The Nature Collectors: New Lands, New Nature, and Ecological Imperialism

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

The Practice of Natural History

- Observation
- Description
- Classification
- Collecting
- Mapping
- Amateurs to Professionals
- Artists as Naturalists
- Naturalists to Biologists
- Natural History as Literature
- Encyclopedias
- Museums
- Evolution

Classification and Identification - Taxonomy
Carl Linnaeus 1707 – 1778

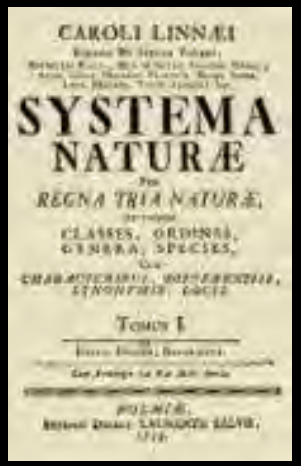
Swedish botanist, physician, and zoologist, who laid the foundations for the modern scheme of binomial nomenclature (*Genus species*).

The first edition of *Systema Naturae* was printed in 1735. He then returned to Sweden, where he became professor of botany at Uppsala.

In the 1740s, he was sent on several journeys through Sweden to find and classify plants and animals. In the 1750s and 60s, he continued to collect and classify animals, plants, and minerals.

His “sexual system” of taxonomy used the flower and its reproductive parts to structure the taxonomy, and it focused on “essential” diagnostic characteristics.

It was remarkably useful for the practical purposes of identification but inconsistent for animal classification.



Classification and Natural Diversity - Biogeography
Comte de Buffon 1707–1788

French naturalist, mathematician, cosmologist, and encyclopedic author.

Buffon published thirty-six quarto volumes of his *Histoire naturelle* from 1749-88.

In the opening volumes of the *Histoire naturelle* Buffon criticized Linnaeus's taxonomical approach to natural history.

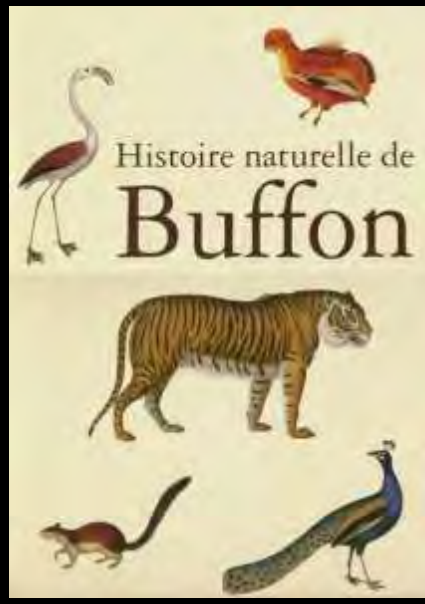
In the course of his examination of the animal world, Buffon noted that despite similar environments, different regions have distinct plants and animals, a concept later known as Buffon's Law.

This is considered to be the first principle of biogeography.

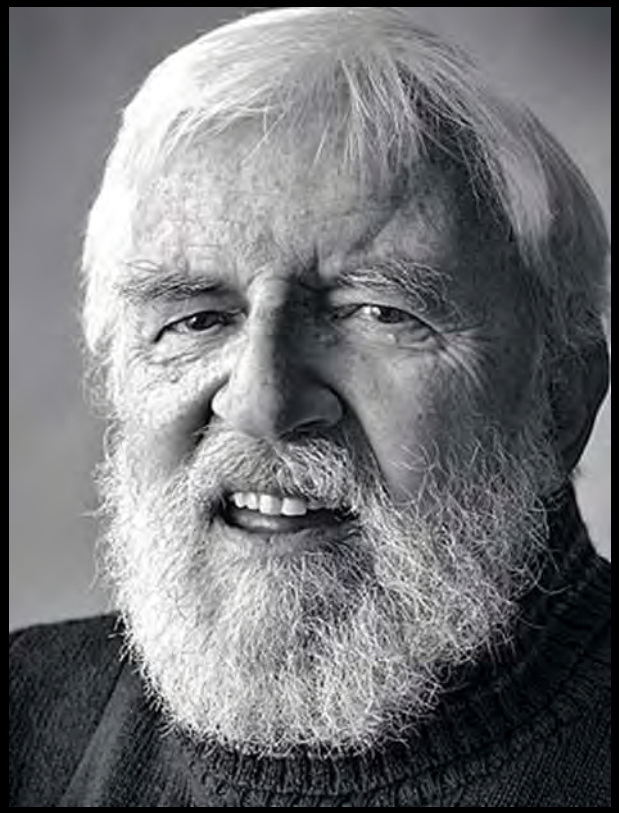
He was not an evolutionist, yet he was the father of evolutionism. He was the first person to discuss a large number of evolutionary problems.

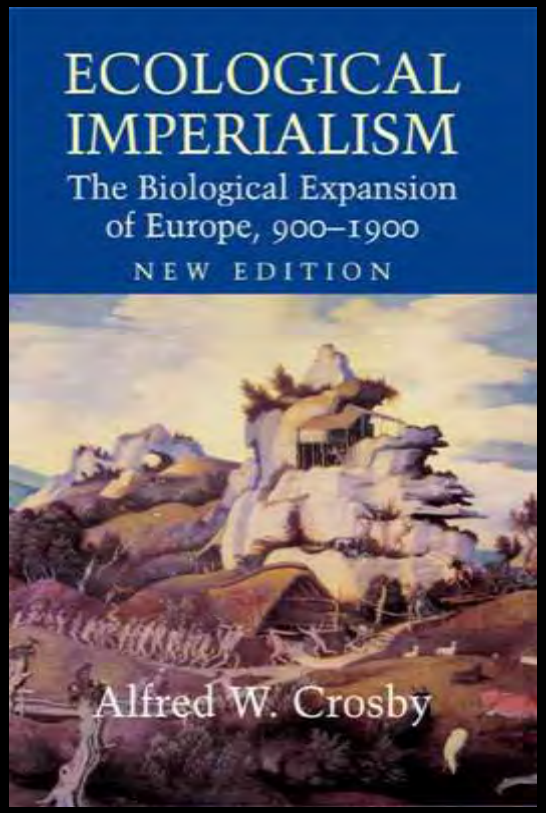
In contrast to Linnaeus, Buffon was less concerned with identification and more interested in vividly illustrating plenitude, diversity, and continuity of animal species.

Buffon insisted we "must make use of all parts of the object" for classification, including internal anatomy, behavior, and distribution.



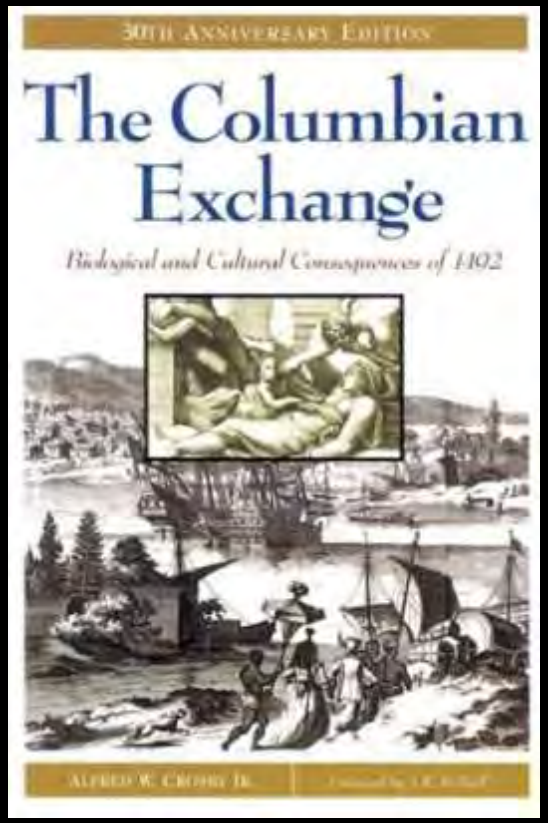
“What in heaven’s name is the reason that the sun never sets on the empire of the dandelion?”

