



Bay



Plain

and

Piedmont

**A Landscape History
of the Chesapeake Heartland
from 1.3 Billion Years Ago to 2000**

The Chesapeake Bay Heritage Context Project

September 2000



BAY, PLAIN, AND PIEDMONT
A LANDSCAPE HISTORY OF THE CHESAPEAKE HEARTLAND
FROM 1.3 BILLION YEARS AGO TO 2000

The Chesapeake Bay Heritage Context Project

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The National Park Service is dedicated to conserving the nation's valued natural and cultural resources for the enjoyment, education and inspiration of this and future generations. The mission is advanced beyond park boundaries through collaborative partnerships with governments at all levels, organizations and citizens. As a partner of the Chesapeake Bay Program, the Service participates in efforts supporting restoration and protection goals for the Bay and its watershed through natural and cultural resource interpretation, access for all Americans and citizen-based conservation action.



The Chesapeake Bay Program is a unique regional partnership leading and directing restoration of the Chesapeake Bay since 1983. The Chesapeake Bay Program partners include the states of Maryland, Pennsylvania, and Virginia; the District of Columbia; the Chesapeake Bay Commission, a tri-state legislative body; the U.S. Environmental Protection Agency (EPA), which represents the federal government; and participating citizen advisory groups. Since its inception, the Chesapeake Bay Program's highest priority has been the restoration of the Bay's living resources—its finfish, shellfish, Bay grasses, and other aquatic life and wildlife. Improvements include fisheries and habitat restoration, recovery of Bay grasses, nutrient reductions, and significant advances in estuarine science.

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Note: In accordance with the provisions of the Historic Preservation Act of 1966 and the Archaeological Resource Protection Act of 1979, which restrict disclosure of site locations and other information that may endanger cultural resources significant in the culture and history of the United States, all maps depict relative distributions rather than actual locations of archeological sites. This is done to respect the privacy of property owners and to maintain the confidentiality of locations of potentially threatened cultural resources.

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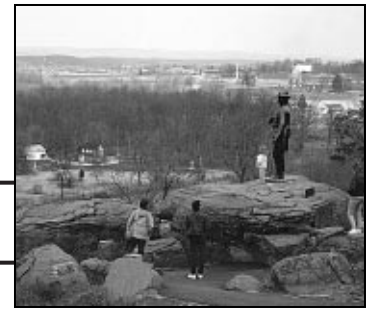
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Introduction

Chesapeake Bay Heritage Contexts:

A Framework for Understanding

Past and Present Landscapes



WHERE, WHAT, AND WHEN

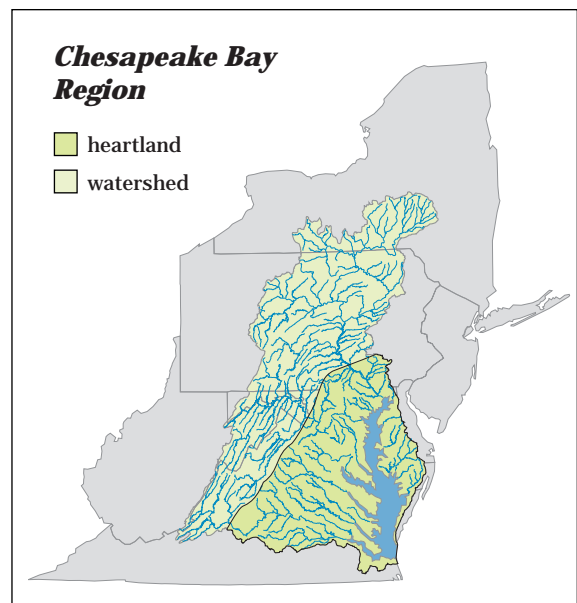
This book explores the cultural and natural heritages of the Chesapeake Bay heartland, a region that extends through parts of south-central Pennsylvania, eastern Maryland and Virginia, and all of the District of Columbia (see Map 1). The area forms a large portion of the mid-Atlantic region of the United States. Today, one of America's densest concentrations of people lives there, side by side with thousands of plant and animal species. This study focuses on the unique relationships between people, plants, animals, and place that have emerged at various times in the region's history.

The book moves from the earliest geological evidence of life in the Chesapeake Bay heartland—evidence that is at least 1.3 billion years old—to 2000. Over time, this region has been home to a fascinating diversity of natural and cultural landscapes. High mountain chains have risen over Chesapeake lands at least twice during the past billion years. Ocean waters and sluicing floods from melting glaciers have periodically flowed across the area. Hunting and gathering people first came to the region by 12,000 years ago. Native Americans began cultivating crops and settling in towns throughout the area around a thousand years ago. First arriving less than five hundred years ago, Europeans, and Africans first forcibly brought by them to the region in 1619, struggled to transform forests to farm fields during the colonial era between 1524 and 1775.

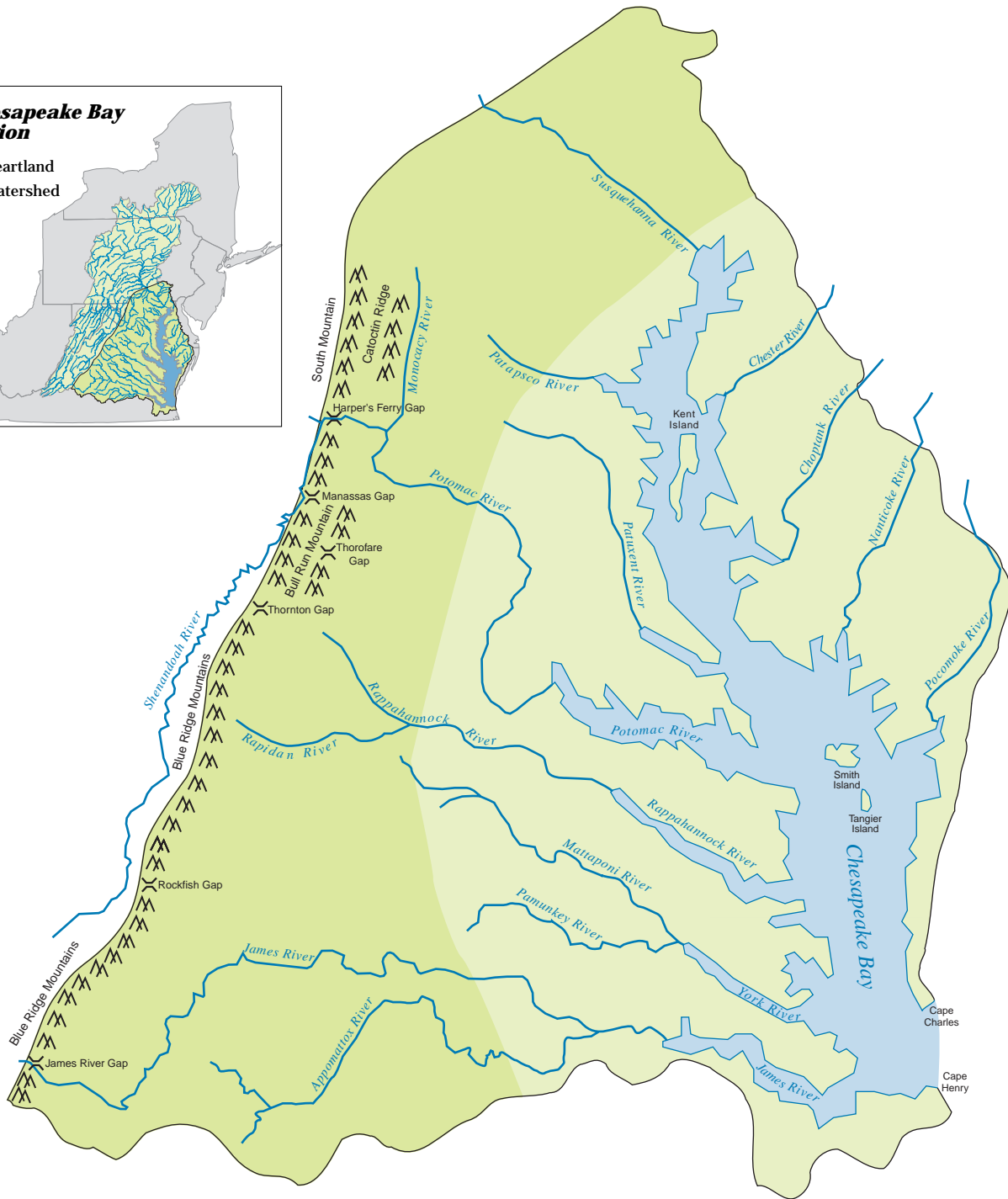
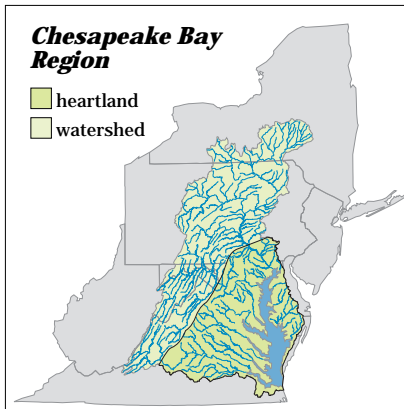
Since then, social, political, economic, and technological developments in metallurgy, steam power, internal combustion engines, chemical engineering, and, most recently, in electronics, have enabled people to transform regional environments in dramatic ways.

