

Maryland's Environment: A 20,000 Year History of Change

Introduction

Over its 4.6 billion year history, the Earth's crust has been shaped by intertwining chemical, physical, and biological processes. In the inexorable slowness of geologic time, the convection of the Earth's [mantle](#) gave contour to the land. Tectonic movement and climatic cycles shaped ancient seas that created the unique foundation of the Middle Atlantic region of North America. Streams carved hills and valleys, and rainwater weathered rock into soil. At the time of their formation, Maryland's mountains rivaled the Himalayas in size. Their rock slowly weathered, creating the softer contoured mountains we know today. Over time, Maryland's bedrock became mantled by fertile soils, mineral deposits, and complex water features – which together create a habitable landscape that has long been attractive to human beings.



Western Maryland Mountains

The political boundaries of the State of Maryland contain an ecologically diverse landscape. Its river systems feed the Chesapeake Bay, the Delaware River, and the Ohio River drainages, and an east-west span of 249 miles stretches from the Atlantic seaside to the Allegheny Plateau. Across the state, elevations climb from the ocean's edge to 3,360 feet at Backbone Mountain in Garrett County. Granite bedrock protrudes from the surface of western Maryland, while a wedge of unconsolidated sediments blanket this rocky base to a depth of 8,000 feet at the Atlantic coastline. Maryland's flora is similarly variable, being a product of the diverse soils, climate, and hydrology of the state.

Many different lines of evidence help us to understand how Maryland came to be as it is today. Accordingly, several disciplines contribute to our knowledge of Maryland's environmental history. Specialists in geology, geography, climatology, archaeology, history, oceanography, paleobiology, zoology, botany, and marine studies help us explore the ways in which Maryland's environment developed. One thing we have learned through their work is that the histories of Maryland's landscape and of Maryland's people are intertwined, and that each has influenced, affected, and shaped the other.

The following sections explore/investigate some questions surrounding key points in the development of Maryland's environment over the past 20,000 years. A list of sources offers recommendations for further reading, and linked pages expand on some topics touched on in the text:

- [What Was Maryland Like 20,000 Years Ago?](#)
- [When Did People First Arrive in Maryland?](#)
- [Why Did Native Americans Begin Farming?](#)
- [What Was Maryland's Landscape Like When the English Colonists Arrived?](#)
- [How has Maryland's Environment Changed in the Years since European Contact?](#)
- [How can Understanding the History of Ecological Change Help Us with the Future?](#)

What Was Maryland Like 20,000 Years Ago?

Twenty thousand years ago Maryland's landscape was very different. The climate was much colder, the Chesapeake Bay did not exist. There were no people, and mammoths, mastodons, bison, and giant beavers roamed a landscape dominated by coniferous woods and marshy tundra.



Mammoths

<http://newsimg.bbc.co.uk/media/>

This was the [Ice Age](#): the most recent glacial episode in North America, when extensive ice sheets covered much of North American and Europe. At the time of this [Wisconsin Glaciation](#), ice up to one mile thick covered the land as far south as northern Pennsylvania, reaching its maximum extent between 18,000 and 20,000 years BP (Before the Present). Maryland itself was not covered by glacial ice, but its climate was highly influenced by the glaciers to the north.



Chesapeake Bay Satellite Image.

(NASA image courtesy Jeff Schmaltz, [MODIS Rapid Response](#))

This glacial episode is also responsible for the formation of large portions of Maryland's landscape. As the ice-sheets retreated, meltwaters flushed down the rivers of the ancestral Chesapeake and carved new channels across the coastal plain. These rivers carried stone rubble and sediment scraped up by the glaciers and deposited this material in layers across a vast area. The Chesapeake Bay as we know it first began to emerge about 12,000 years ago, formed when a widely branching network of river channels joined to a single tidal river flowing along the Atlantic continental shelf.

In western portions of Maryland, higher elevations brought colder temperatures and a landscape reminiscent of more northern climates. Twenty thousand years ago, the flora and fauna of Maryland were very different. Because of colder, harsher climatic conditions, forests were dominated by cold-adapted species like spruce, fir, and pine, and the piedmont and mountain regions of the state had areas of tundra-like marshlands similar to those we know from Siberia, Alaska, and northern Canada. Prior to the glacial retreat, our familiar white-tailed deer, black bear, and beaver coexisted with now-extinct [megafauna](#).

