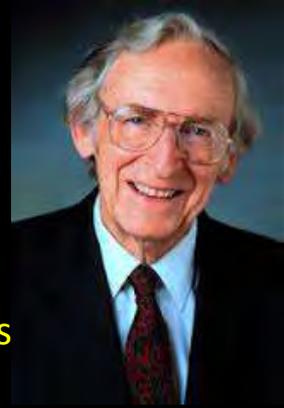
"Man is everywhere a disturbing agent. Wherever he plants his foot, the harmonies of nature are turned to discord"

Wallace Stegner “the rudest kick in the face that American initiative, optimism and carelessness had yet received.



Humans the Great Disrupters

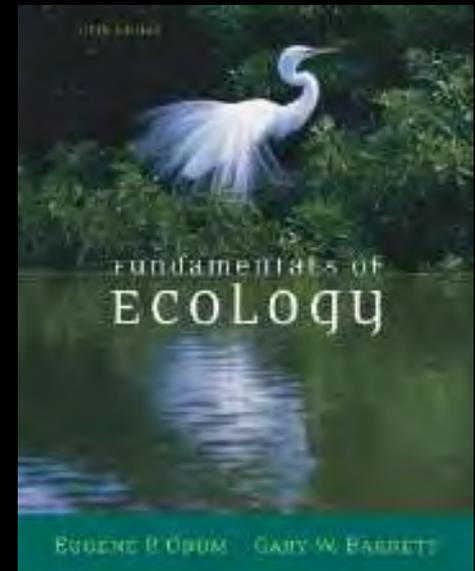
20th Century Development of Ecology – Ecosystem and Stability



Eugene Odum, *Fundamentals of Ecology* (1953)

- The law of organic nature is to bring order and harmony out of chaotic materials of exis
- 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

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?

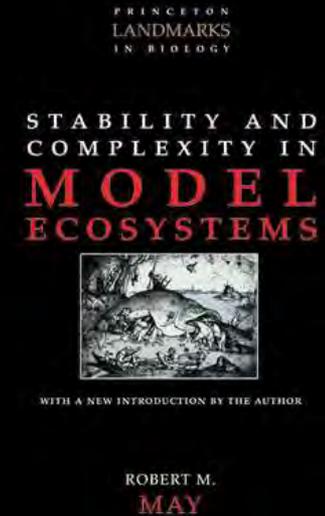


The “new ecology” post-Odum

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.



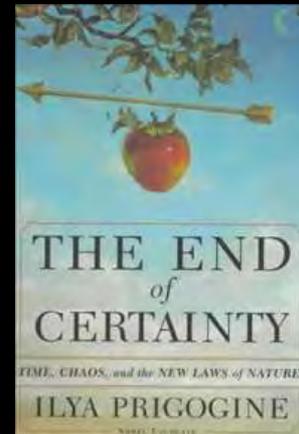
Instability of biodiversity and invasion biology

Daniel Botkin, *Discordant Harmonies: A New Ecology for the Twenty-first Century* (1990)

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.