The heartland of this region stretches across the southernmost half of the 64,000-square-mile Chesapeake drainage, a vast area bounded on the north by the headwaters of the Susquehanna River in south-central New York, on the west by the Appalachian Mountain chain crests that cut across central Pennsylvania and West Virginia, and on the south by the upper tributaries of the James and other rivers that flow into the lowermost reaches of Chesapeake Bay.

The Chesapeake Bay heartland itself is bordered on the west by the Blue Ridge Mountains in Virginia and South Mountain in Maryland and Pennsylvania. A broken line of low hills running parallel to Pennsylvania's Kittatiny Mountains forms its northernmost border, and the elevated uplands separating the Delaware and Susquehanna River drainages forms its eastern border. The heartland's southern borders are in



Map 1: The Chesapeake Bay Heartland



LEGEND

- Bay
- Plain
- Piedmont





Figure 1: Bay Landscape: Shad fishing on Chesapeake Bay by moonlight and kerosene lamp, 1884.

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southeastern Virginia, marked by the headwaters of rivers and streams that flow north and east into the Bay's lower-most reaches.

This region contains three distinct, occasionally overlapping environmental areas often called physiographic provinces or ecosystems by specialists. These are the Bay itself, the Coastal Plain, and the Piedmont. Each is a unique and complex environment that both supports and is influenced by living things. The Bay environment consists of deep and shallow open salt waters and the brackish waters of the lower tidal portions of rivers (see Figure 1). Chesapeake waters flow into the Atlantic Ocean at Hampton Roads at the Bay's southeastern end. The Coastal

Plain bordering on the Bay consists of beaches, marshes, forests, and grasslands growing on generally sandy or gravelly soils. This area is often called the tidewater region, since the waters coursing along its shores rise and fall with the tide (see Figure 2). Coastal Plain sections on the Bay's eastern and southern shores generally tend to be flat and are drained by salty or brackish waters. Bluffs and low rolling hills drained by brackish or freshwater streams are located on the western shore and in more interior parts of this region.

The Piedmont (literally "foot hills") is a region of mixed hardwood forests and softwood barren lands bordering on swift running freshwater rivers and streams. Mountain laurel, ferns, and grasses flourish on Piedmont forest floors. Poison ivy, Virginia creeper, and other epiphytic clinging vines wind their ways around tree trunks that push their roots deep into the Piedmont's clayey soils. Low mountain chains and isolated hills of hard rock resistant to the eroding power of these waters rise above broad valleys covered by these soft clayey soils. A low-lying ridge chain, known as the fall line, runs through the region from Conowingo Falls on the Susquehanna to Baltimore, Washington, and Richmond.



Figure 2: Coastal Plain Landscape: Dyke Marsh Wildlife Preserve, located in Fairfax County, Virginia, a unit of George Washington Memorial Parkway. (Photograph courtesy of the

National Park Service)



Figure 3: Piedmont Landscape: A view of the Blue Ridge Mountains from Culpeper, Virginia.

(Photograph courtesy of the National Park Service and the Library of Congress)

The fall line separates the Piedmont uplands from the tidal lowlands of the Coastal Plain (see Figure 3). Rapids flowing over this ridge line mark the uppermost limits of navigation for ships sailing up the region's rivers. These distances vary from less than five miles on the Susquehanna to well over a hundred miles on the James.

The Susquehanna and James are only two of the more than fifty major rivers flowing through this region. Together, these rivers pour 2.5 million cubic feet of freshwater and huge amounts of sediments, minerals, and nutrients into Chesapeake Bay each year. Five of these rivers, the Susquehanna, Potomac, Rappahannock, York, and James, provide 90 percent of the Bay's freshwater volume. The largest of these, the Susquehanna, accounts for fully half of the freshwater discharged into Chesapeake Bay. The huge volume of freshwater that flows into the Bay makes these waters 10 percent less salty than those in the nearby open ocean.

The Bay itself is an estuary—a place where fresh river water mixes with salty ocean currents. It is the largest estuary in the United States and one of the largest in the world. The Bay was formed at the end of the last Ice-Age, when melting glaciers caused sea levels to rise worldwide. This generally slender, shallow sliver of bay water stretches two hundred

miles from its northern border at the mouth of the Elk River in Maryland, to its southern outlet between Cape Henry and Cape Charles. Its deepest portions trace what in ancient times was the path of the Susquehanna River; its shallower parts were formed when land was flooded by rising ocean waters. As much as forty miles across at its widest point, Chesapeake Bay follows a generally narrow channel with an average width of between five and ten miles. Bay waters today cover a surface area of 2,500 square miles at an average water depth of twenty-one feet. They support an amazing variety of life. Deeper waters are home to many species of fish, shellfish, and, on occasion, visiting ocean fish and aquatic mammals. Vast meadows of submerged aquatic vegetation, great banks of clams and oysters, sizable populations of blue crabs, young fish not ready for the open water, migratory waterfowl, clouds of diatoms, dinoflagellates, and other plankton, and numerous species of fish, mammals, and birds make their homes in shallower Bay waters.

The Coastal Plain consists of beaches, saltwater and brackish marshes, freshwater swamps, and forests. The region straddles an environmental borderland marking the southernmost extent of many northern species and the most northerly limits of many southern plants and animals. Tidewater beaches support distinct communities of shellfish, insects, and migratory birds. Plants that are resistant to salt spray, including salt grass, salt meadow cordgrass, and American holly provide food and shelter to a wide variety of insects, mammals, and birds and stabilize dunes and bluffs above the high tide mark, keeping them from eroding quickly into the Bay. Areas closest to the Bay are also home to low-lying salt marshes, which are flooded twice daily by tides. Plant communities dominated by salt marsh cordgrass and other species able to withstand extended periods of immersion live in these areas. In contrast, areas of salt marsh that only get covered by water at high tide are dominated by salt meadow cordgrass and other less water tolerant species. Just

inland, common reeds, white perch, common snapping turtles, northern water snakes, great blue herons and other waterfowl, rice rats, and raccoons are among the many plants and animals making their homes in tidewater swamps and other brackish water wetlands.

Moving inland, we find freshwater marshes and swamps in places such as Virginia's Great Dismal Swamp (see Figure 4) that are homes to bald cypress, red maple, green ash, sweet gum, loblolly pine, poison ivy, giant water bugs, north black racers, bullfrogs, eastern mud turtles, barred owls, wood ducks, marsh rabbits, Virginia opossums, muskrats, river otters, beavers, and many other species. Farther in, Coastal Plain uplands are populated by diverse mixed hardwood and softwood forests. Each community reflects variations in local weather, water, and soil conditions.