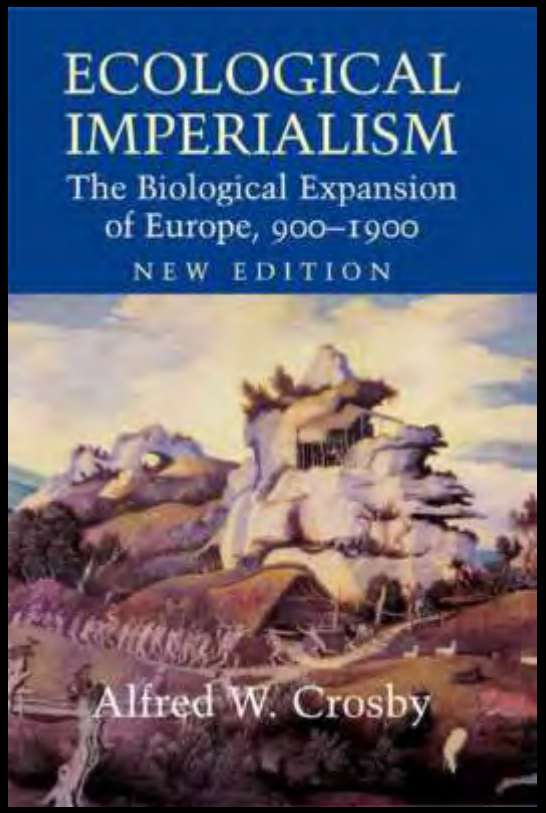


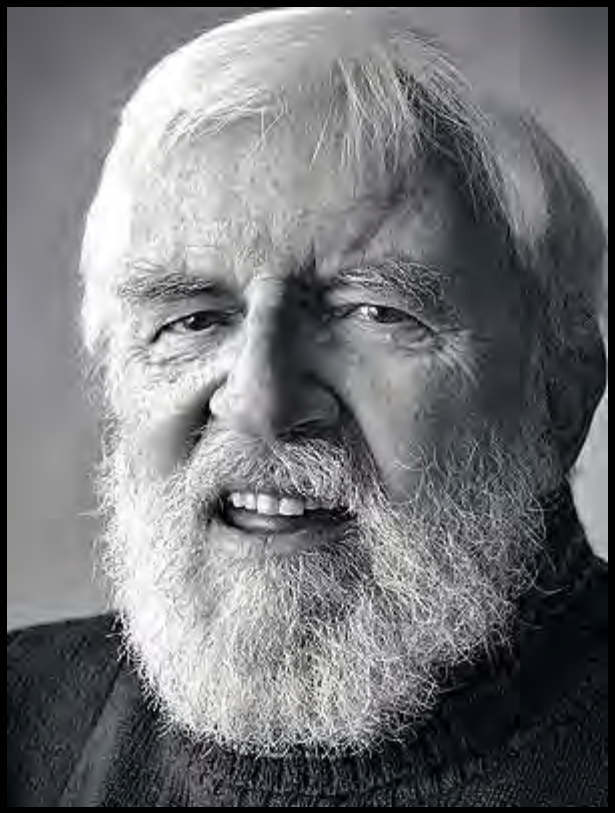


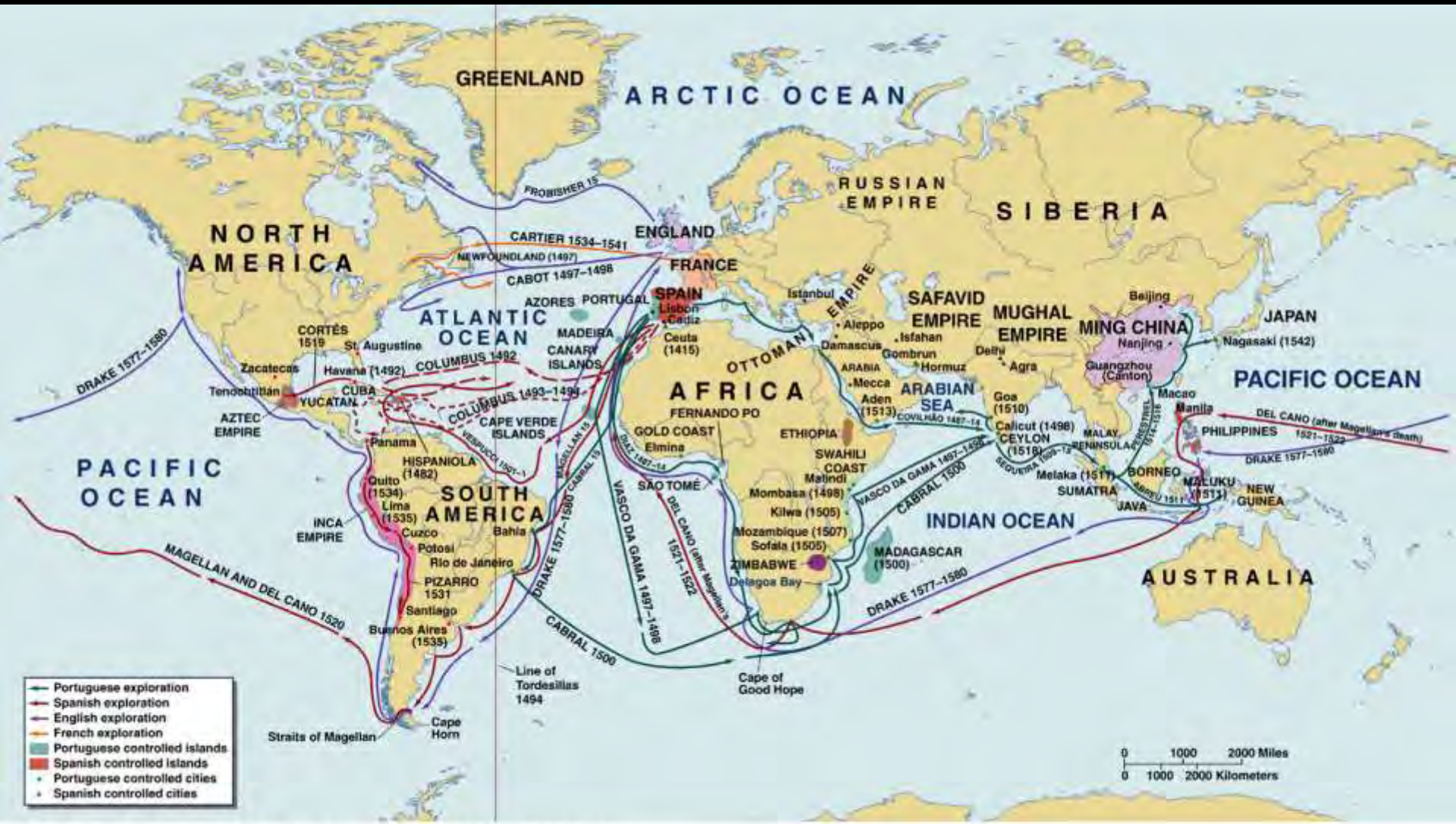
Ecological Imperialism - Environmental History

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.





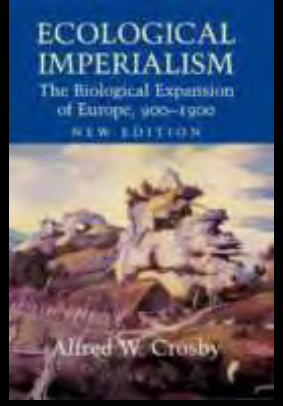


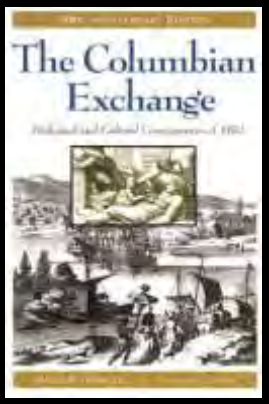


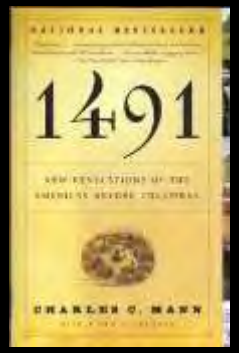
MAP 3-2 EUROPEAN EXPLORATION, 1420–1580

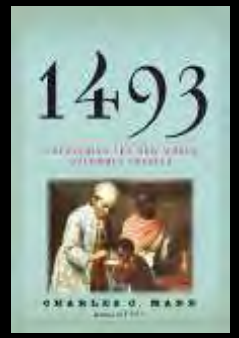
Colonial America Natural History 1492-1800

- European Naturalists - Spanish, French, Dutch, English
- Reshaping the Natural History of Earth - Ecological Imperialism
- Botanical Empires - Crops and Commerce
- Acclimatization and Botanical Gardens – By 1800, Europe had hundreds
- The Columbian Exchange
- Politics of Natural History – Local Knowledge vs. European Professional Knowledge







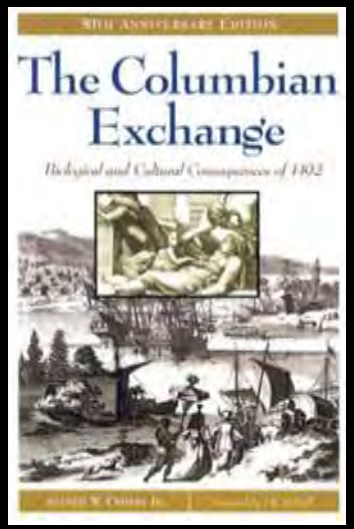


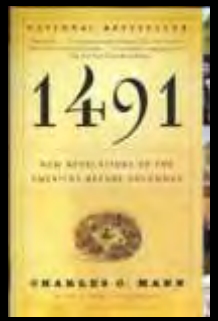
1492 The Columbian Exchange

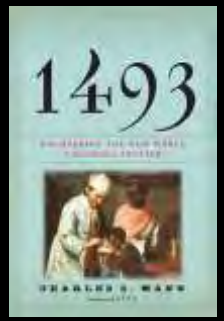
"Until about 200 million years ago Eurasia and the Americas were a single landmass called Pangaea. It broke apart and for millions of years the parts had little communication. As Crosby put it, Columbus initiated the process of knitting back together the seams of Pangaea.

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*

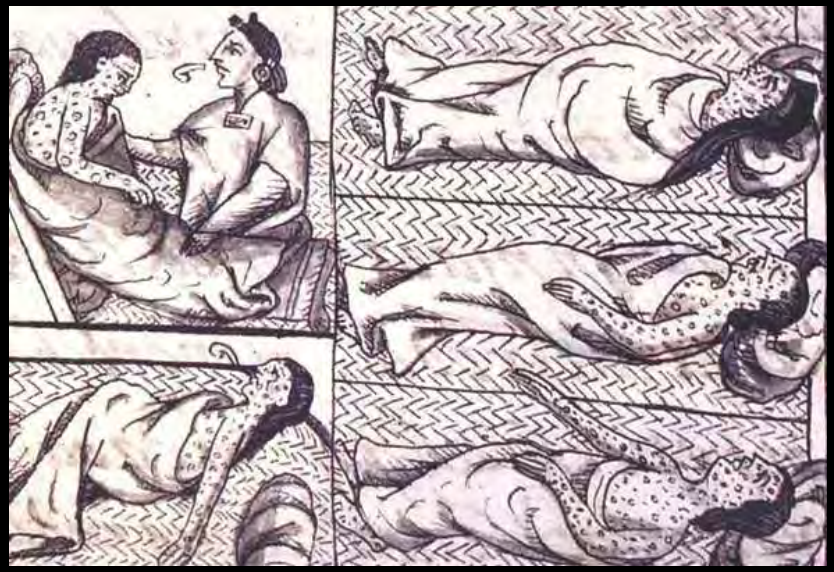


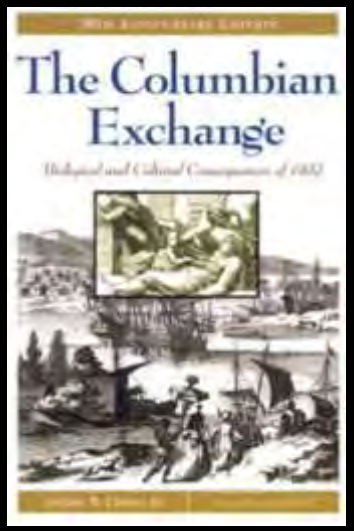




The Columbian Exchange - 1492

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

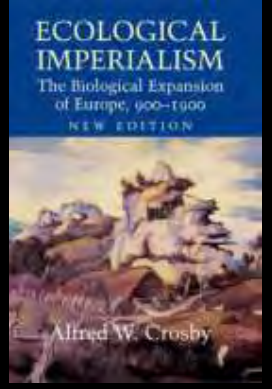
Impacts of The Loss of the Keystone Species in North America

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?