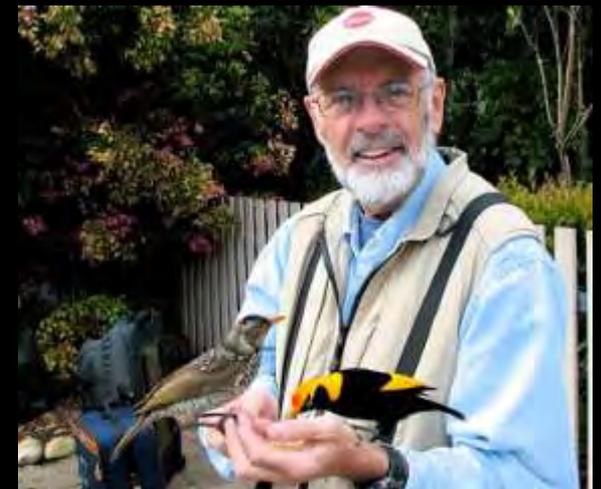
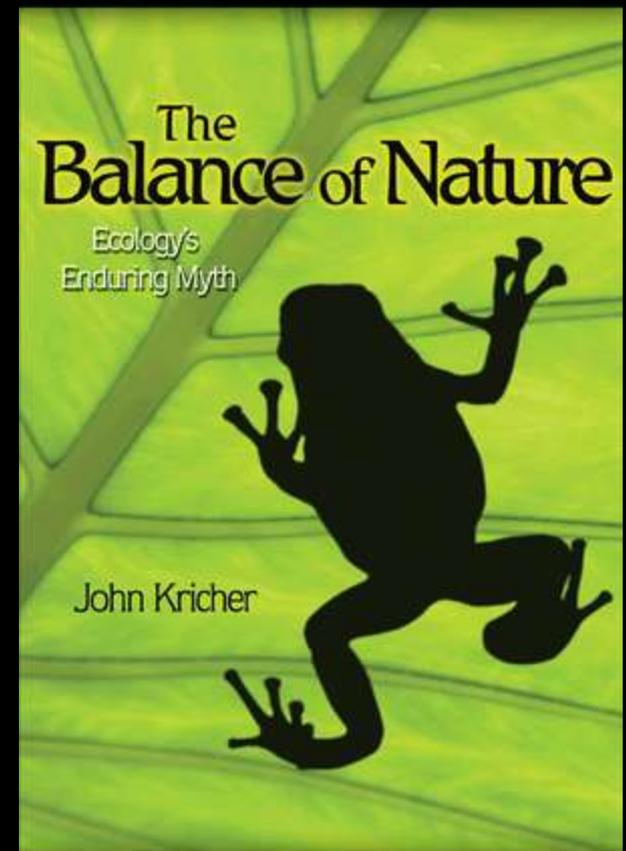
“The existence of a balance of nature has been a dominant part of Western philosophy since before Aristotle.