During the period between 20,000 and 12,000 years ago, large-scale, massive climatic changes transformed Maryland's environment. The greatest factors in shaping the environment during this time were the indirect effects of melting glacial ice caused by a gradual global warming trend.



Melting glacier

[Further Information:](#)

When Did People First Arrive in Maryland?

[The first human beings](#) arrived in Maryland sometime during the end of the last glacial period. There is some evidence of possible pre-[Clovis](#) occupation of the region as early as 18,000 years ago. It is generally agreed that by about 11,500 years ago, [Paleoindian](#) people using Clovis tools had moved into Maryland and left evidence of their lives in the archaeological record.



Image is a diorama of Paleoindians. Courtesy of The State Museum of Pennsylvania, Archaeology.

Clovis Point

At the time people arrived in Maryland, the [ice age](#) was coming to an end, though the climate was still much colder and wetter than it is today. Mobile hunters probably came into the region that is now Maryland in pursuit of game. These [Paleoindians](#) lived in small family bands and moved frequently, following the migration of animals and keeping a seasonal pattern of rotation from place to place.

Human beings arrived in Maryland on a wave of change as a series of large-scale climatic shifts began to have a transformative effect on Maryland's environment. A strong warming trend marked the onset of the [Holocene](#) epoch, which caused tremendous changes to the landscape, plants, and animals of the region. One of the biggest changes associated with this warming trend was a period of sea level rise that continues into the present.

The coastlines of the Chesapeake Bay and its many tributaries were particularly attractive to humans settling in Maryland. In addition to being a highly productive estuary, the Bay also provided a highway of rivers and creeks provided easy transportation routes. Archaeologists have found evidence that Native American campsites were focused along waterways. Pottery, tools, and shellfish remains from Maryland have been recovered up and down the Atlantic coast – suggesting that objects and ideas were moved around by waterborne trade.

Throughout the Holocene, climatic conditions grew increasingly warmer and drier, causing formerly dominant animals and plants to be replaced by others who could thrive in the new landscape. By

10,000 years ago, if not earlier, the [megafauna](#) had become [extinct](#), and by 9000 years ago, our modern mixed hardwood forests began to form. By about 8,000 years ago, a continuing warming trend kept glaciers melting and the resulting sea level rise flooded the continental shelf, causing the widening of the Chesapeake Bay and its tributaries. Between 6,000 and 3,000 years ago, the modern outlines of the Chesapeake shore began to take shape.

These significant changes in Maryland's environment altered the ways in which people lived. New types of tools, and new patterns in the size and location of campsites, were developed. New means of obtaining and storing food took shape – ways which were better suited to Maryland's evolving hardwood forest landscape. This time of cultural adjustment to a new environment is called the [Archaic](#) period. Archaic peoples lived in small groups in widely-scattered encampments. Their lives were largely nomadic, with hunting and gathering filling their subsistence needs.

Archaeological evidence documents gradual changes in this way of life by the end of the Archaic period. Important shifts in the way Native people used the land and its resources define the Transitional Archaic period. The number and size of archaeological sites increases, suggesting that denser populations of people lived more intensively on the land. There is also archaeological evidence of seasonal aggregation for ceremonial purposes. At this time, people also began using new technologies, including different kinds of tools and pottery.



Dogs have accompanied humans since the earliest populations migrated into North America.

[Further Information:](#)

Why Did Native Americans Begin Farming?

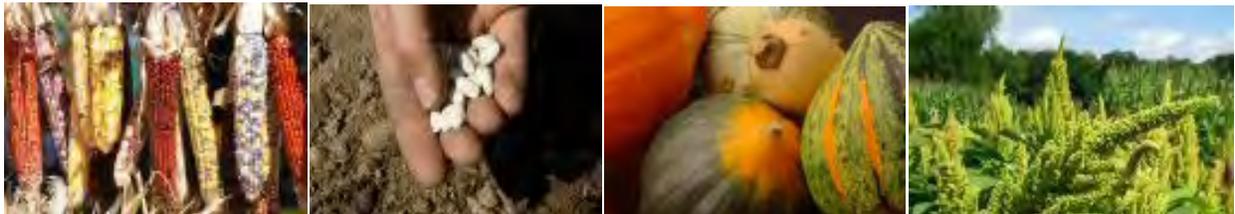
Archaeological evidence suggests that rather than abruptly shifting from hunting and gathering to farming, Native Americans gradually incorporated food-growing into their lifestyle. The transition to food growing in eastern North America was not a revolution, but a nuanced evolution. And Native peoples across America became farmers at different times and in different ways in response to a diversity of needs, beliefs, and ecological conditions.