The Chesapeake Piedmont is also a transition zone where species most commonly found in southern softwood forests blend in with plants that flourish in more northerly mixed softwood-hardwood forests. Three types of environment may be found in this area. Well-drained mesosere zones located on level and mildly sloping terrain cover 85 percent of all Piedmont lands. Dry xerosere eroded and hilltop environments comprise 19 percent of the land area. The remaining 5 percent of Piedmont land is made up of wet bottomland hydrosere habitats.

White oaks, beeches, hickories, tulip trees, and, until decimated by blight, chestnuts, dominate mature mesosere forest communities. Red oaks prosper in more northerly parts of the region; black oaks tend to be more common in southern sections. American hornbeam, flowering dogwood, blueberries, shadbush, and maple leaf viburnum live in lower forest canopies. A wide variety of insects, amphibians, reptiles, birds, and mammals also make their homes in these forests.



Figure 4: Coastal Plain Wetland Landscape: Great Dismal Swamp, ca. 1906. (Photograph courtesy of the Library of Congress)

Chestnut oak, red oak, flowering dogwood, dwarf chinquapin oak, and Virginia pine are the dominant trees in dry xerosere forests. Blackjack oak and, more rarely, arborvitae, are found in extremely dry Piedmont barren lands. Blueberries, mountain laurel, and a variety of shrubs and grass grow in upland xeric habitats. A relatively small number of animal species adapted to drier and harsher conditions make their homes in this zone.

Silver maple, sycamore, bitternut hickory, swamp white oak, hornbeam, box elder, hackberry, sweet gum, green ash, river birch, and, formerly, the American elm, dominate forests growing along the banks of Piedmont swamps and streams. Paw paw, poison ivy, wild grape, wild azalea, witch hazel, and spicebush thrive on the forest floors in this zone. In contrast to its other habitats, Piedmont wetlands support some of the largest communities of insects, crustaceans, mollusks, fish, amphibians, reptiles, birds, and mammals in the Chesapeake region.

WHY

The main purpose of this book is to give readers accurate, up-to-date, and easy to understand information on the natural and cultural heritages of the Chesapeake Bay heartland. Although the Chesapeake Bay is one of the most intensively studied regions in the United States, basic information about the area is still hard to find.

Many thousands of specialized publications touch on just about every conceivable aspect of the Bay heartland's natural and cultural resources, and thousands of other reports—many unpublished and most hard to find—contain technical findings from studies commissioned by private corporations, public interest groups, government agencies, and other organizations. Add to this the ever increasing numbers of web sites that offer information on everything from water pollution levels to deep surface geology. Yet much of this material is presented in dense, technical terms, and readers may find it difficult to tell which findings are dependable and which are controversial or out of date. And no one source presents information on the region's cultural and natural resources in a systematic framework.

For more than two years, an innovative partnership has worked together to fill this gap. This partnership combines the knowledge, skills, and resources of federal and state agencies, academic institutions, public and private organizations, and interested individuals. In creating this book, project partners have worked to achieve three goals:

- to offer accurate, up-to-date information on the natural and cultural resources of the Chesapeake Bay heartland,
- to present this information in non-technical language,
- to organize this information in ways that reveal how a complex, ever-changing web of relationships connects all of the region's natural and cultural resources.

Culture is simply the way people live, and nature is what we need to thrive and survive. Cultural and natural heritage is everyone's concern. By investigating our cultural and natural landscapes, we can see how our lives depend on an ever-changing kaleidoscope of links connecting the past to the present. When we understand these connections between culture and nature, past and present, we can make better decisions about

whether to change things or to keep them as they are.

By providing the latest, most accurate information in plain language, this book aims to provide a sound basis for such decisions. It is meant to assist anyone living in or concerned about the Chesapeake Bay region. General readers seeking basic information and specialists looking for succinct summaries can find useful data and suggested sources in these pages. Developers seeking for ways to avoid past mistakes and enhance potential project values can find useful information here. And State Historic Preservation Office employees using state historic contexts can use this study to place information about properties in state borders within a more comparative broader regional perspective. As this is a government report funded by tax dollars, its text may be freely used or adapted for brochures, newsletters, and other publications.

HOW

This study combines two National Park Service organizational frameworks, the Historic Context and the National Historic Landmark Thematic Framework, to help readers find information. The historic context is a method that federal, state, and local agencies use to organize and assess the information they need to identify, evaluate, designate, and manage cultural resources such as buildings, sites, and structures that are associated with particular aspects of American history and culture. The National Historic Landmark thematic framework is a system used nationwide to gather and organize information on America's most significant historic sites.

Both systems have been modified and combined to create the Heritage Context framework developed especially for this project. Chesapeake Bay heritage contexts document relationships between cultural and natural resources during particular periods. Each heritage context—one of which comprises each chapter of this book—summarizes basic information for the period. You will see

boxed insets that highlight places chosen to represent natural and cultural landscapes of particular periods. Also in each chapter you will find reliable lists of sources (with locations) for further information.

Using adaptations of historic context frameworks employed by State Historic Preservation Offices of Delaware, Maryland, Pennsylvania, Virginia, and the District of Columbia, this study divides information on the Chesapeake Bay region into these chronological heritage contexts:

- The Deep Past, 1.3 Billion to 18,000 Years Ago (Chapter One, pages 11-17)
- Paleoindian Life in the Chesapeake Region, 18,000 to 9,900 Years Ago (Chapter Two, pages 19-26)
- Hunting and Gathering Lifeways in the Chesapeake Region, 10,000 to 1,000 Years Ago (Chapter Three, pages 27-37)
- The Rise of Townlife, 1,100 to 500 Years Ago (Chapter Four, pages 39-50)
- Contact and Colonization, 1500 to 1775 (Chapter Five, pages 51-76)
- The Early Republic, 1775 to 1820 (Chapter Six, pages 77-94)
- Sectional Strife, 1820 to 1880 (Chapter Seven, pages 95-118)
- Urbanization, 1880 to 1930 (Chapter Eight, pages 119-138)
- Chesapeake Metropolis, 1930 to 2000 (Chapter Nine, pages 139-162)

Each heritage context—each chapter in this book—begins with outlines of the period's major developments and events. These are followed by overviews of relationships between people and place during the period, **An Ecology of People and Place**. The first chapter, "The Deep Past," focuses on the 1.3 billion years of history preceding the initial human entry into the region sometime between 18,000 and 11,500 years ago. Place precedes people in the next three chapters, highlighting what an enormous influence environmental conditions had on people's actions in the region from the time of their first arrival until about five hundred years ago. This order is

reversed, with people coming before place, in the final five chapters, reflecting the rise of attitudes and capabilities that allowed and encouraged many people to dominate and exploit Chesapeake Bay environments.

Each discussion of **Place** begins with a general description of conditions in each of the Chesapeake Bay region's three major environmental areas. It continues by assessing the status of major components of each region's environment. These include its rocks, minerals, soils, and other geological features, its salt and fresh waters, and its climate, weather, plants, and animals.

Each discussion of **People** begins with a general look at cultural developments in the particular period. It places events against the broader backdrop of national and international developments. And it charts, evaluates, and explains key cultural factors of each period, including changes in the number and location of human inhabitants; its social, political, and economic life; and its technological and intellectual developments

These discussions are followed by more detailed looks at key aspects of the period's **Cultural Landscape**. Slightly modified for this study, the National Historic Landmark thematic framework is used to present specific information relating to these eight key aspects for all but the first period:

- **Peopling Places**
- **Creation of Social Institutions**
- **Expressing Cultural Values**
- **Shaping the Political Landscape**
- **Developing the Chesapeake Economy**
- **Expanding Science and Technology**
- **Transforming the Environment**
- **Changing Role of the Chesapeake in the World Community**

In this study, the word ecology is used to refer to the relationships of living things with one another and with their environments. The phrase natural landscape

refers to ecologies independent of human interference or influence. The term cultural landscape refers here to the combination of cultural and natural factors that forms unique ecologies of people and place. This definition acknowledges the role that culture plays in linking human and natural worlds.