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



The End of Nature

Global Change and Nature

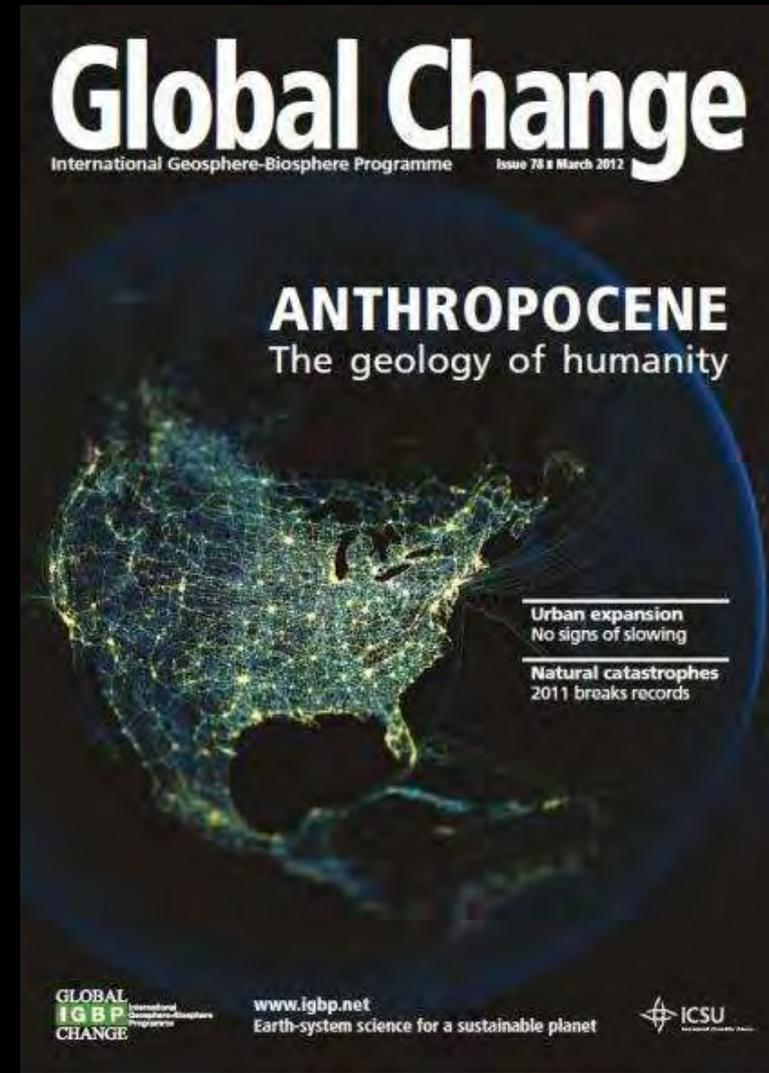
Anthropocene – the Age of Humans

Nearly all humans live in anthropogenic landscapes, especially in urban, suburban and densely populated rural village landscapes.

Anthropogenic landscape transformation (land-use change) is one of the primary drivers of global changes in climate, biodiversity and biogeochemistry.

Ecological processes in anthropogenic landscapes differ profoundly from those of pristine and indirectly impacted ecosystems. These processes include species introduction and domestication, population management and harvest, the tillage transport and cover of soils by impervious structures, fossil fuel combustion, irrigation and the fertilization of ecosystems with nitrogen, phosphorus and other limiting nutrients.

Anthropogenic landscapes are highly fragmented fine-scale mosaics of managed and unmanaged landscape features with clearly defined boundaries such as buildings, roads, yards and agricultural plots.



Human-Nature and the American Mind

“Anthropogenic biomes point to a necessary turnaround in ecological science and education, especially for North Americans.

Beginning with the first mention of ecology in school, the biosphere has long been depicted as being composed of natural biomes, perpetuating an outdated view of the world as ‘natural ecosystems with humans disturbing them’.

Anthropogenic biomes tell a completely different story, one of ‘human systems, with natural ecosystems embedded within them’. This is no minor change in the story we tell our children and each other. Yet it is necessary for sustainable management of the biosphere in the 21st century.” Erle Ellis



New Nature - Novel Ecosystems

Assemblages of species in a given area that have not previously occurred.

Novel ecosystems are not under human management, but they are mostly the result of direct or indirect human activities.

They lack natural analogs

Ecology (like evolution) has a strong historical dimension.

Pristine or near pristine ecosystems are historically and culturally important just like cathedrals and castles. Just like cathedrals and castles, they need to be preserved and restored as best they can.

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.