Apart from growing food, Native Americans actively “managed” the landscape by burning undergrowth and forest litter to make nut gathering easier and to facilitate hunting. Early historical accounts make mention of park-like forests:

“Neare their habitations is little small wood or old trees on the ground by reason of their burning of them for fire. So that a man may gallop a horse amongst these woods any waie, but where the creekes or Rivers shall hinder.” John Smith 1608.

John Smith, A True Relation of Such Occurrences and Accidents of Noate as Hath Hapned in Virginia, (1608), in Lyon Gardiner Tyler, ed., Narratives of Early Virginia, 1606-1625 (New York: Charles Scribner's Sons, 1907, p.101).

It was during the Transitional [Archaic](#) time period that Native Americans first became food growers by encouraging useful plants in and around their campsites. These acts formed the beginnings of a food production system which had far reaching effects on many aspects of culture – from the size of settlements, to mobility, to the health of individuals, to social and political relationships. Clear lines of evidence from the Midwestern United States document that at campsites located on alluvial floodplains weedy plants were tolerated, encouraged, and eventually propagated. These acts of [husbandry](#) ultimately formed a system of Native horticulture that was unique to the [Eastern Woodlands](#) of North America. Sunflower, sumpweed, cucurbit gourd, knotweed, chenopod, maygrass, and little barley were grown. Together, these crops are referred to as the Eastern Agricultural Complex. While wild relatives of all of these plants persist in nature, the cultivated types grown in prehistory are now mostly extinct.



The tropical cultigens corn (or maize), beans, and squash, which feature so prominently in early colonial accounts of the New World, were actually latecomers to the farm fields of the Eastern Woodlands. In the Midwest and on the Allegheny Plateau here in the East, maize was incorporated into the gardens of Indians who had a long history of growing the crops of the Eastern Agricultural complex. In these areas, we believe that maize first appeared in small quantities and at scattered locations after AD 200. For centuries maize was a minor crop in these areas. After AD 1100, farming economies focused on maize flourished, and beans, fleshy squashes, and pale-seeded amaranth also become archaeologically visible.



Here in Maryland and Virginia, very different patterns of prehistoric plant use are evident east and west of the Blue Ridge Mountains. To the west, the Midwestern pattern prevails – there is evidence of pre-maize agriculture, and maize occurs at some [Middle Woodland](#) period sites. On the piedmont and coastal plain, however, the story is a bit different: there is no convincing evidence that pre-maize crops were ever an important part of the Native food system. In these areas, maize first occurred around A.D. 1100, and all early maize remains in the Chesapeake region have been found at archaeological sites thought to have ceremonial or political significance. This suggests that maize may have served an important symbolic or ritualistic role as well as being a food plant.

These differences in the timing and traditions associated with becoming farmers reflect the differences in the ecological settings and culture history of prehistoric Native Americans. One explanation for the differences in the adoption of maize (as a food) and sedentary farming (as a lifestyle) in the Chesapeake region is that the Bay and its many estuaries provided a food-rich “breadbasket.” A great variety of wild food resources were easily accessible via waterborne travel.

The first English visitors to the Americas described maize as “corne” (corn) – which was their word for wheat or other staple starchy grain.

The effects of prehistoric farming on Maryland’s environment are difficult to discern. We know from early colonial narrative accounts that the Chesapeake Indian peoples managed the forest understory for hunting and gathering, and cleared land for gardens. These activities would have increased soil erosion and modified the natural succession of plant species. The opening of [arable](#) land would also have created more forest edge – resulting in an increase in the diversity of plant and animal life. Hunting, fishing, and gathering activities would also have affected local biology. Growing populations living in larger, more concentrated communities certainly impacted Maryland’s landscape. But the toll of humans as ecological factors prior to the time of European contact remains incompletely understood.