Cultural landscapes can be as large as river valleys and as small as gardens. But whether situated in a single locale or spread over a wide area, each reflects unique relationships between natural conditions and cultural activities. Cultural landscapes are transformed over time, with only fragments of earlier cultural landscapes surviving in later periods. These fragments become components of later ecologies, whether as relics or reusable resources. Well-preserved fragments of cultural landscapes of the past—usually linked with significant people or events—may gain importance far beyond their specific cultural landscape.

Natural resources, too, survive as remnants of past landscapes. This study employs the terms geology, water, climate, plants, and animals to describe these natural resources. Geology includes rocks, minerals, and soils. Water includes both salt and fresh waters. Climate includes the atmosphere and weather. Plants includes water and land plants and relatives such as fungi and microscopic phytoplankton. And finally, animals includes microscopic zooplankton; larger invertebrates, such as worms, shellfish, mollusks, and crustaceans; insects; fishes; reptiles and amphibians; birds; and mammals.

Each chapter examines all of these factors—history, habitats, natural and cultural landscapes, and natural resources—in sections on the eight key aspects listed above. **Peopling Places** assesses how changes and continuities in population patterns affect each period's natural and cultural landscapes. It focuses on natural and cultural features associated with migration, health status, culture, ethnicity, gender, and other aspects of identity. Such features can include archeological

sites containing artifacts, settlement patterns associated with particular cultures, and specific combinations of architectural styles and land use patterns that reveal the immigration or emigration of specific ethnic groups.

Creation of Social Institutions and Movements charts how public and private associations expressed themselves in the region's landscape. Sites such as ball fields and memorials; buildings such as clubhouses, churches, and schools; and districts such as Colonial Williamsburg, can provide examples of social aspects of a period's cultural and natural landscape.

Expressing Cultural Values examines the ways beliefs and values are expressed when a culture interacts with its natural landscape. These expressions can include sites of high culture, such as temples, museums, formal parks, and places associated with prominent figures in arts and letters, as well as sites of popular culture, such as amusement parks, music halls, and the homes of primitive painters.

Shaping the Political Landscape examines the particular impressions that government makes on a period's landscape. Political properties range from council rings, city halls, and political clubhouses to military fortifications, battlefields, and places associated with important political figures and movements.

Developing the Chesapeake Economy examines the impact of work on the landscape. Places associated with this include quarries, factories, and other locales for resource extraction and production; paths, turnpikes, railroads, canals, and other transportation facilities; warehouses, stores, and other places of distribution; banks, stock exchanges, and other financial institutions; and union halls and other properties associated with American labor.

Expanding Science and Technology assesses the impacts of innovation upon the land. Places associated with this

include buildings used in technological development, such as workshops, laboratories, and institutes of higher learning; sites associated with first, final, or exemplary examples of major industries; and ships, aircraft, and other objects exemplifying scientific and technological advances.

Transforming the Environment considers natural and cultural aspects of the landscape that influence environmental change during a particular period. Places where these forces come together include locales where the environment is exploited, degraded, maintained, or restored.

Finally, **Changing Role of the Chesapeake in the World Community** considers the roles of ports, customs facilities, and similar points of contact with the wider world, as well as the impacts of products and ideas originating beyond the borders of the landscape under discussion.

Each chapter also contains lists of **Key Locales** that preserve significant aspects of the cultural and natural landscapes of the period. Many of the *Key Locales* are highlighted by a marginal symbol. Earlier chapters list important archeological sites. Later chapters list National Historic Landmarks in the region. These, of course, are not the only places of significance to American history and culture in the Chesapeake area. Hundreds of sites of local and state significance in the region, for example, are listed in the National Register of Historic Places. National Historic Landmarks, by contrast, are nationally significant places designated by the Secretary of the Interior after completion of rigorous multi-year nation-wide evaluation studies. Dates in brackets after the names of these places indicate their dates of construction or periods of major historical, architectural, or cultural significance. In addition, each chapter contains a chronological listing of **Significant Events** which occurred during the applicable time period. Each chapter then ends with a section listing widely available books, **Further Information**.

Full citations for these books can be found in the **Source** section at the end of the volume.

Appendices at the end of the volume contain a regional time line (**Appendix One, pages 163-165**), a list of common and scientific names of major plants and animals in the region (**Appendix Two, pages 166-168**), and listings of regional National Natural Landmarks—places systematically studied and formally designated by the Secretary of the Interior that preserve unique nationally significant natural resources (**Appendix Three, page 169**), National Historic Landmarks (**Appendix Four, pages 170-172**), and National Parks (**Appendix Five, page 173**). These are followed by a **Sources** section, which presents a selection of relatively widely available useful books, some of the many pertinent historic context reports on file in State Historic Preservation Offices in the region, and representative lists of useful films, videos, and Web sites.

SOME BASIC SOURCES

The following books are only a few of the many sources that either survey aspects of the Chesapeake Bay region's natural and cultural heritage or place them within broader regional or national perspectives :

Useful general information on the region's natural resource heritage include:

- E. Lucy Braun, *Deciduous Forests of Eastern North America* (1950).
- Richard Gerstell, *American Shad in the Susquehanna River Basin: A Three-Hundred-Year History* (1998).
- Michael A. Godfrey, *Field Guide to the Piedmont* (1997).
- K. Bruce Jones, et al., *An Ecological Assessment of the United States Mid-Atlantic Region* (1997).
- Christopher P. White, *Chesapeake Bay: A Field Guide* (1989).
- David A. Zegers, ed., *At the Crossroads: A Natural History of Southcentral Pennsylvania* (1994).



*Marginal Symbol
for Key Locales*

Guidebooks to the region include:

Federal Writers' Program, *Maryland: A Guide to the Old Line State* (1940a).

——, *Virginia: A Guide to the Old Dominion* (1940b).

Edward C. Papenfuse, et al., *Maryland: A New Guide to the Old Line State* (1979).

Particularly helpful cultural landscape studies include:

Donald W. Meinig, *The Shaping of America. Volume 1: Atlantic America, 1492-1800* (1986).

——, *The Shaping of America. Volume 2: Continental America, 1800-1867* (1993).

——, *The Shaping of America. Volume 3: Transcontinental America, 1850-1915* (1999).

Timothy Silver, *A New Face on the Countryside* (1990).

John R. Stilgoe, *Common Landscape of America, 1580 to 1845* (1982).

The following sources are among the many useful studies surveying archeology in the region:

Jay F. Custer, *Prehistoric Cultures of Eastern Pennsylvania* (1996).

Richard J. Dent, Jr., *Chesapeake Prehistory* (1995).

Robert S. Grumet, *Historic Contact* (1995).

Ivor Noël Hume, *Here Lies Virginia* (1994a).

Paul A. Shackel and Barbara J. Little, *Historical Archaeology of the Chesapeake, 1784-1994* (1994).

Among the many useful textbooks surveying the history of the region:

Paul S. Boyer, et al., *The Enduring Vision: A History of the American People* (1990).

Suzanne Chapelle, et al., *Maryland: A History of Its People* (1986).

Many studies look at colonial life in the region. The following source, soon to be updated, provides an excellent bibliography for the period:

David L. Ammerman and Philip D. Morgan, eds., *Books about Early America* (1989).

Other volumes surveying Chesapeake colonial life include:

Jacob Cooke, ed., *Encyclopedia of the North American Colonies* (3 vols., 1993).

John J. McCusker and Russell R. Menard, *The Economy of British America* (1991).

Slavery was one of the principal issues confronting people in the region for more than 250 years. Particularly useful sources on the subject include:

Ira Berlin, *Many Thousands Gone* (1998).

Edmund S. Morgan, *American Slavery, American Freedom* (1975).

Housing, fishing, and other key aspects of regional architecture and technology are surveyed in:

Larry S. Chowning, *Harvesting the Chesapeake* (1990).