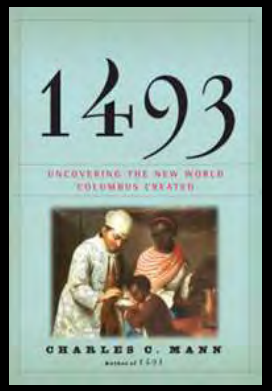


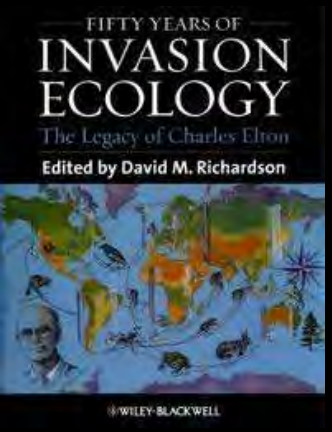
Columbus set off an ecological explosion of a magnitude unseen since the Ice Ages.

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

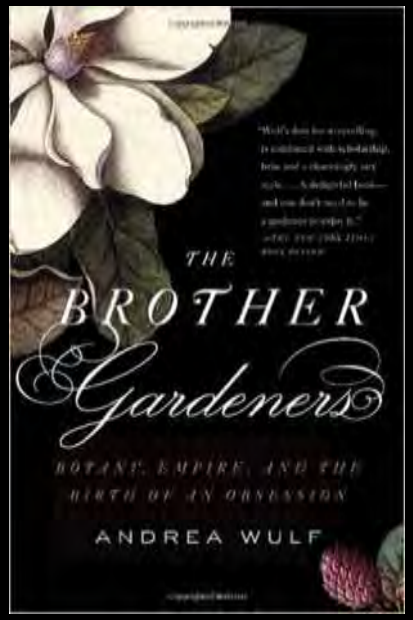
now they're gone, they're gone, they're really gone
you never seen anyone so gone
there's pictures in a museum, some lines written in a book
but you won't find a live one, no matter where you look

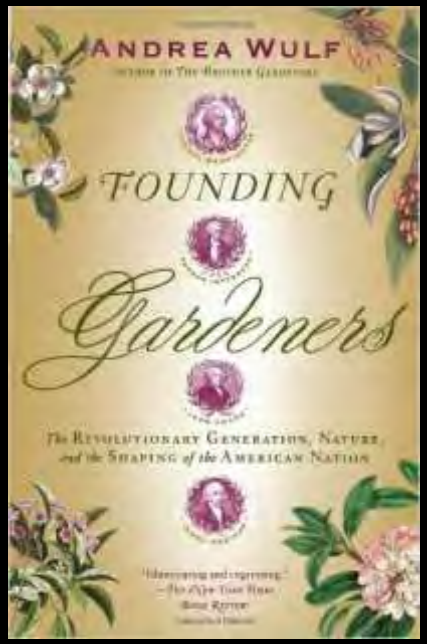
Hide your wives and daughters, hide the groceries too
The great nations of Europe coming through

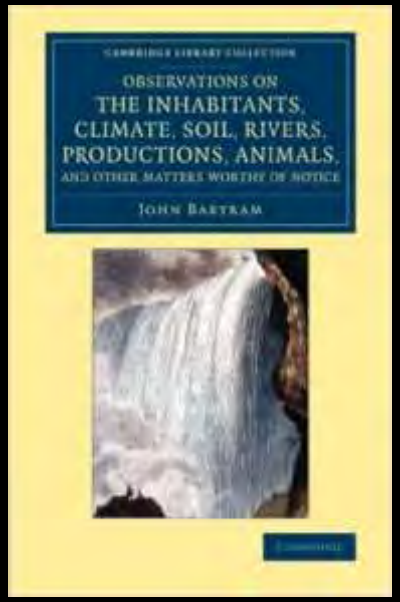
Columbus sailed for India found Salvador instead
he shook hands with some Indians and soon they all were dead
they got tb and typhoid and athletes foot, diphtheria and the flu
'scuse me great nations coming through

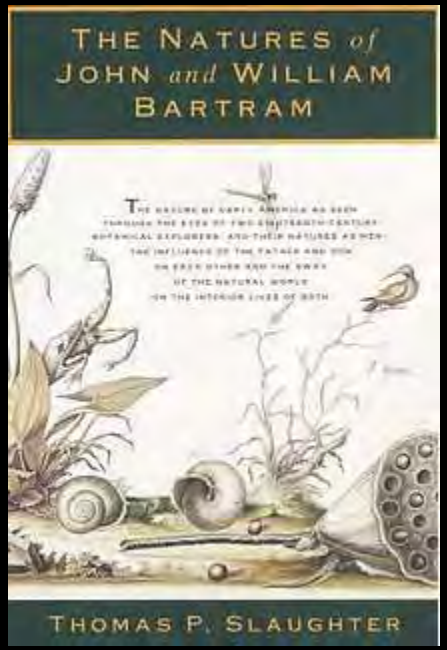
On *Bad Love* (1999) and *Songbook Vol. 1* (2003)

The Cultivation of American Nature









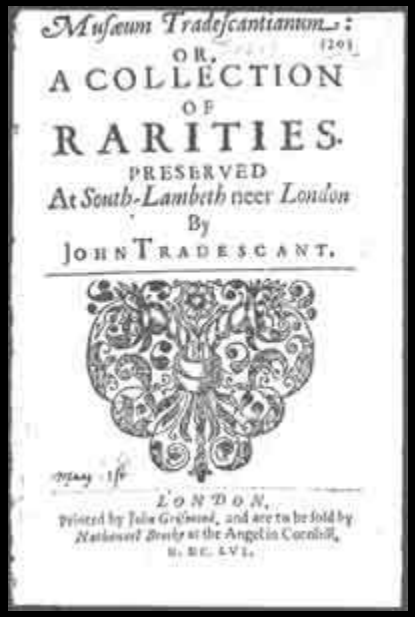
The Brother Gardeners

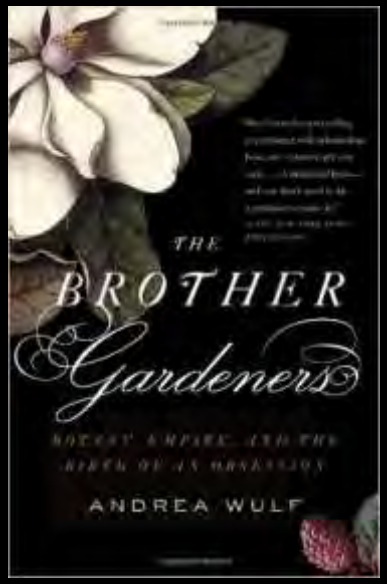
John Tradescant the Younger 1608 – 1662

son of John Tradescant the elder, was a botanist and gardener

Unlike his father, who collected specimens that other people brought back for him, he went in person to Virginia between 1628-1637

Among the seeds he brought back, to introduce to English gardens were great American trees, like Magnolias, Bald Cypress and Tulip tree, and garden plants such as phlox and asters.





Peter Collinson 1694 – 1768

"I think there is no greater Pleasure than to be communicative & oblige others…Wee fellow Brothers of the Spade find it very necessary to share among us."

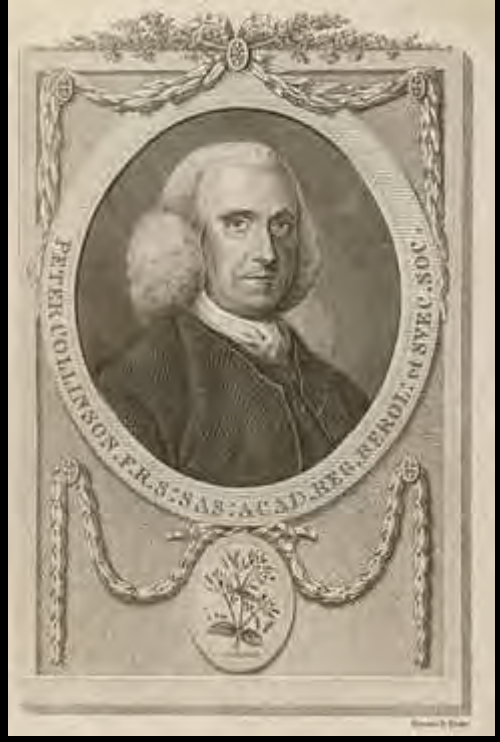
a Fellow of the Royal Society (introduced Benjamin Franklin's work on electricity), an avid gardener, and the middleman for an international exchange of scientific ideas in mid-18th century London.

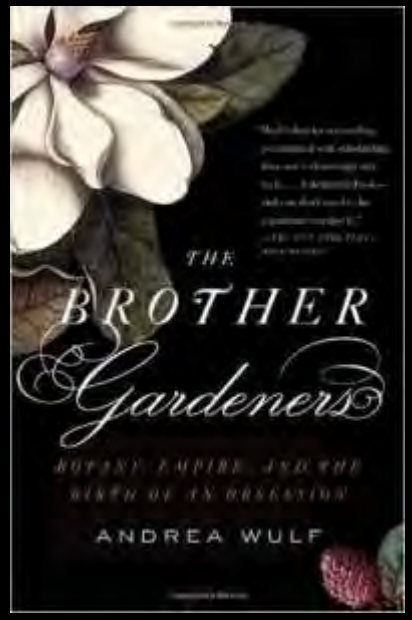
Peter Collinson was born into a wealthy family of Quaker cloth merchants. Although Collinson was a cloth merchant by vocation, largely trading with North America, his real love was gardening.

Through his business contacts, he obtained samples of seeds and plants from around the world. He introduced over 180 new species including hydrangeas, rhododendrons and magnolias.

In the late 1730s, he began to import North American botanical seeds for English collectors to grow through financing the travels of John Bartram. Yearly, he distributed the New World seeds collected by Bartram to British gentry, nurserymen, and natural scientists.

Collinson was also the patron of the artist and natural historian Mark Catesby.