Innovations in food production throughout the [Woodland](#) period were intertwined with cultural, political, and social changes. Horticulture enabled people to stay for longer periods of time in one place, which resulted in the development of more complex social and political relationships. We see the material expression of cultural identity and beliefs in Woodland period artifacts. These stylistic patterns reveal complex networks of communication and exchange throughout the Middle Atlantic region.

By the Late Woodland period there is evidence that populations had grown significantly, and that people lived in larger, year-round villages organized in complex political alliances called Chiefdoms. At this same time, archaeology reveals big changes



From *The History and Present State of Virginia*, by Robert Beverly, 1705.

in horticulture (with the adoption of maize agriculture), innovations in tool and weapon technologies, the creation of new pottery styles, and the practice of complex burial rituals.

[Further Information:](#)

What Was Maryland's Landscape Like When the English Colonists Arrived?



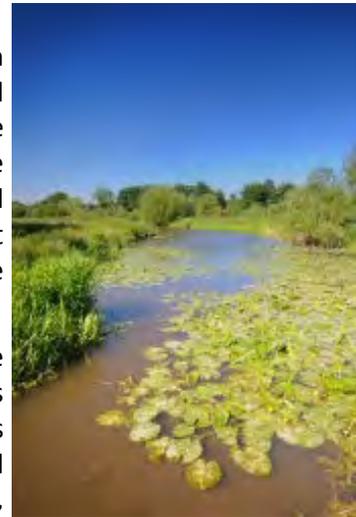
The first written accounts of Maryland made by European explorers describe rich and abundant landscapes of forest and water. The Chesapeake Bay was the stage for the earliest direct contact with Maryland and it was central to the initial experiences of European visitors and the records that they made. The Bay supported a diverse web of resources that provided food and which represented economic potential for the colonial endeavor.

Early historic accounts of Maryland include detailed descriptions of both the physical and cultural landscapes: a rich estuary flanked by marsh and swamplands, intertwining waterways, a gentle plain of locally-diverse forests, and a network of human communities concentrated in riverside villages where Native Americans plied waterways and trails and managed hunting grounds, nut groves, and gardens. The colonists observed that complex social and political relationships linked the groups of Native Americans they encountered.

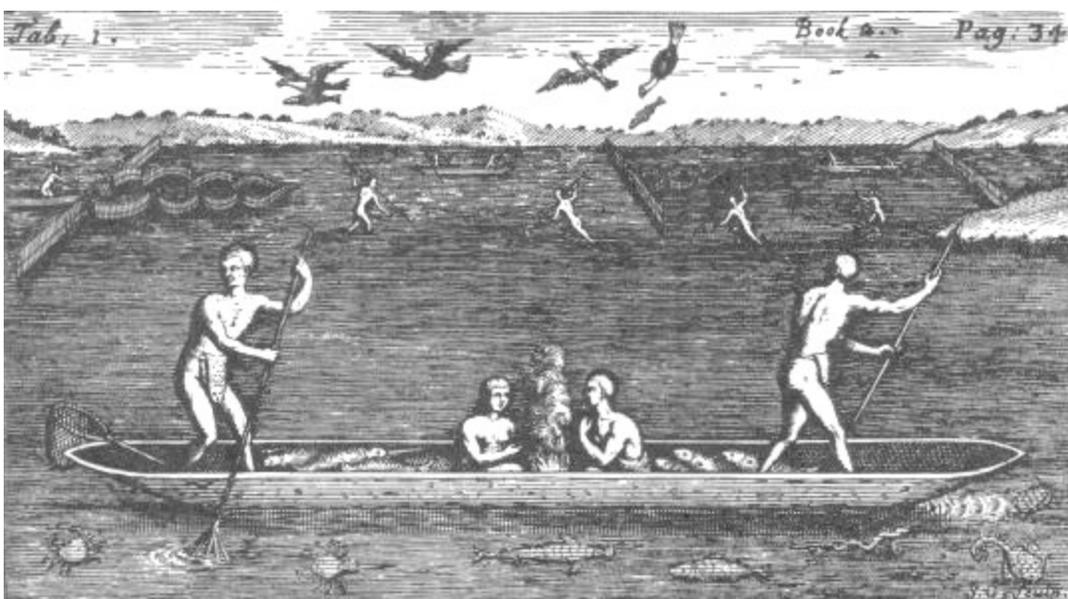
History speaks of the natural cycles of want and plenty in the Chesapeake region. During the early summer the rivers, farm fields, and forest edges produced abundant foods. This was followed by a plentiful autumn with a variety of nuts, maize, and fall fruits. Dried and salted foods were stored for winter use. But, according to most accounts, these stores were exhausted long before springtime, and a "starving time" followed when game was scarce and