Henry Glassie, *Pattern in the Material Folk Culture of the United States* (1968).

Brooke O. Hindle, ed., *America's Wooden Age* (1975).

Virginia and Lee McAlester, *A Field Guide to American Houses* (1986).

Dell Upton, ed., *America's Architectural Roots* (1986a).

——, ed., *Holy Things and Profane* (1986b).

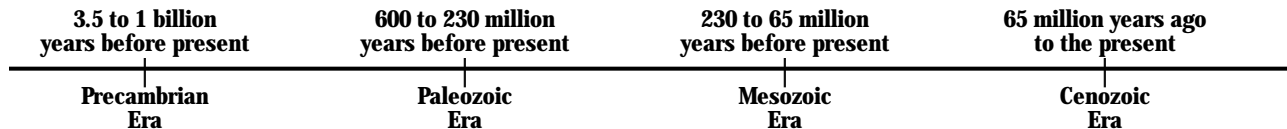
——, and John Michael Vlach, eds., *Common Places* (1986).

A useful selection of writings on the region appears in:

Richard Harwood, ed., *Talking Tidewater* (1996).

Chapter One

The Deep Past, 1.3 Billion to 18,000 Years Ago



AN ECOLOGY OF CHANGE

Both Chesapeake Bay and the communities of plants and animals living in and around it may appear ageless, but the Bay environment we see today only began to emerge 12,000 years ago (see Map 2). Going further back in time, the region has been a place of tropical rainforests, arid grasslands, teeming swamps, dense pine lands, and bleak arctic tundra. Over time, a restless earth has shifted Chesapeake lands across portions of the face of the earth, moving them through polar, temperate, and equatorial latitudes. Deep ocean waters, vast lakes, glacial ice-sheets, layers of sand, and streams of molten lava covered these lands in their season. Colliding continents, earthquakes, volcanoes, and perhaps even an ancient meteor strike have raised, lowered, and fractured the part of the earth's crust that undergirds the region today. Chesapeake lands have sunk under the weight of rock, water, and ice, only to rise—at least twice during the past billion years—into mountains rivaling the Himalayas, when the massive forces released by colliding continents pushed huge blocks of land many thousands of feet into the air.

These changes occurred at different rates over vast stretches of time. Sometimes they occurred very quickly, even by the immense expanses of time used to mea-

sure geological change. Catastrophic events—such as the meteor strike believed to have gouged a crater as large as the state of Rhode Island and as deep as the Grand Canyon into what is now the lower tip of the Delmarva Peninsula near Cape Charles during Eocene times 35 million years ago—could transform the entire landscape in an instant. Other changes took time. Over the course of millennia, wind, water, and ice cut through the mountains, wore away rocks, and ground stone into gravels, silts, clays, and sands. Continents drifted apart and slammed together along fault-lines running through the region, triggering earthquakes and sometimes causing deeply buried rock melted by the heat of these collisions to ooze from great cracks and craters to bury the land beneath layers of magma, lava, and ash. Today, the routes of many Chesapeake waterways mark these faults where earthquakes cracked and shifted vast wedges of the earth's crust.

This history is written, too, in the region's rocks, soils, and sediments. For instance, we can see the sands, sediments, and gravels laid down by ancient oceans, bays, and rivers in today's limestones, dolomites, sandstones and other sedimentary rocks. Deposits of these rocks can now be

SIGNIFICANT EVENTS

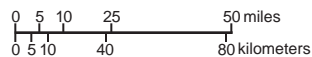
- 3.5 to 1 billion years before present—one-celled organisms evolve (Precambrian)
- 1.3 to 1 billion years before present—Grenville Orogeny mountain-building
- 1 billion to 500 million years before present—lapetus Ocean covers the region
- 500 million years before present—Pangaeon super continent forms
- 600 to 230 million years before present—plants, insects, mollusks, fishes, and amphibians emerge (Paleozoic)
- 350 to 250 million years before present—Appalachian Orogeny mountain-building
- 230 to 65 million years before present—dinosaurs, birds, and the first mammals appear (Mesozoic)
- 200 million years before present—North America goes with Laurasia when Pangaea splits up
- 200 million to 12,000 years before present—parts of the region periodically flooded by Atlantic Ocean waters
- 65 million years before present—mammals emerge as dominant land animals
- 50 million years before present—North America begins to split off from Laurasia.
- 2 million years before present—most recent series of Pleistocene Ice-Ages begins
- 18,000 years before present—most recent glacial ice-sheets retreat

Map 2: The Deep Past, 1.3 Billion to 18,000 Years Ago

- KEY LOCALES**
- NATIONAL NATURAL LANDMARKS**
- Maryland**
- Battle Creek Cypress Swamp
 - Belt Woods
 - Long Green Creek and Sweathouse Branch
 - Sugar Loaf Mountain
- Pennsylvania**
- Fernciff Wildflower and Wildlife Preserve
- Virginia**
- Caledon State Park
 - Great Dismal Swamp
 - Charles C. Steirly Natural Area
 - Montpelier Forest
 - Seashore Natural Area
 - Virginia Coast Reserve



- LEGEND**
- ▲ National Natural Landmark
 - Natural or Cultural Feature
 - Bay
 - Plain
 - Piedmont



seen on cliff sides, mountain slopes, in quarry pits, and deeply buried in caves and mines. We can also find clues to the past in the slates, serpentines, marbles, and other metamorphic rocks exposed along Piedmont uplands and buried beneath the Coastal Plain. Transformed by heat and pressure, these rocks preserve a record of the enormous forces released during earthquakes and continental collisions. Unique locales, such as Maryland's *Pilot Serpentine Barren Preserve* and *Soldier's Delight Serpentine Barren*, provide distinctive Piedmont habitats for plant communities including red cedar, blackjack oak, post oak, and a unique form of chickweed that only thrives on soils derived from deposits of serpentine metamorphic rocks. And igneous rocks, such as granite, basalt, and diabase often found exposed along Piedmont cliffs, recall times when lava and magma welled up from vents, fissures, and volcanic craters.

Interestingly, not all of the past events documented in the region's rock records originated locally. Some rocks from other continents were left behind after colliding landmasses drifted apart. Others from locales closer to the Chesapeake provide clues to past events not yet found or no longer present in the region.

Deeply buried granites discovered in layers of rock (rock layers are known to geologists as strata) in Piedmont deposits five hundred miles away in Alabama, for example, preserve the earliest evidence of the region's geological history. They represent the remains of what geologists call the Grenville Orogeny. The term orogeny refers to geological processes that occur when mountains are formed. The Grenville Orogeny raised up a lofty mountain chain across the present day Piedmont, between 1.3 and 1 billion years ago. Made up of relatively soft rocks, this mountain chain eroded away within the comparatively brief span of 150 million years, and the Grenville terrain was flooded by the in-rushing waters of the Iapetus Ocean. The Iapetus Ocean was first formed about 4 billion years ago. It separated the continents of Laurentia (today's North America),



Figure 5: Piedmont Monadnock: Sugar Loaf Mountain National Natural Landmark, Frederick County, Maryland.

(Photograph courtesy of the Maryland Geological Survey)

Baltica (today's northern Europe), and Gondwanaland (today's Africa, South America, and Southwest Asia).

Today we can see the clean white sands from the floor of the Iapetus Ocean in the hard quartzites that lie atop distinctly shaped Piedmont hills known as monadnocks, such as northern Virginia's *Bull Run Mountain* and Maryland's *Sugar Loaf Mountain National Natural Landmark* (see Figure 5), and on exposed sides of cliffs in places such as Pennsylvania's *Otter Creek Gorge* and *Urey Overlook*. About this time, the slates and marbles of the present day Catoclin Ridge and the fall line hills of Maryland and Virginia were formed from lava and ash spewed from submarine volcanoes and vents at the floor of the Iapetus Ocean, between 750 and 410 million years ago. And the thick sheets of limestone that form much of the Piedmont's bedrock today were laid down by a rain of tiny dead microorganisms, coral skeletons, and dissolved minerals that drifted to the ocean bottom over the span of many millions of years.