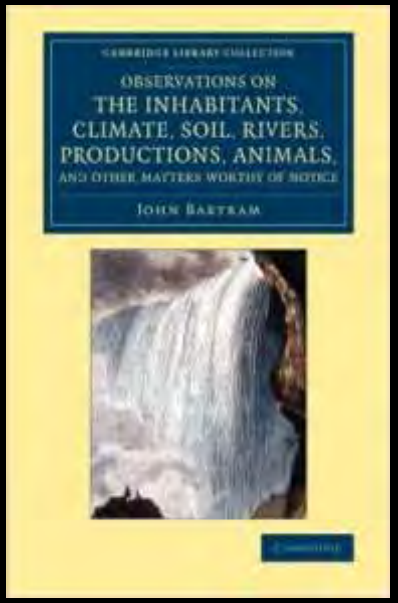


John Bartram 1699 – 1777

Linnaeus said he was the "greatest natural botanist in the world.“ Bartram, sometimes called the "father of American Botany“ was one of the first practicing Linnaean botanists in North America. He assisted Linnaeus' student Pehr Kalm during his extended collecting trip to North America in 1748–1750.

Bartram was particularly instrumental in sending seeds from the New World to European gardeners: many North American trees and flowers were first introduced into cultivation in Europe by this route. Beginning ca. 1733, Bartram's work was assisted by his association with the English merchant Peter Collinson.

In 1765 after lobbying by Collinson and Benjamin Franklin in London, George III rewarded Bartram a pension of £50 per year as King's Botanist for North America, a post he held until his death. With this position, Bartram's seeds and plants also went to the royal collection at Kew Gardens. Bartram also contributed seeds to the Oxford and Edinburgh botanic gardens. He was elected a foreign member of the Royal Swedish Academy of Sciences in Stockholm in 1769.

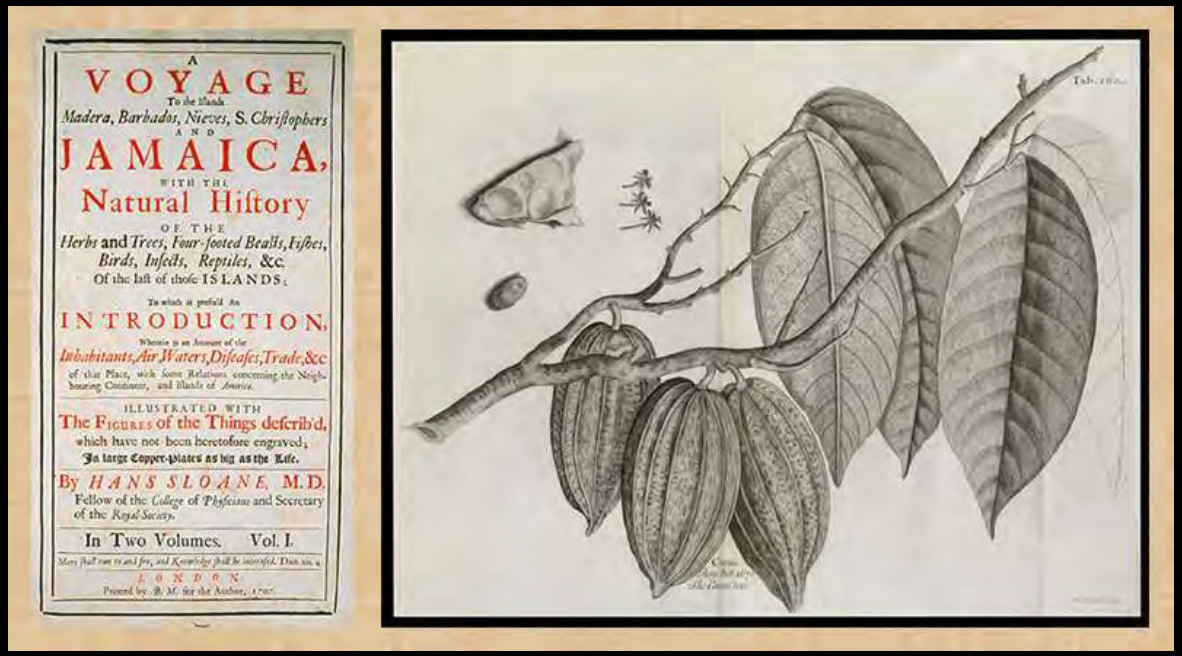


The Great Collector

Hans Sloane 1660-1753
Natural History of Jamaica 1707

Succeeded Isaac Newton as President of the Royal Society 1727–1741

His collection founding core of British Museum


A
VOYAGE
To the Iſlands
Madera, Barbados, Nieves, S. Chriſtophers
AND
JAMAICA,
WITH THE
Natural Hiſtory
OF THE
Herbs and *Trees, Four-footed Beaſts, Fiſhes, Birds, Inſects, Reptiles,* &c.
Of the laſt of thoſe ISLANDS;
To which is prefix'd An
INTRODUCTION,
Wherein is an Account of the
Inhabitants, Air, Waters, Diſeaſes, Trade, &c.
of that Place, with ſome Relations concerning the Neighbouring Continent, and Iſlands of *America*.
ILLUSTRATED WITH
The FIGURES of the Things deſcrib'd,
which have not been heretofore engraved;
In large Copper-plates as big as the Life.
By *HANS SLOANE*, M.D.
Fellow of the *College of Phyſicians* and Secretary of the *Royal Society*.
In Two Volumes. Vol. I.
Many ſhall run to and fro, and Knowledge ſhall be increaſed. Dan. xii. 4.
LONDON:
Printed by *B. M.* for the Author, 1707.

Maria Sibylla Merian 1647-1717

Artist Naturalist and Entrepreneur

The Caterpillars' Marvelous Transformation and Strange Floral Food 1679
(*Der Raupen wunderbare Verwandlung und sonderbare Blumennahrung)*

Showed larvae hatching from eggs when the idea of spontaneous generation of insects was still accepted

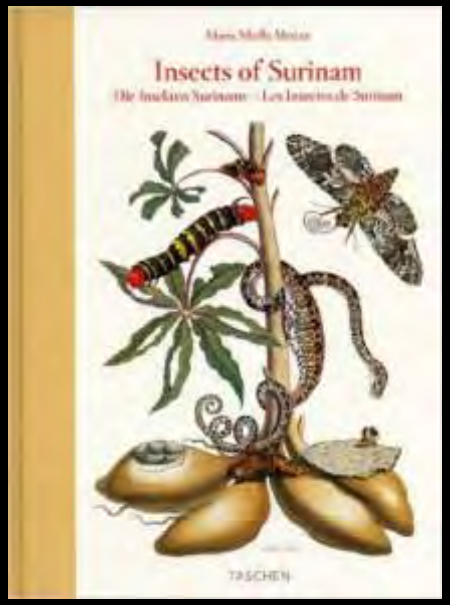
Merian described the life cycles of 186 insect species

Maria Sibylla Merian 1647-1717

Metamorphosis Insectorum Surinamensium 1705

She collected and traded insects, spiders, crocodiles, snakes, and turtles

She was her own publisher for *Metamorphosis*

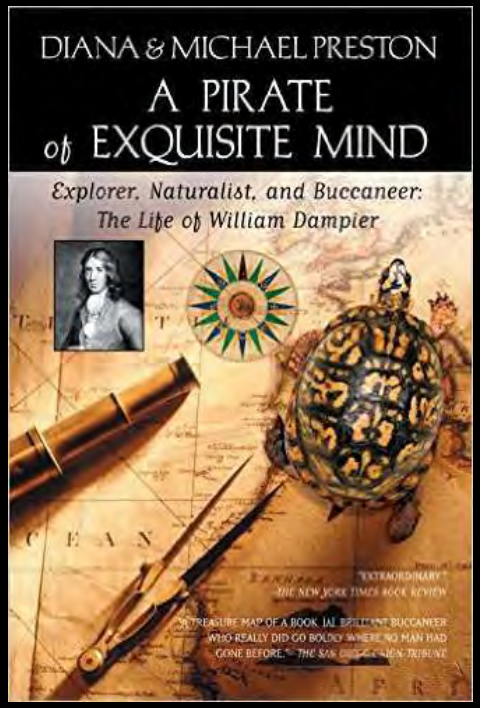


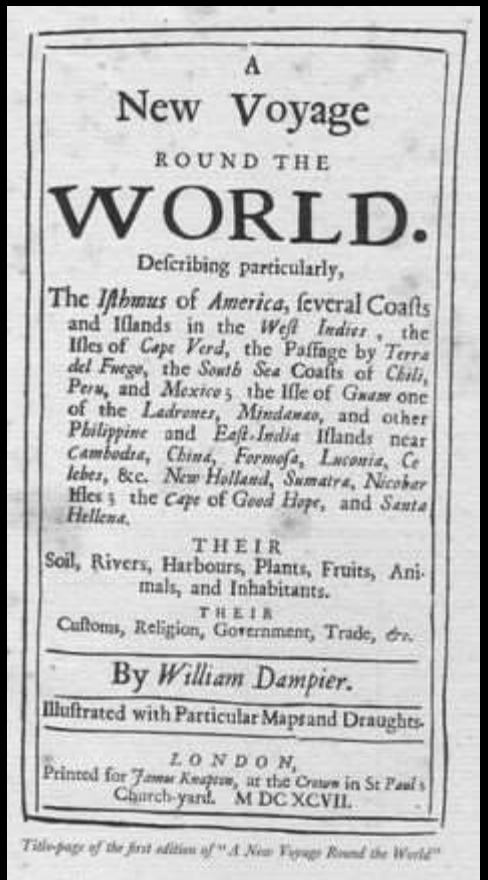
Goethe praised Merian for her ability to move
'between art and science, between nature observation and artistic intention.'