Indians lived almost exclusively on bark, oysters, and plant tubers. The early chroniclers mention the mobility of Native groups – which allowed for flexibility in following food resources during these lean times, and in responding to the weather. The colonists suffered from conventions of land ownership,



Marshland



From *The History and Present State of Virginia*, by Robert Beverly, 1705.

“... that abundance of fish, lying so thicke with their heads above the water, as for want of nets (our barge driving amongst them) we attempted to catch them with a frying pan”

Smith, John, General History of Virginia. In P.L. Barbour, ed., The Complete Works of Captain John Smith (1580-1631), Vol. II. (Chapel Hill: University of North Carolina Press, 1986).

which offered less flexibility in terms of responding to seasonal cycles. Being anchored to their farms, early settlers suffered devastating privation and starvation.

European colonists settled in Maryland during a cool time period in North America and Western Europe. This time is referred to as the “Little Ice Age,” which lasted from about AD1500 to AD1850.

Conflicts attendant to the colonial encounter had the effect of disturbing Native American settlement patterns, moving people from their traditional homes and changing the relationships between Native groups.

At the time of contact, the forests of the Eastern Woodlands were majestic. [Variable mixed hardwood forests](#) formed a tall, dense canopy which dominated the land. Maryland’s forest resources represented an economic opportunity for the colonists. They used wood domestically for building boats, homes, and farm structures. Timber was also exported to England, where a crisis of deforestation made it a highly valuable commodity.

At the time of the colonial encounter, Maryland was home to numerous animals now [extinct](#) or [extirpated](#): Wapiti (Eastern elk), woodland bison, passenger pigeon, and the Carolina parakeet were common, and black bear, timber wolf, mountain lion, and bobcat ranged throughout the state.



Eastern Elk- courtesy of Audubon



Carolina Parakeet - courtesy of Audubon



Passenger Pigeon- courtesy of Audubon

There is evidence that 17th-century farmers on the Chesapeake colonial frontier made use of Indian fields which were already cleared of forest cover and were located on the most productive soils adjacent to waterways.

European exploration and settlement of the New World was primarily an economic venture: colonists sought resources to finance the colonies, to compensate their financiers, and for personal gain. Colonial ideas of land ownership and resource management reflect a focus on industry and trade.

Significant Events Associated with Contact, Exploration, and Colonization	
1492-1607 -	Early European contacts and exploration of Eastern North America
1524 -	Earliest written record by Giovanni da Verrazano describes the Chesapeake Bay region
1571-1585 -	Attempted colonization of the region
1607 -	First successful English colony established at Jamestown, Virginia
1634 -	Saint Mary's City was established and Maryland was founded

[Further Information:](#)

How has Maryland's Environment Changed in the Years since European Contact?

Contact and the colonization of North America brought unprecedented change to the landscape and in the role of human beings as agents of ecological change. The colonial encounter marked the beginning of a tremendous acceleration in the rate of human-induced environmental change.

European colonists brought with them new attitudes about land use, transforming the land in accord with their economic needs and in response to the varying qualities of agricultural terrain. In [Tidewater](#) Maryland, tobacco varieties imported from the West Indies were grown with great success, fueling an economy built on slave labor. Native forests in these portions of the state were cleared faster and more extensively than in northern and western areas.