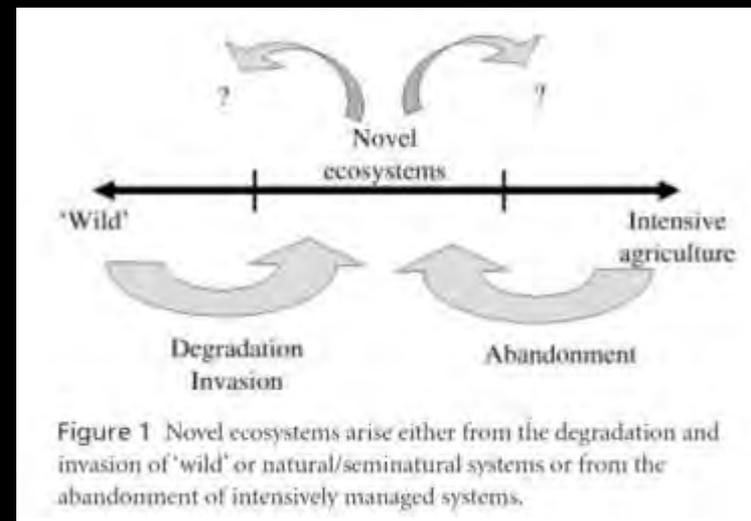
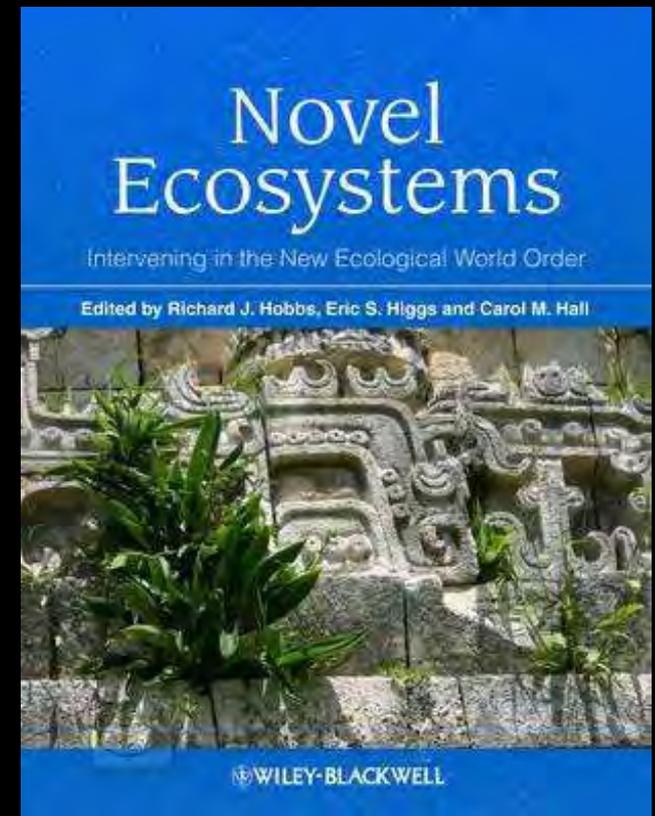


Figure 1 Novel ecosystems arise either from the degradation and invasion of 'wild' or natural/seminatural systems or from the abandonment of intensively managed systems.

A critique of the 'novel ecosystem' concept

Carolina Murcia^{1,2*}, James Aronson^{3,4*}, Gustavo H. Kattan⁵, David Moreno-Mateos³, Kingsley Dixon^{6,7}, and Daniel Simberloff⁸

Trends in Ecology & Evolution xx (2014) 1–6

The 'novel ecosystem' concept has captured the attention of scientists, managers, and science journalists, and more recently of policymakers, before it has been subjected to the scrutiny and empirical validation inherent to science. Lack of rigorous scrutiny can lead to undesirable outcomes in ecosystem management, environmental law, and policy. Contrary to the contentions of its proponents, no explicit, irreversible ecological thresholds allow distinctions between 'novel ecosystems' and 'hybrid' or 'historic' ones. Further, there is no clear message as to what practitioners should do with a 'novel ecosystem'. In addition, ecosystems of many types are being conserved, or restored to trajectories within historical ranges of variation, despite severe degradation that could have led to their being pronounced 'novel'.

Pristine Nature and the Rain Forest

“Zip lining in Costa Rica takes daring adventure travelers over the rainforest canopy: It’s a thrilling ride that can’t truly be replicated on miniaturized, inside zip lining courses. It takes a leap of faith to let go and send yourself across the treetops, despite the safety features in place.



Costa Rica’s rainforests, like all places allowed to remain wild and self-sustaining, are teeming with the perfect balance of flora and fauna, of predators and prey.

Left to itself, the Costa Rica rainforest is more than a natural resource; it’s an ever-changing yet unchanging part of the world’s geography.

Zip lining in Costa Rica is a wonderful way to see the forest while supporting a small local economy in an ethical way — this is an important factor for many travelers to Costa Rica.”



The Wilderness Myth

“wilderness is a matter of perception – part of the geography of the American mind”

Roderick Nash, *Wilderness and the American Mind* (1967)



"The idea of nature contains, though often unnoticed, an extraordinary amount of human history."

Raymond Williams, "Ideas of Nature" (1983)