William Dampier 1651–1715

The first person to circumnavigate the world three times
First Voyage (1679–1691)
Second Voyage (1699–1701) the first official voyage of discovery ordered by the British Admiralty, captain on board the H.M.S. Roebuck.
Third Voyage (1703–1707)
The first Englishman to reach and map parts of Australia and New Guinea
The first English best-selling travel writer A New Voyage Round the World 1697

Words introduced to English: avocado, barbecue, breadfruit, cashew, catamaran, and chopsticks





A
New Voyage
ROUND THE
WORLD.
Describing particularly,
The *Isthmus* of *America*, several Coasts and Islands in the *West Indies*, the Isles of *Cape Verd*, the Passage by *Terra del Fuego*, the *South Sea* Coasts of *Chili*, *Peru*, and *Mexico*; the Isle of *Guam* one of the *Ladrones*, *Mindanao*, and other *Philippine* and *East-India* Islands near *Cambodia*, *China*, *Formosa*, *Luconia*, *Celebes*, &c. *New Holland*, *Sumatra*, *Nicobar* Isles; the *Cape* of *Good Hope*, and *Santa Hellena*.
THEIR
Soil, Rivers, Harbours, Plants, Fruits, Animals, and Inhabitants.
THEIR
Customs, Religion, Government, Trade, &c.
By *William Dampier*.
Illustrated with Particular Maps and Draughts.
LONDON,
Printed for *James Knapton*, at the *Crown* in St *Paul's* Church-yard. M DC XCVII.

Title-page of the first edition of "A New Voyage Round the World"

In 1699, Dampier followed his *New Voyage* with *Voyages and Descriptions*, which contained a significant technical work, "A Discourse of Trade-Winds, Breezes, Storms, Tides, and Currents."

The first hydrographer to connect winds and surface currents and produce the first wind map of the world

Tis generally observed by Seamen, that in all Places where Trade winds blow, the Currentis influenced by them, and moves the same way with the Winds;

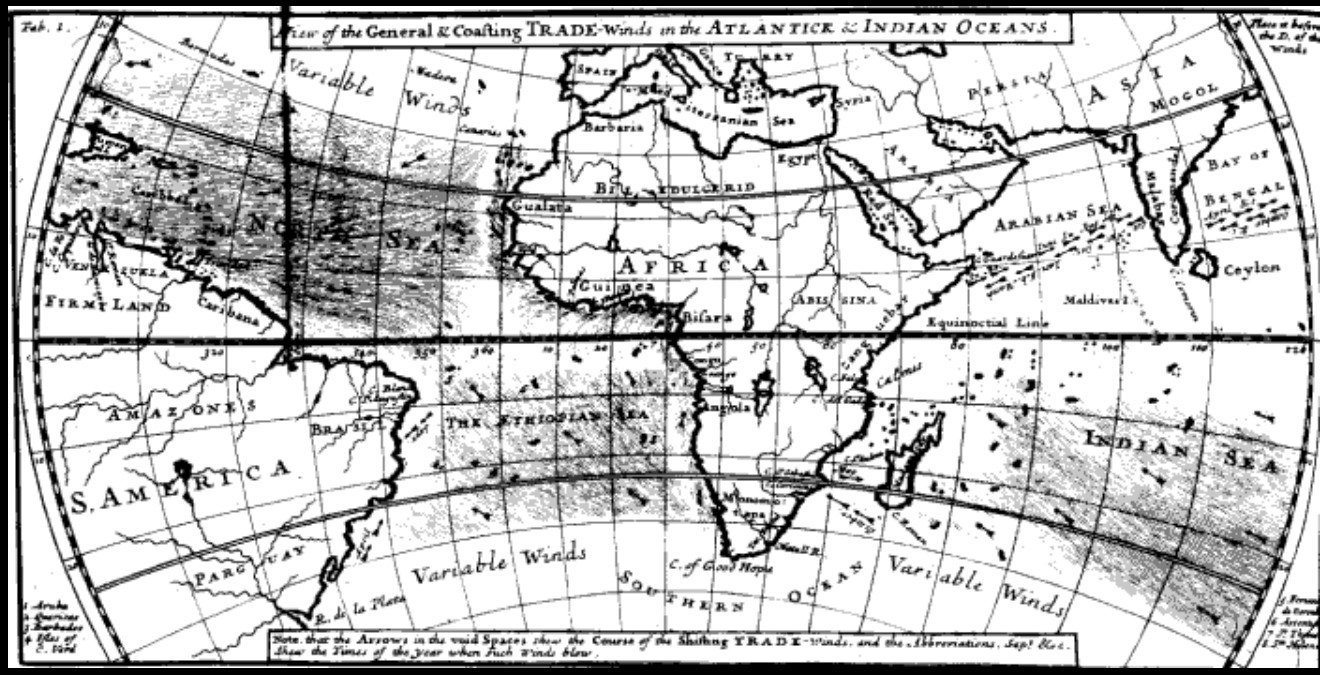
Cap. *Dampier*

HIS

DISCOURSE

OF THE

Trade-Winds, Breezes, Storms, Seasons of the Year, Tides and Currents of the TORRID ZONE throughout the World.



The first naturalist to visit all 5 continents
The first naturalist of Australia (New Holland)
The first Englishman to the Galapagos
The first to use the term “sub-species”
The first to describe zebras, marijuana, breadfruit, avocado
The first to identify cochineal as an insect not a seed

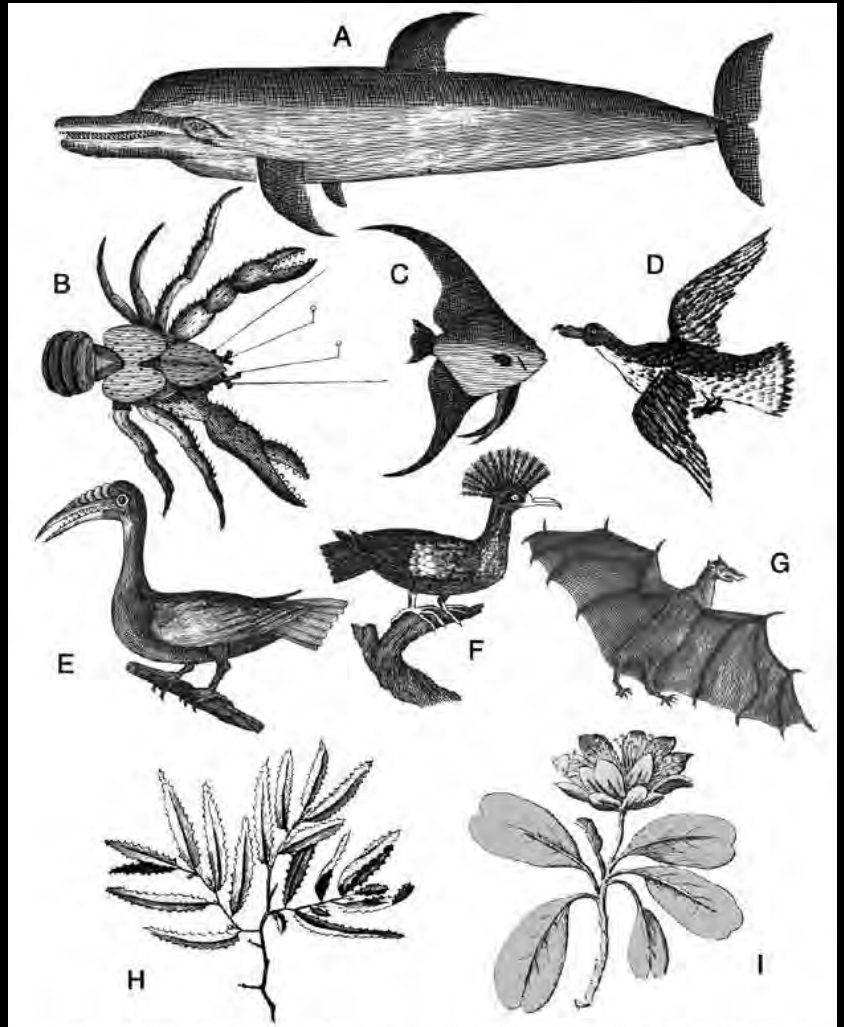


FIGURE 4. Examples of natural history illustrations appearing in Dampier's *A Voyage to New Holland*, 1703. A. Bottlenose dolphin (*Tursiops truncatus*). B. Hermit crab (*Dardanus* sp.). C. A large juvenile batfish (*Platax* sp.). D. Pintado Petrel or Cape Pigeon (*Daption capense*). E. Blyth's Hornbill (*Rhyticeros plicatus*). F. Victoria Crowned Pegeon (*Goura victoria*). G. Flying fox, a fruit bat (*Pteropus* sp.). H. Seaweed, a brown alga (*Sargassum binderi*). I. Wild Rose (*Diplolaena grandiflora*, of the family Rutaceae).

Joseph Banks 1743-1820

Three voyages

- HMS Niger (1766-67) to Canada – Newfoundland and Labrador
- HMS Endeavour (1768-1771) with Captain James Cook to the Southern Pacific, New Zealand, and Australia collecting with Daniel Solander [student of Linnaeus]
- HMS Sir Lawrence (1772) Hebrides, Iceland, Orkney Islands

Founds the Royal Botanic Gardens at Kew

Leads the Royal Society – major patron of further collecting

European Naturalists in North America
Mark Catesby 1683-1749 English Naturalist

Natural History of Carolina, Florida, and the Bahama Islands (1732-43)

In February 1722, Catesby set sail to South Carolina. His sojourn in the New World was taken under the auspices of London's Royal Society.

Catesby spent the next four years exploring the southeast colonies and the Bahamas, and the subsequent 20 years writing and illustrating his exhaustive two-volume *Natural History of Carolina, Florida and The Bahama Islands*.

He depicted live specimens in their natural habitats, and made special study of both migration and extinction.

Mark Catesby 1683-1749

Natural History of Carolina, Florida, and the Bahama Islands 1732-43

Between 1729 and 1747 Catesby published his Natural History of Carolina, Florida and the Bahama Islands, the first published account of the flora and fauna of North America. It included 220 plates of birds, reptiles and amphibians, fish, insects, and mammals, as well as plants.

First to America in 1712 and In 1714, Catesby and others traveled "from the lower part of the James River in Virginia to that part of the Appalachian Mountains where the sources of that river rise…" In the same year, he sailed to Jamaica, where he gathered Jamaican plants to send to England.