In the early days of the colony, European settlers themselves slowly cleared the land. Their pigs, cattle, horses, and fowl were fenced out of houseyards and ranged free in the Maryland woods. The activities of the livestock were very effective in clearing the understory and preventing the regeneration of forests. Farming practices -- especially tobacco agriculture, which was so widespread in Tidewater Maryland -- included the frequent clearing of fields and their later abandonment due to exhausted soils, which led to the fragmentation of forests and the creation of patchwork landscapes.

The late 1800s and early 1900s witnessed the most extensive deforestation in Maryland, when approximately 80 percent of the land was cleared of trees. The result was a heretofore unprecedented homogeneity of the Maryland landscape.

The colonial transformation and the centuries which followed have caused tremendous changes in Maryland's plant and animal communities. Habitat destruction, unregulated hunting, and increased competition from introduced exotic species and diseases resulted in the wholesale decline in wilderness-dependent species and a corresponding rise in species that favored agricultural landscapes and human habitation sites. This decline and loss has significantly disturbed Maryland's ecological balance.

Some Highlights in Maryland Species Change

- Overhunting was responsible for the collapse of the fur trade by the middle 1600s.
- The fossil pollen record reveals an explosion of ragweed pollen about 350 years ago that coincides with massive forest clearing and agricultural expansion following European colonization.
- Colonial hunting and habitat destruction diminished the range of bear, elk, big cats, and woodland bison.
- The passenger pigeon – once the most common bird in Eastern North America - was hunted to extinction (the last bird died in captivity in 1914).
- Piedmont and mountain regions of Maryland once supported forests of giant chestnut trees that were decimated by a blight introduced in the 1920s.



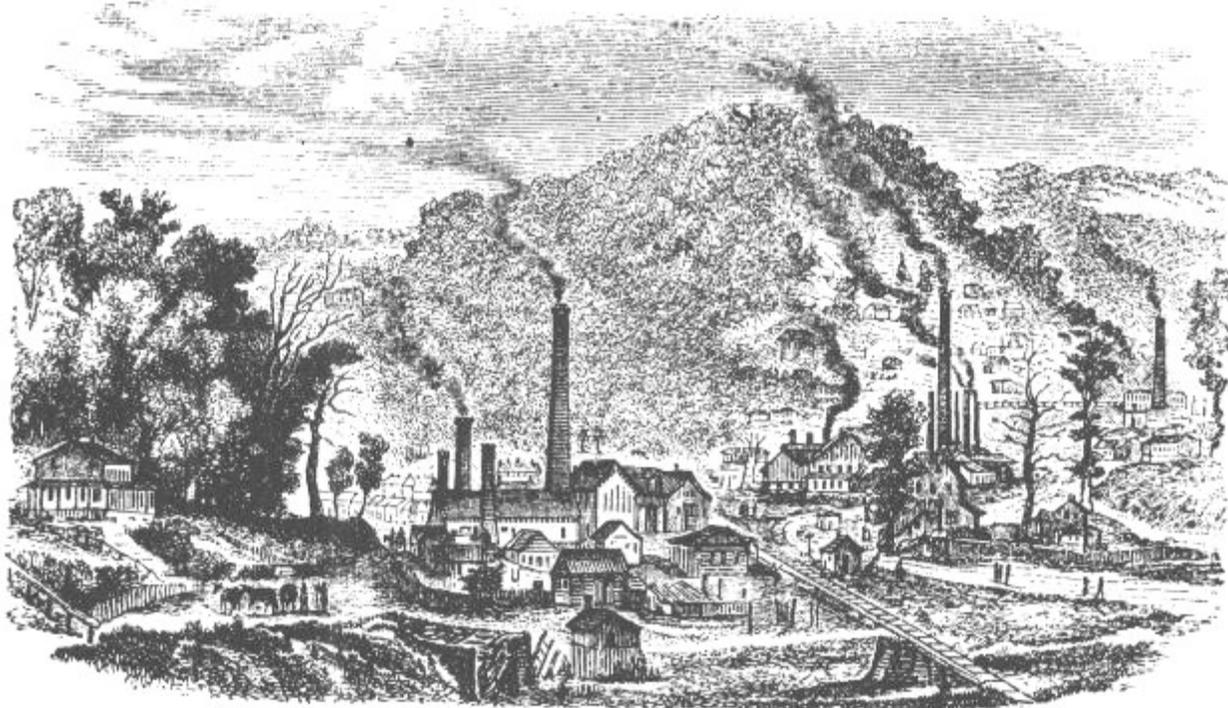
- Dutch Elm disease (introduced in 1928) has significantly reduced the elm tree.
- More recently, a small parasite has diminished the once-common hemlock tree.