The earliest of these microscopic life-forms evolved in the Iapetus Ocean waters between 3.5 and 1 billion years ago. More complex, multicellular organisms, such as corals, emerged as Laurentia, Baltica, and Gondwanaland began drifting toward one another at the beginning of Paleozoic times. As these continents drifted closer, the Iapetus Ocean narrowed into a body of water known as the Tethys Sea. The waters of this sea gradually drained away as the



Pilot Serpentine Barren Preserve and Soldier's Delight Serpentine Barren, Maryland



***Bull Run Mountain, Virginia
Sugar Loaf Mountain National Natural Landmark, Maryland***

Otter Creek Gorge and Urey Overlook, Pennsylvania

continents collided to form Pangaea, a single super continent, around 500 million years ago. The force of this collision pushed together vast chunks of the earth's crust, and the heat it generated caused rocks to melt into magma. This magma issued then from great volcanoes, fissures, and vents and flowed across the land. Many of the gneisses, marbles, schists, granites, and slates comprising the Chesapeake region's bedrock were forged in this underground furnace. And most of the asbestos, mica, iron, nickel, gold, silver, and other minerals extracted from the historic mines and quarries of the region came from rocks pressed and heated by these events. In Pennsylvania, Piedmont sites that preserve historic mines include the *Delta Slate Quarries*, the *Codorus Iron Furnace*, the *Gap Nickel Mine*, *Wood's Chrome Works*, and the *Pequea Silver Mine*.



***Delta Slate Quarries,
Codorus Iron Furnace,
Gap Nickel Mine,
Wood's Chrome Works,
and Pequea Silver Mine,
Pennsylvania***

Pressures built up as masses of ancient sediments and younger volcanic rocks piled into one another. These pressures produced the Appalachian Orogeny, the second great mountain building episode in the region, between 450 and 250 million years ago. The highest peaks of the chain that this orogeny created soared more than four miles into Late Paleozoic skies. Today's Appalachian uplands are the much eroded remnant of this ancient mountain chain.



***Hopeland Coal Deposit,
and Zion's View
Dinosaur Site,
Pennsylvania***

When the vast Pangaeian land mass existed, this mountain chain lay at its center, near the earth's equator. All but the westernmost portions of the present day Chesapeake region sat astride this range. Little is known about the region's environment at the time. Rocks telling this story have either eroded away, been buried deeply, or transformed beyond recognition by heat and pressure beneath younger sediments.

Evidence of the earliest plant life exists in rocks found in sediments lying within today's western Piedmont uplands. These preserve a record of great swamps of seed-ferns, club-mosses, and other primitive plants – some as tall as modern trees – that thrived in the warm, wet climate

of the Late Paleozoic era. Horsetails flourishing in soils far too poor for other plants are a living representative of these early species in this region. Late Paleozoic swamps lined the shores of a long, narrow sea that jutted into the center of Pangaea. Dead plants – preserved in acidic, stagnant swamp waters – formed thick peat sediments. These sediments gradually hardened into the vast coal seams that extend today in a broad arc across the Appalachian uplands from Pennsylvania to Alabama. Mollusks, insects, bony fishes, and, eventually, amphibians swam in these ancient swamps and rivers, beneath the wings of six-inch dragonflies and four-inch cockroaches. Pennsylvania's *Hopeland Coal Deposit* is one of the few locales in the Chesapeake region that preserves geological evidence from this era.

Excavators working at places such as *Zion's View Dinosaur Site* in the Pennsylvania Piedmont have given us glimpses of the kinds of animals that lived in the region during the Mesozoic era between 230 and 65 million years ago. Intriguing evidence unearthed by modern technology further fills out our picture of the world at this time. Crystalline rocks brought up from deep in the earth by drilling rigs indicate that the rocks now underlying the Chesapeake Coastal Plain originated in the part of Gondwanaland that today is East Africa. These rocks were left behind when Pangaea split apart during Triassic times, around 200 million years ago. Consisting of the present continents of Africa, South America, Australia, and Antarctica, Gondwanaland broke away and drifted south. The remaining part of Pangaea containing North America, Europe, and Asia become a new continent known as Laurasia.

Chesapeake lands lay at the edge of this new continent and were again submerged by in-rushing ocean waters. Sand, mud, and other sediments flowed into this ocean from Laurasian rivers. These sediments gradually formed a continental shelf consisting of new layers of limestone, sandstone, and shale beneath the shallow waters of the Laurasian coast.

In these shallow, warm waters, succeeding generations of plankton, submerged aquatic vegetation, invertebrates, fish, and, lastly, aquatic dinosaurs made their homes.

Following the mass extinction of dinosaurs and many other forms of life around 65 million years ago, global sea levels dropped, and the portion of continental shelf containing modern day Chesapeake lands began rising above the waves. Discoveries of fossils of tropical rainforest plants, birds, and mammals indicate that this region was dry land when North America split from Europe and Asia by 50 million years ago. During the next 25 million years, the region's rainforests were gradually replaced by brushy grasslands as the earth evidently shifted somewhat on its axis at the same time the North American continent drifted farther north toward cooler latitudes. Because of changes in world sea level during these years, lands along what is now the Atlantic seaboard were periodically flooded and exposed.

The most complete known evidence showing how living things adapted to changes in the Chesapeake region in Miocene times between 10 and 20 million years ago comes from fossils found in the Pennsylvania Piedmont *Bootlegger's Sink* and the Maryland Coastal Plain's *Calvert Cliffs Preserve*. The Chesapeake was a place of grasslands and warm, shallow coastal waters during Miocene times. This world gradually gave way to dense spruce forests and marshy tundra bordering on deep and frigid ocean waters as the much colder Pleistocene period began 2 million years ago. At least four major glacial advances, known as Ice-Ages, occurred during this period. Each lasted more than 100,000 years. Sea levels rose and fell as glacial ice-sheets advanced and retreated. At their maximum, the region's Coastal Plain extended eastward as far as a hundred miles beyond the present shoreline, as frozen ocean waters locked into glacial ice caused world sea levels to drop as much as three hundred feet below current elevations. Whenever warmer conditions melted ice-sheets, rising ocean waters flooded continental shelf lands.



***Bootlegger's Sink,
Pennsylvania
Calvert Cliffs
Preserve, Maryland***



Figure 6: Ancient Landscapes Revealed: Rocky Point from the Southeast, October 7, 1987, in Calvert Cliffs State Park, Maryland.
(Photograph courtesy of the Maryland Geological Survey)

CALVERT CLIFFS. *The Calvert Cliffs are a line of one hundred-foot-high bluffs stretching along a thirty-mile-long expanse of Maryland's Western Shore between Chesapeake Beach and Drum Point (see Figure 6). Strata belonging to three Miocene-age geological formations may be viewed along exposed portions of the cliffs. The oldest, known as the Calvert Formation, is composed of dry sandy clays and marls. This is overlain by the yellow sands and green clays and marls of the Choptank Formation. The bluish clays and fine sandstones of the Saint Mary's Formation lie at the uppermost levels of the cliffs.*

These strata preserve evidence of the flat grasslands and shallow coastal waters that once covered this ancient Chesapeake world. Fossils belonging to 624 species also have been found in Calvert Cliff deposits. The majority of these species, 408 to be exact, are mollusks. The bones of nearly two dozen kinds of whales, porpoises, seals, and sea cows have been identified in Calvert Cliffs deposits. Such now-extinct species as mastodons, along with primitive types of horses, camels, rhinoceros, tapirs, deer, wolves, bears, beavers, dogs, cats, crocodiles, snakes, and turtles lived on the coastal plains. Aquatic birds, such as gannets, auks, loons, and shearwaters flew in Chesapeake skies. Various types of shark; a wide range of bony fish, including bluefish, weakfish, ocean catfish, sturgeon, black drum, cod, sailfish, and ocean sunfish; and dense colonies of corals, crabs, clams, oysters, and scallops made their homes in the waters that periodically covered Coastal Plain lands.