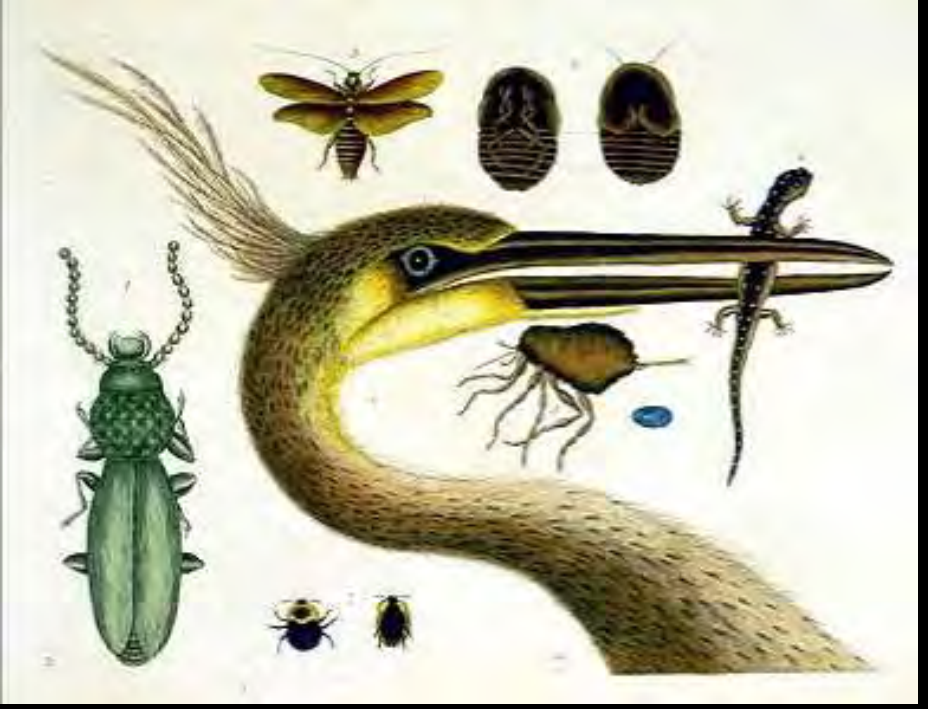
By 1719, Catesby had returned to England, where influential members of the Royal Society, then chaired by Sir Isaac Newton, had learned of his work in the colonies. Led by William Sherard, "one of the most celebrated botanists of the age," members began soliciting sponsors to finance Catesby for a botanical expedition to South Carolina.

By 1722, Catesby was again crossing the Atlantic. This time his studies would reveal the natural marvels of what was still an exotic – and largely unexplored – continent and which would be chronicled in his monumental Natural History of Carolina, Florida & the Bahama Islands.

After returning to England in 1726, Catesby spent the next seventeen years preparing his Natural History. Publication was financed by an interest-free loan from Peter Collinson.

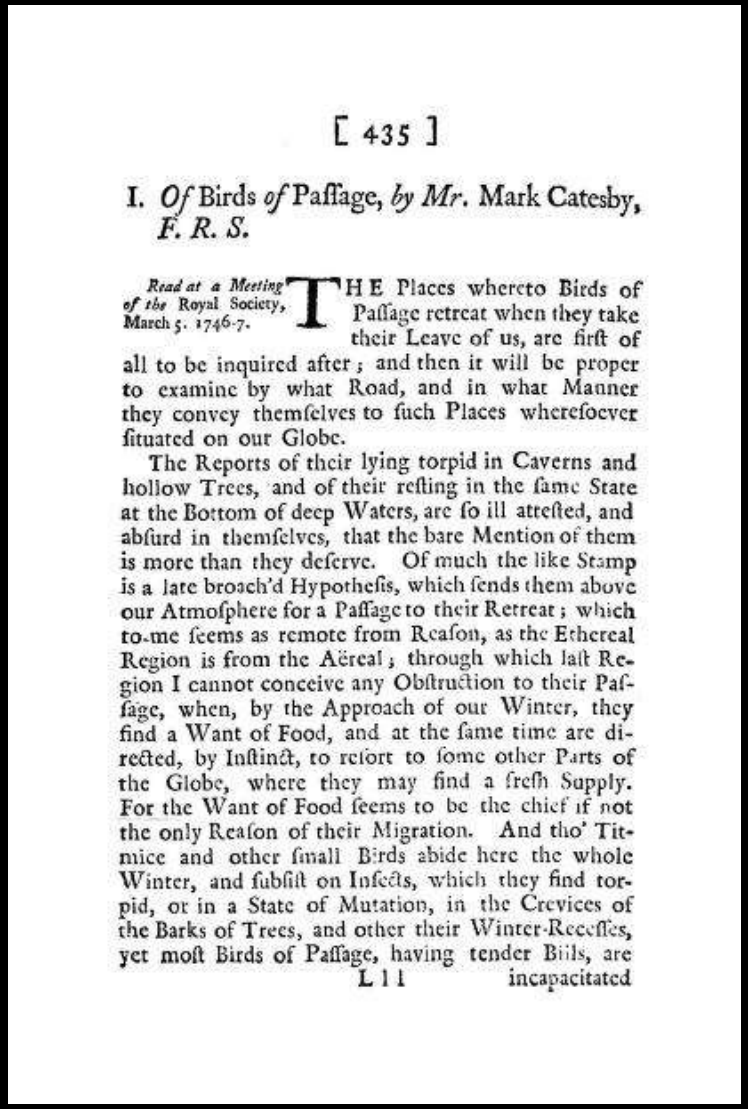
Catesby was the first to use folio-sized colored plates in natural history books. He learned how to etch the plates himself. Rather than adopting the traditional method of cross-hatching, Catesby followed the natural lines of feathers in his bird etchings.

Another innovation was to depict his birds in association with the plants upon which they fed or nested – putting them in an ecological setting.



Where do the birds go?

Of Birds of Passage, by Mark Catesby,
Published 1747
Philosophical Transactions of the Royal Society of London



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I. *Of* Birds *of* Paſſage, *by Mr.* Mark Catesby, *F. R. S.*

Read at a Meeting of the Royal Society, March 5. 1746-7.

THE Places whereto Birds of Paſſage retreat when they take their Leave of us, are firſt of all to be inquired after; and then it will be proper to examine by what Road, and in what Manner they convey themſelves to ſuch Places whereſoever ſituated on our Globe.

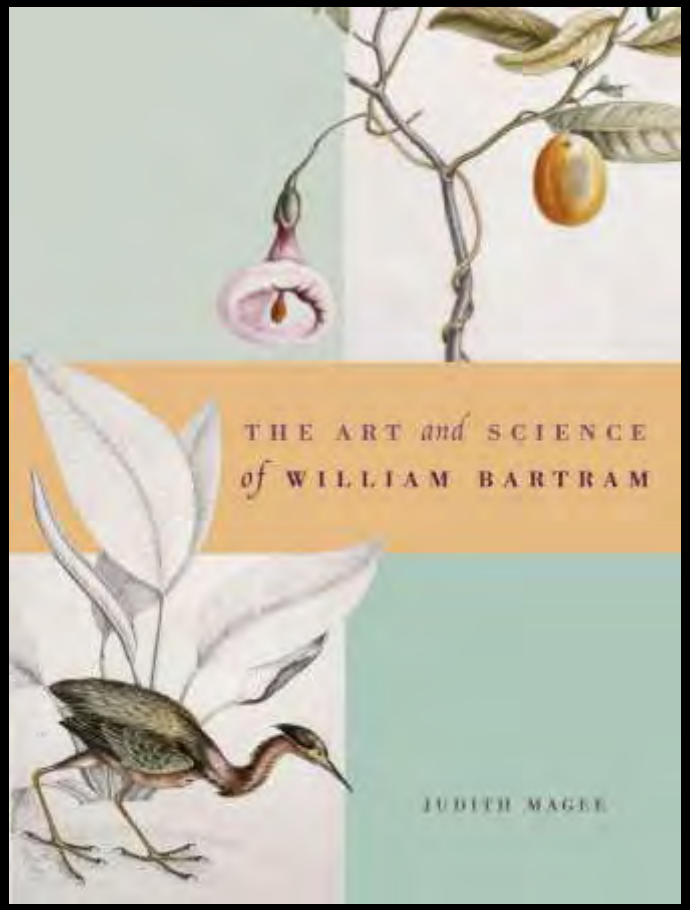
The Reports of their lying torpid in Caverns and hollow Trees, and of their reſting in the ſame State at the Bottom of deep Waters, are ſo ill atteſted, and abſurd in themſelves, that the bare Mention of them is more than they deſerve. Of much the like Stamp is a late broach'd Hypotheſis, which ſends them above our Atmoſphere for a Paſſage to their Retreat; which to me ſeems as remote from Reaſon, as the Ethereal Region is from the Aëreal; through which laſt Region I cannot conceive any Obſtruction to their Paſſage, when, by the Approach of our Winter, they find a Want of Food, and at the ſame time are directed, by Inſtinct, to reſort to ſome other Parts of the Globe, where they may find a freſh Supply. For the Want of Food ſeems to be the chief if not the only Reaſon of their Migration. And tho' Titmice and other ſmall Birds abide here the whole Winter, and ſubſiſt on Inſects, which they find torpid, or in a State of Mutation, in the Crevices of the Barks of Trees, and other their Winter-Receſſes, yet moſt Birds of Paſſage, having tender Bills, are