Study of sediment cores offers a chronology of forest development and change. By examining plant pollen types and rates of sediment accumulation, we can learn about environmental change.

Ecological transformation continued as Maryland's population burgeoned. Resources were harvested to fuel development of towns and cities, industries took shape, and political boundaries were shaped and defended. The early years of the republic saw a huge expansion in canal and highway construction which improved access to undeveloped areas and opened more land to farming, timber harvesting, and mining. The resulting habitat destruction pushed many species out of their native areas or into extinction, and invasive, opportunistic species moved in to fill the void. Deforestation led to extensive soil erosion – the effects of which were visible from the mountains to the sea.

Early industries in Maryland included charcoal and bog iron production. Their furnaces consumed large quantities of wood, and it is estimated that Maryland's coastal plain forests were reduced by 30 percent by the year 1775.

By the mid-19th century, the development of coal, steam, and steel fueled greater industrial expansion. The period witnessed urban development, civil war, and an influx of European immigrants to Maryland's shores. Changes in Maryland agriculture characterize this period as well, as farming shifted toward the western frontier.



Reproduced from 1854 Engraving of Mt. Savage Iron-Works in: *Green Glades & Sooty Gob Piles, The Maryland Coal Region's Industrial and Architectural Past*, Maryland Historical Trust.

"The real legacy of European Colonization has been the transformation of a highly variable, almost completely forested landscape into a herbaceous-dominated system, interspersed with different-sized fragments of secondary forest in different stages of succession. . . It is difficult to predict what would happen to today's largely deforested landscape if it were subjected to the kind of climate changes seen in the past." Grace Brush 2001: 57.

[Further Information:](#)

How can Understanding the History of Ecological Change Help Us with the Future?

The Maryland landscape we know today is the product of millions of years of natural processes. Until recently, that landscape was predominantly shaped by the ecological functions of soil, climate, hydrology, and slope. Global-scale shifts in climate were responsible for governing ecological change in Maryland. But the arrival of humans on the land introduced a new element which through time proved to be an increasingly powerful ecological force which continues to accelerate into the present.

"Environment may initially shape the range of choices available to a people at a given moment, but then culture reshapes environment in responding to those choices." (William Cronon, 1993:13)

Looking at the history of Maryland's environment, we recognize that it has never been static. The first European explorers to the New World encountered not a primordial landscape untouched and unchanging, but a dynamic realm of interconnected physical, biological, and cultural forces. Understanding the interaction of these forces and their effects upon a malleable landscape puts the concept of a "virgin wilderness" into a context where change is constant and humans long played an important role

We share a history with all the Marylanders that have come before us. By being human, through the acts that fulfill our needs for food, shelter, and transportation, as well as our social, political, and spiritual desires, we effect and are affected by the land we live upon. As Marylanders we share a heritage of transforming our environment.

We live in a time where concerns about global warming, deforestation, overpopulation, and our food supply loom large. History helps us to understand the effects of both our conscious and inadvertent actions upon the environment. And hopefully, an understanding of our past will help us to be better stewards of our home and its resources.



Deforestation

[Further Information:](#)

Glossary

Arable: Land favorable to the cultivation of crops or land upon which crops are grown.

Archaic: The Archaic cultural period (7500 B.C. to 1000 B.C) is divided into the Early Archaic (7500 B.C. - 6000 B.C.), Middle Archaic (6000 B.C. – 3500 B.C.) and Late Archaic (3500 B.C. – 1000 B.C.) sub periods.
http://www.jefpat.org/diagnostic/Prehistoric_Ceramic_Web_Page/Prehistoric_Prehistory.htm

Archeobotany: Or Paleoethnobotany is the study of archaeologically-recovered plant artifacts to interpret how people in the past used and interacted with plants.

Clovis: A distinct Paleoindian group originally named for a distinctively shaped fluted stone spearpoint used to hunt megafauna. The Clovis people are generally regarded as the earliest human inhabitants of the New World.