Most of these animals are now long extinct or only live in warmer or wetter parts of the world. Together, they preserve evidence of a climate that was much drier and somewhat cooler than it is today.



***Tye River Hemlock-Beech
Slopes and James River
Arborvitae Bluff, Virginia***

***Falmouth Potholes,
Pennsylvania***

Also during Pleistocene times, vast sheets of glacial ice scraped their ways across the northern hemisphere. During warmer intervals, torrents of water rushing from melting glaciers deposited vast sheets of sand, silt, gravel, and clay across the Coastal Plain. Although causes for these episodes remain unknown, plant pollen recovered from cores drilled into Pleistocene age deposits reveal something of environmental conditions during these times. Pollen from aquatic plants indicates that ocean temperatures averaged from 3.5 to 5.5 degrees Fahrenheit cooler than those at present, and analysis of land plant pollen suggests that continental air temperatures averaged almost 10 degrees Fahrenheit cooler than today. As for temperatures during periods when glaciers were in retreat, discoveries of pollen from plants adapted to warmer conditions in core levels dating to these periods suggest prevailing temperatures that were on average as much as 15 to 25 degrees Fahrenheit warmer than those measured today.

These new sediments sluiced through and buried earlier Coastal Plain deposits. Newly deposited glacial sediments gradually weathered into deep layers of generally acidic, sandy or silty soils of light to medium texture. Today, miners quarry iron ores, mineral earth pigments, green-sand marl, diatomite, clay, sand, and gravel from these sediments. During Pleistocene times, cold-adapted spruce and pine forests grew on these newly deposited soils. Easily penetrated by rain, river, and sea water, these soils filtered water into vast underground aquifers of fresh and brackish water. This water was locked within layers of sand and gravel, which lay atop deeply buried impermeable bedrock strata. Today, freshwater is generally found in aquifers that lie from several hundred to more than one thousand feet deep along the western and upper eastern shores of Chesapeake Bay. Brackish waters, which percolate downward into the earth from saltwater sources, lie from two hundred to three hundred feet below the surface in the lower Eastern Shore and are as deep as

2,500 feet near the present mouth of the Bay.

Farther inland during the Pleistocene period, windswept tundra marshlands (similar to those in northern sections of present day Siberia, Canada, and Alaska) covered all but the southernmost reaches of the Piedmont uplands. We can see evidence of this in several stretches of coniferous forest in the southern Virginian Piedmont that are dominated by Canadian hemlock, white pine, and in one locale, arborvitae. As these plant communities are commonly found today only in far more northerly latitudes, the Virginia forests are believed to be remnants of late Pleistocene woodlands. Foremost among these are the *Tye River Hemlock-Beech Slopes* and the *James River Arborvitae Bluff*. Other evidence of the Pleistocene environment is preserved in places like *Pennsylvania's Falmouth Potholes*, where the power of glacial meltwaters is dramatically exhibited in the forms of perfectly round holes cut into rocks scoured smooth by careening cascades of rocks and gravels carried by rushing waters. Sediments scoured from rocks by glacial meltwaters collected as medium textured, easily tilled, and highly fertile clayey soils in broad Piedmont valleys. Enriched by organic deposits laid down by successive generations of plant and animal life, some of these soils are now as much as a hundred feet thick. Rains and rivers provide most water in the Piedmont; the presence of bedrock close to the surface prevents the formation of extensive underground aquifers.

Bones, teeth, and horns found in Piedmont and Coastal Plain soils dating to Pleistocene times indicate that present day Chesapeake region residents, such as white-tailed deer, beaver, and black bear, lived side by side with now extinct species such as the mammoth, mastodon, giant beaver, and eastern short-faced bear. Other finds dredged from beneath the modern continental shelf show that walruses, seals, and other sea mammals that are now found only in more northerly latitudes thrived in the

waters that periodically covered the Coastal Plain when melting glaciers retreated northward.

The earliest identifiable geological evidence of the Susquehanna, James, and other rivers that now flow into Chesapeake Bay dates to Pleistocene times. Melting glacial waters, coursing down the rivers of the ancestral Chesapeake region, cut new channels across the mid-Atlantic Coastal Plain at least four times during periods of major glaciation. Drilling core evidence indicates that all but the most recent of these channels now lie buried beneath layers of sand, silt, and gravel deposited by successive glacial waters.

The modern day Chesapeake region drainage was first formed during the most recent glacial episode. During what is known as the Wisconsin glaciation, ice-sheets up to a mile thick covered northern Pennsylvania by the time they advanced to their maximum extent about 18,000 years ago. Today's Chesapeake region was then a widely branching network of narrow upland river channels wending their way across gently rolling terrain. Rising more than three hundred feet above present sea level, these streams joined in a single tidal river somewhere along a now submerged section of the continental shelf. This river snaked its way across the level, continental shelf lowlands to its mouth, nearly a hundred miles east of the present day shoreline.

FURTHER INFORMATION

Useful sources containing information needed to more fully understand the deep past in the Chesapeake region include:

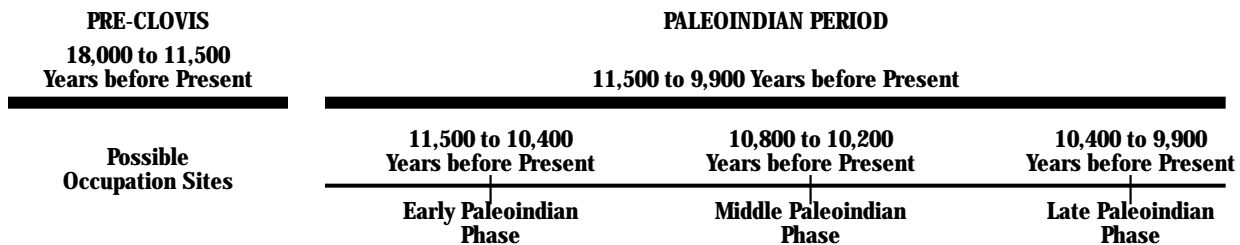
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Chapter Two

Paleoindian Life in the

Chesapeake Region,

18,000 to 9,900 Years Ago



AN ECOLOGY OF PLACE AND PEOPLE

□ PLACE

People first came to the region at the end of the most recent Ice-Age sometime between 18,000 and 11,500 years ago (see Map 3). Several types of geological evidence affirm that the Chesapeake region looked much different then than it does today. As in earlier times, our guesses about how it looked come in part from rocks, sands, gravels, and soils, which preserve records of late Pleistocene land surfaces and waterways. Carbon 14 tests and other radiometric dating techniques reveal the ages of charcoal, bone, and other organic matter preserved in buried soil layers. Much of this material has been brought to the surface in cores drilled into ancient Ice-Age lake beds and swamps, such as Virginia's *Great Dismal Swamp*. Analyses of bones, charred wood and plants, and pollen found in pits, shell heaps, and other Paleoindian archeological deposits elsewhere in North America also furnish evidence of what the Chesapeake environment might have been when people first came to the region.