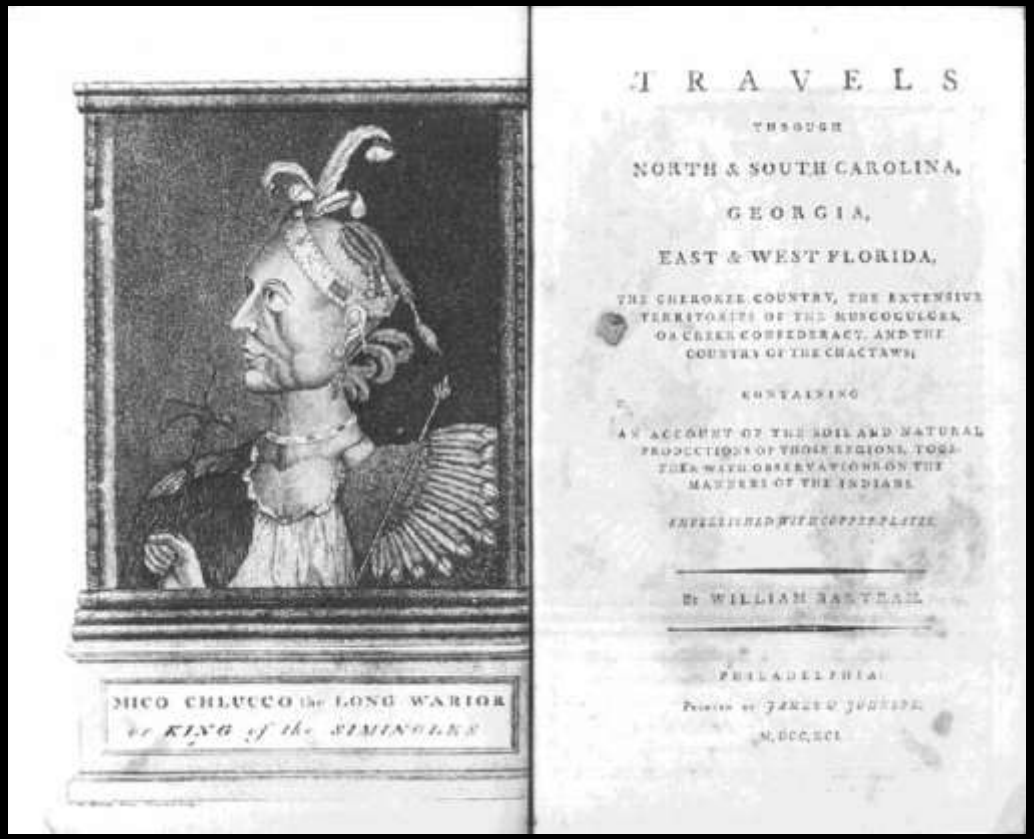
 incapacitated

"singularity of this bird is, that the shafts of the tails feathers are very stiff, sharp-pointed and bare of feathers at their ends, which seem designed by nature for the support of their bodies, while they are in an erect posture, building their nests, which they do in chimneys, with little sticks interwoven and cemented together in a kind of glue or gum..."

The American Naturalist
William Bartram 1739–1823
Travels through North and South Carolina, Georgia, East and West Florida (1791)

From his mid-teens, Bartram was noted for the quality of his botanic and ornithological drawings. He also had an increasing role in the maintenance of his father's botanic garden, and added many rare species to it.





The Natural History of the New World - Artist Naturalist in North America

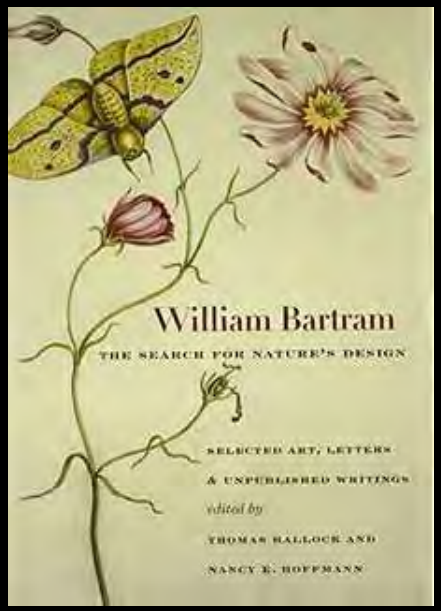
William Bartram 1739-1823 (son of John Bartram 1699-1777)

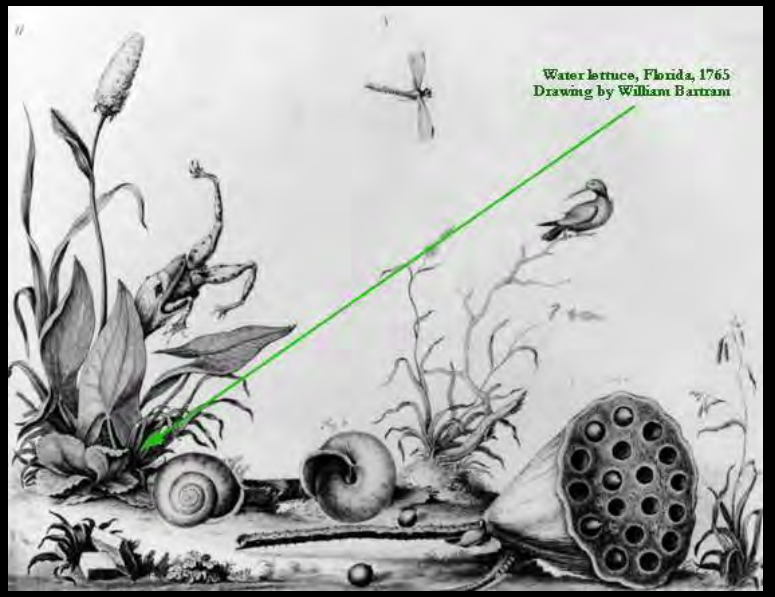
Travels through North and South Carolina, Georgia, East and West Florida (1791)

An aesthetic appriciation of nature with an accurate recording of data based on long term observations

"It was now after noon; I approached a charming vale, amidst sublimely high forests, awful shades! Darkness gathers around, far distant thunder rolls over the trembling hills; the black clouds with august majesty and power, moves slowly forwards, shading regions of towering hills, and threatening all the destructions of a thunderstorm; all around is now still as death, not a whisper is heard, but a total inactivity and silence seems to pervade the earth; the birds afraid to utter a chirrup, and in low tremulous voices take leave of each other, seeking covert and safety; every insect is silenced, and nothing heard but the roaring of the approaching hurricane…"

Admiration for Native American culture, Quaker/Pantheist – interconnection and underlying harmony





First American Ornithologist - Alexander Wilson (1766 – 1813)

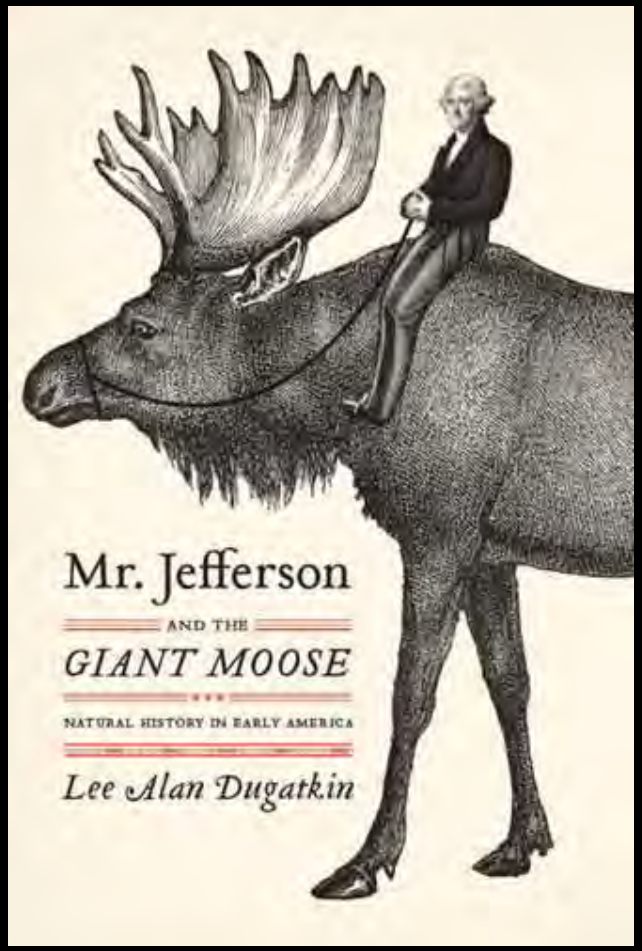
In May 1794, at the age of 27, Wilson left Scotland for America. He settled near Philadelphia, and he taught school in Pennsylvania.

He met William Bartram, who got him interested in birds.

In 1802, Wilson decided to publish a book illustrating all the North American birds. He traveled widely, observing and painting birds, and gathering subscribers for the book. His nine-volume work, *American Ornithology* published in 1808-1814, illustrated 268 species, including descriptions of 26 new species.

Wilson also conducted the first breeding bird census, in Bartram's garden. His 1810 meeting with Audubon probably inspired Audubon to publish his own book.

The Theory of Degeneracy and Jefferson's Moose



Comte de Buffon 1707–1788

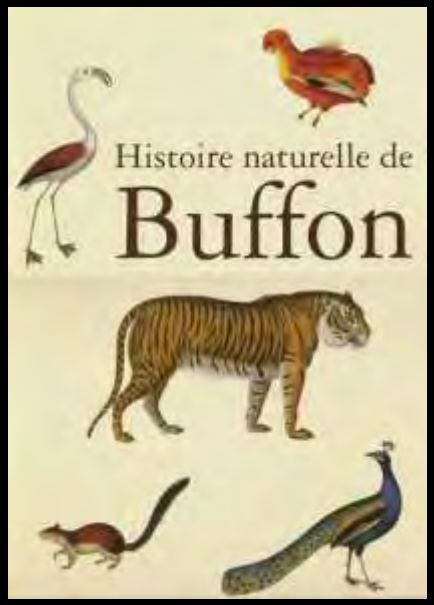
Theory of Degeneracy

“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.

America, Buffon told his readers, is a land of swamps, where life putrefies and rots. “

Dugatkin, 2009



The Theory of American Degeneracy (Environmental Determinism)

"There was no escaping the pernicious effects of the American environment - not even for Native Americans. They too were degenerate. For Buffon, Indians were stupid, lazy savages.

In a particularly emasculating swipe, he suggested that the genitalia of Indian males were small and withered - degenerate - for the very same reason that the people were stupid and lazy.

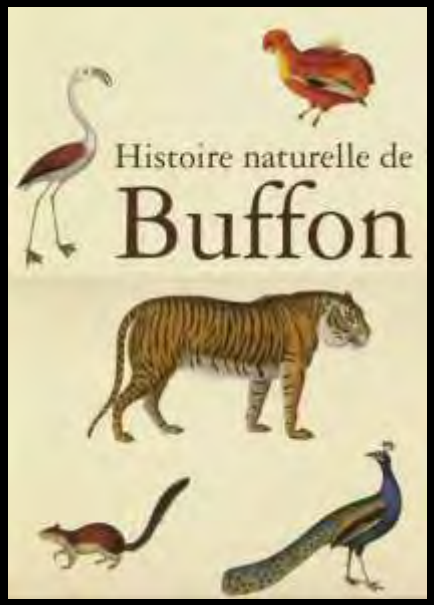
The environment and natural history had never before been used to make such sweeping claims, essentially damning an entire continent in the name of science.