Cultivation: The act of growing plants.

Dichotomous Key: Is a tool that allows the user to determine the taxonomic identity of items in the natural world, such as plants and animals. The key is a written device constructed from a series of organized statements which represent mutually exclusive choices. Identification is made by selecting choices based on the user's comparisons with unknown specimen until a conclusion is reached.

Domestication: The process through which a plant (or animal) is adapted to life in close association with and to the benefit of humans.

Eastern Woodlands: The temperate forests zones of eastern North America stretching from the Mississippi River east to the Atlantic ocean, and excluding the tropical forests of the south.

Extinct: A plant or animal species which no longer exists.

Extirpated: A local extinction, where a species ceases to exist in one area, but still exists elsewhere.

Flotation: A process to separate organic remains from archaeological soils.

Holocene: Is a geological epoch which began approximately 10,000 years ago and continues into the present.

Horticulture: The art and science of growing plants.

Husbandry: The act of caring for or managing plants and animals for human benefit.

Little Ice Age: A modest cooling of the northern hemisphere following a warmer era (the Medieval Warm Period) and spanning from the 1500's through the mid 19th century.

Ice Age: A geologic period of long-term reduction in the Earth's temperature which results in an expansion of the continental and polar ice sheets.

Light Microscope: Or optical microscope is a type of microscope which uses visible light and a system of lenses to magnify images of small specimens.

Glossary continued -

Mantle: A thick layer of molten rock on which the earth's crust floats.

Megafauna: Specifically, the Pleistocene Megafauna, the giant land animals of the last ice age like mammoth, mastodon and giant bear which are now extinct.

Morphology: The form (structure, shape, color, pattern) of an organism or of a part of an organism.

Non-Indigenous: A plant or animal species that is introduced to a geographical area. Not native, an alien or exotic species.

Paleoethnobotany: Or Archeobotany is the study of archaeologically-recovered plant artifacts to interpret how people in the past used and interacted with plants.

Paleoindian: The Paleoindian cultural period (10000 B.C. to 7500 B.C.) was a time of radical climatic change at the transition of the Pleistocene to the Holocene at the end of the last ice age.

http://www.jefpat.org/diagnostic/Prehistoric_Ceramic_Web_Page/Prehistoric_Prehistory.htm

Palynology: Is the science that studies fossil pollen and other palynomorphs (tiny organic-walled micro-fossils).

Phytolith: Or plant opal silica bodies are rigid microscopic structures that occur in many plants. Silica phytoliths vary in size and shape based on the plant taxon and plant part (root, stem, seed) from which they derive.

Radiocarbon Dating: A method of radiometric dating that uses the naturally occurring radioisotope carbon-14 to determine the age of carbon-rich materials. Raw (or uncalibrated) radiocarbon ages are reported in radiocarbon years Before Present (BP) (1950). Raw ages can be calibrated to give calendar dates in years A.D. (Anno Domini) or B.C. (Before Christ).

Reference Collection: A collection of botanical specimens arranged and maintained in a herbarium for comparative purposes to aid in the identification of archeobotanical artifacts. Materials in an Archeobotanical Reference Collection are often treated to simulate archaeological conditions such as carbonization or water-logging.

Scanning Electron Microscope: A type of microscope that uses electrons to illuminate a specimen and create an enlarged image. Electron Microscopes can obtain much higher magnifications than light microscopes.

Starch Grain Analysis: A methodology that uses microscopic starch residues preserved on artifacts (and in soils) to understand past plant use.

Tidewater: Applies to all geographic areas of Maryland where waterways are affected by tidal influence.

Wisconsin Glaciation: The most recent glacial period which began about 110,000 years ago, reached its maximum extent between 18,000 and 20,000 years ago, and ended between 10,000 and 15,000 years ago.

Woodland: The Woodland cultural period (1000 B.C. - A.D. 1600) is divided into the Early Woodland (1000 B.C. - A.D. 200), Middle Woodland (A.D. 200 - A.D. 900) and Late Woodland (A.D. 900 - A.D. 1650) subperiods.

http://www.jefpat.org/diagnostic/Prehistoric_Ceramic_Web_Page/Prehistoric_Prehistory.htm

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