Buffon's American degeneracy hypothesis was quickly adopted and expanded by men such as the Abbé Raynal and the Abbé de Pauw, who believed that Buffon's theory did not go far enough.

They went on to claim that the theory of degeneracy applied equally well to transplanted Europeans and their descendants in America.

These ideas became mainstream enough that Raynal felt comfortable sponsoring a contest in France on whether the discovery of America had been beneficial of harmful to the human race."

Dugatkin, 2009



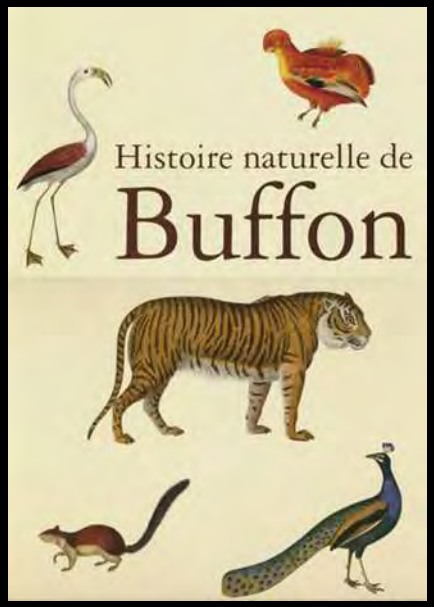
The Theory of American Degeneracy

Kant – the climate in America produced a race “too weak for hard work, too indifferent to pursue anything, incapable of culture” (1788)

Hegel – “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.” (1816)

Keats – *Lines to Fanny* (1819)

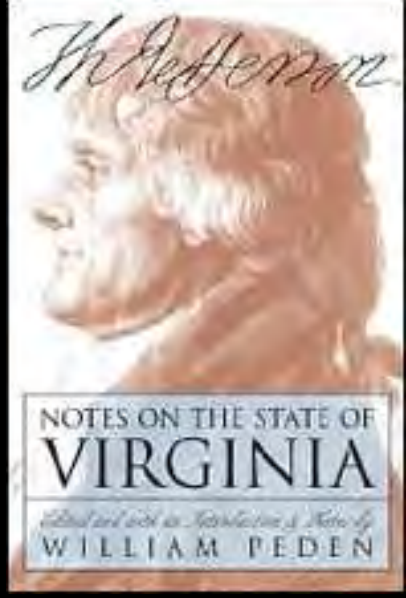
Where shall I learn to get my peace again?
To banish thoughts of that most hateful land,
Dungeoner of my friends, that wicked strand
Where they were wreck'd and live a wrecked life;
That monstrous region, whose dull rivers pour
Ever from their sordid urns unto the shore,
Unown'd of any weedy-haired gods;
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.



Jefferson's Moose and Refuting the Degeneracy Theory

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

In his *Notes on the State of Virginia* (1785) Thomas Jefferson responded to Buffon's claims. His evidence included comparative tables of weights of animal species from America and Europe, lists of species endemic to each part of the world (the American list was four times as long) and even an explanation of why cattle were smaller in the New World than in the Old (farming practices, not climate conditions). He also included a passionate defense of Native Americans.




A Comparative view of the Quadrupeds of Europe and of America

I. Aboriginals of both	Europe	America	II. Aboriginals of one only				III. Domestic animals of this	Europe	America
			Europe		America				
Mammoth	lb	lb	Sanglier. Wild boar	280	Tapir	530	Cow	783	1258
Buffalo. Bison			Mouflon. Wild sheep	56.	Elk		Horse		1360
White bear. Ours blanc			Bouquetin. Wild goat		Puma		Ass		
Caribou. Renne			Lievre. Hare	7.6	Jaguar	218	Hog		220
Bear. Ours	153.7	410	Lapin. Rabbit	3.4	Cabiai	109	Sheep		128
Elk. Elan. Original pair [illegible]			Rat. Rat	3.3	Tamanoir	109.	Goat		
Red deer. Cerf	288.8	270	Genette	3.1	Tamandua	68.4	Dog	67.6	
Fallow deer. Daim	187.9		Desman. Muskrat		Cougar of N. America	700	Cat	7	
Wolf. Loup	69.8		Ecureuil. Squirrel	1	Cougar of S. America	89			
Roe. Chevreuil	58.7		Hermine. Ermin	0.2	Ocelot				

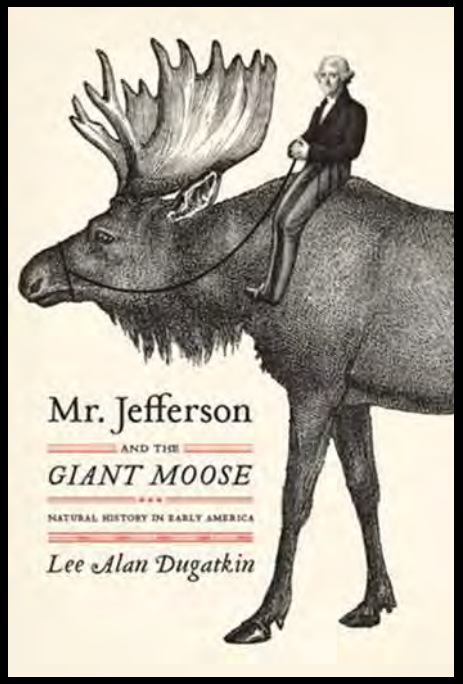
place their
three tables
successively
one after another
V. at side in the

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



Alexander von Humboldt's American expedition 1799-1804

- Expedition way
- City / Stopping place
- Spanish Viceroys and United States

(I) With the spanish corvette "Pizarro" from La Coruña over the Canary Islands to Cumaná

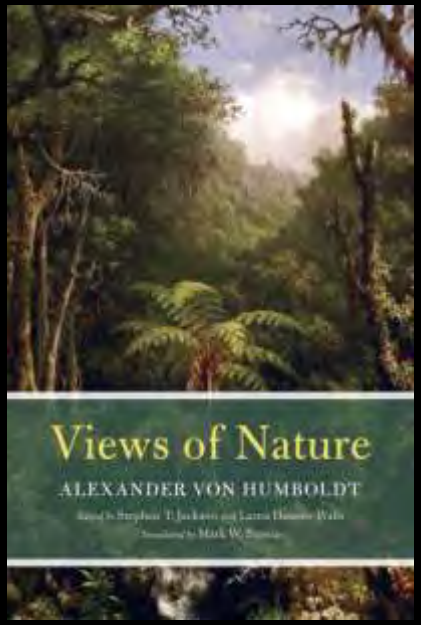
(II) 75-days journey with Bonpland, on the Orinoco and the Rio Negro

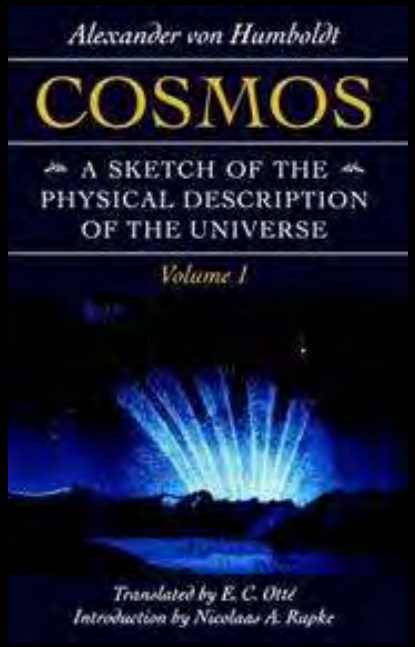
(III) With the ship from Nueva Barcelona to Havanna, 3-month sojourn on Cuba, over Trinidad to Cartagena

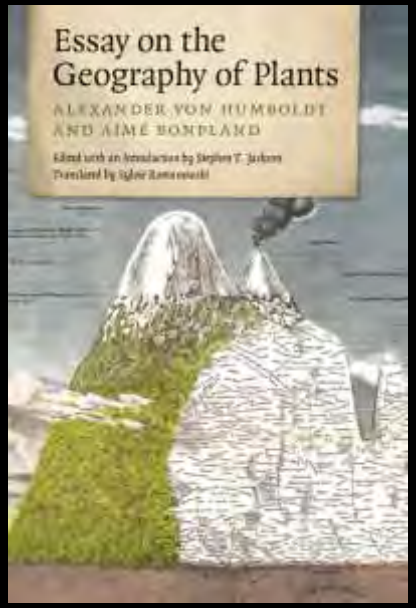
(IV) Through today's Colombia, Ecuador and Peru to Lima

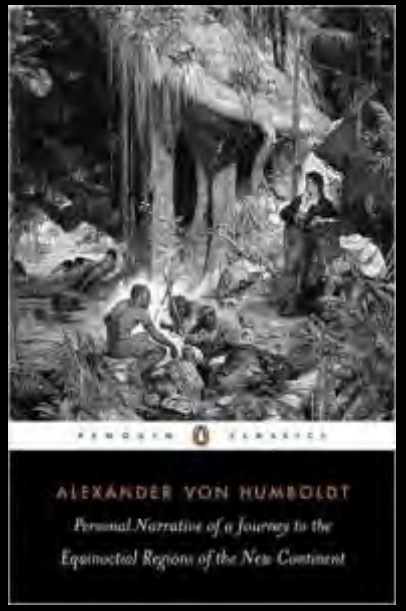
(V) From Guayaquil to Acapulco, longer sojourn in Mexico-City and back to Havanna over Veracruz

(VI) With the cargo ship "Concepción" to Philadelphia, Washington, with the french Frigate "La Favorite" to Bordeaux


Views of Nature
ALEXANDER VON HUMBOLDT


Alexander von Humboldt
COSMOS
A SKETCH OF THE PHYSICAL DESCRIPTION OF THE UNIVERSE
Volume 1
Translated by E. C. Otté
Introduction by Nicolaas A. Rupke


Essay on the Geography of Plants
ALEXANDER VON HUMBOLDT AND AIMÉ BONPLAND


ALEXANDER VON HUMBOLDT
Personal Narrative of a Journey to the Equinoctial Regions of the New Continent