This evidence suggests that Paleoindians arrived during a colder and wetter time,

when the ice-sheets of the most recent glacial advance (known among specialists as the Wisconsin glaciation) were retreating northward. Chesapeake lands themselves were never covered by Wisconsin ice-sheets. Instead, they lay over a hundred miles and more below the long ridges of gravel rubble known as moraines. These moraines marked the southernmost point reached by the ice-sheets. While it was spared the devastation caused by glacial ice itself, the region experienced that power indirectly. Vast volumes of cold, muddy glacial meltwaters from the ice's margin surged down the region's streams and rivers, and Ice-Age ancestors of today's Susquehanna, Potomac, and James rivers—laden with stone rubble and sediment scraped up by the glaciers—gouged wide valleys through soft Piedmont limestones. Evidence of the power of these waters can be glimpsed in places such as Pennsylvania's *Falmouth Potholes*. Unlike that soft rock, harder rocks such as quartzite and granite resisted the force of meltwaters. Today, these rocks rise up over Piedmont valleys as majestically isolated hills, ranges, and monadnocks. Farther east, those same ancestral Chesapeake rivers deposited vast layers of sand, soil, and gravel across a now-flooded coastal plain extending out as much as ninety miles

SIGNIFICANT EVENTS

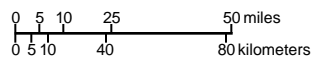
- 18,000 years before present—most recent glacial ice-sheets retreat
- 18,000 years before present—possible pre-Clovis occupation of the region begins
- 11,500 years before present—Paleoindian people using Clovis points first come to Chesapeake
- 10,400 years before present—Clovis points replaced by smaller stemmed and notched points
- 10,000 years before present—Pleistocene megafauna such as American mammoth and giant beaver become extinct at end of Ice-Age
- 9,900 years before present—modern mixed hardwood forests begin to dominate the region
- 9,900 years before present—rising temperatures melt glacial ice forming outline of modern Chesapeake Bay

Map 3: Paleoindian Life in the Chesapeake Region, 18,000 to 9,900 Years Ago

- KEY LOCALES**
- ARCHEOLOGICAL SITES**
- Delaware**
- Delaware Chalcedony Complex Area
 - Iron Hill
- Maryland**
- Higgins
 - Paw Paw Cove
 - Pierpont
- Pennsylvania**
- Conestoga Valley Complex
 - Washington Boro
- Virginia**
- Carpenter
 - Catoctin Creek
 - Dime
 - Henrico Springs
 - Isle-of-Wight
 - Marine Spring Branch
 - Point-of-Rocks
 - Quail Springs
 - Richmond



- LEGEND**
- ▲ Archeological Site
 - ▲ National Natural Landmark
 - Natural or Cultural Feature
 - 🏠 National Historic Landmark
 - 🌊 Bay
 - 🟡 Plain
 - 🟢 Piedmont



beyond the present shoreline, into an ocean that had been lowered 160 feet because so much water was locked in glacial ice.

The Bay as we know it did not exist during Ice-Age times. Instead, it was a part of the wide, flat Coastal Plain. The often shifting channels of the ancestral Susquehanna, Potomac, Rappahannock, and James Rivers wended their ways through its sand and gravel surface. Initially gravel-choked and barren, the Coastal Plain became a place of shallow swamps, lagoons, and grasslands as the glaciers retreated and shrank, lowering the volume and velocity of the region's rivers.

Stands of spruce, pine, hemlock, birch, and alder trees began to establish themselves as conditions grew warmer and wetter 12,000 years ago. Examples of these types of forests survive in small, isolated parts of the southern Virginian Piedmont at the *Tye River Hemlock-Beech Slopes* and the *James River Arborvitae Bluff*. Forests such as these sheltered and supported a vast array of late Ice-Age plants and animals. Some, such as the American mammoth and mastodon, the eastern short-faced bear, and the giant beaver, are now extinct. Others, such as caribou, elk, and bison, no longer live in the region. But many animals alive at that time were species familiar to us, such as the white-tailed deer, black bear, beaver, and wild turkey that flourish in Chesapeake habitats today. A wide variety of saltwater and freshwater fish, birds, reptiles, amphibians, and invertebrates also lived in the region.

Environmental conditions grew more moderate throughout the period. Water from glaciers, melted by warmer weather, flooded into the oceans and raised sea levels worldwide. In the Chesapeake area, rivers began finding their present courses as rising ocean waters gradually flooded low lying continental shelf lands. By the end of the late Pleistocene period, oak, hickory, and maple forests were growing along shorelines. The boundaries of these shorelines were beginning to resemble those that present Chesapeake region residents would recognize.

□ PEOPLE

The origins of the first people to settle in this region remain a mystery. Neither scientists nor Native American traditionalists have yet conclusively discovered the identity of the region's earliest inhabitants. Most generally agree that Native Americans were the first, and—for all but the most recent five of at least 120 centuries—the only people living in the Chesapeake region. Traditions of present day Native American residents such as the Piscataways, Nanticokes, and Powhatans affirm that their ancestors have always been here. Scientists intent on reconstructing past Indian cultural traditions struggle to decipher the meanings of scattered fragments of stone, bone, clay, ash, and stained soil. These are the only surviving identifiable physical evidence of early human occupation in the region.

Nor do we know for certain when people first arrived. Some Indians believe they are descended from people who lived along Chesapeake shores when the world began. Others believe their ancestors came from elsewhere. Archeologists also hold differing views. Some think Paleoindians first arrived from somewhere farther south or west sometime between 12,000 and 11,500 years ago. Their appearance is marked by distinctive, carefully crafted, lance-shaped three to six-inch-long projectile points made of chipped stone. Known as Clovis points (after the New Mexico locale where they were first identified), these graceful, sharp tipped weapons were dulled along their lower edges so they would not cut the sinew or cord bindings that fastened them to spear shafts or handles. All were intentionally made thinner by the flaking off of long, slender fluted channels of stone from their sides (see Figure 7).



Tye River Hemlock-Beech Slopes, Falmouth Potholes, Pan Great Dismal Swamp, and James River Arborvitae Bluff, Virginia

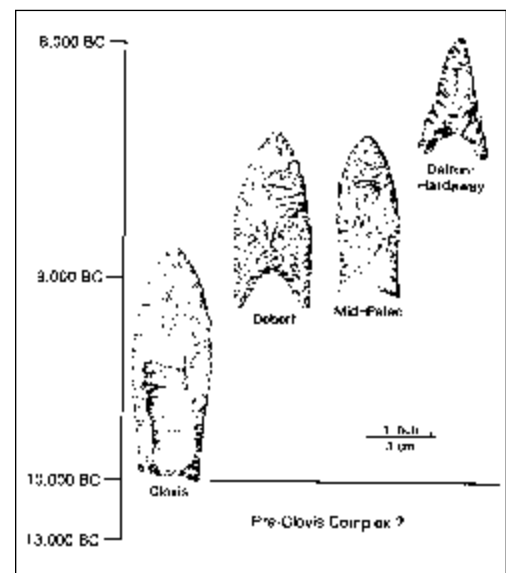


Figure 7: Paleoindian Fluted Points.
(Diagram from *Prehistoric Cultures of Eastern Pennsylvania* used by permission of the Pennsylvania Museum and Historical Commission ©1996)



Cactus Hill site, Virginia

A small but growing group of archeologists think that people using less specialized tools of chipped stone may have arrived several thousand years earlier. They point to evidence found in places such as the *Cactus Hill site*, just south of the Chesapeake in Virginia's Nottoway River Valley. Although archeologists debate entry dates and immigration routes, all agree that the Chesapeake's earliest people are descendants of the first humans, who originated in Africa millions of years ago.

Most archeologists today divide the period when the Paleoindians occupied the Chesapeake into three overlapping phases. Each is marked by distinctive types of stone projectile points. The Early Paleoindian phase, from 11,500 to 10,400 years ago, is marked by the Clovis points described above. Sites associated with the Middle Paleoindian phase, between 10,800 and 10,200 years ago, tend to contain both Clovis and other forms of fluted and unfluted, lance-like points. The presence of Dalton points, which are small, fluted and unfluted, side notched points with deeply curved concave bases, is considered a key diagnostic marker for the Late Paleoindian phase, from 10,400 to 9,900 years ago.

Most other things made and used by the region's past inhabitants were perishable and have long since decayed. The presence of durable objects such as stone tools, bone, shell, and wood at archeological sites affirms that these people relied on tools and weapons made from naturally available materials to survive in their late Ice-Age environment. They gathered smoothed river cobblestones for quartz and mined a hard, flint-like, glassy-surfaced stone called chert from quarries at places such as the *Higgins site* in Maryland. Other kinds of rocks and minerals came from elsewhere. Hard, brownish-red jasper and milky white rhyolite were quarried from nearby Appalachian Mountain formations. Black and dark green Onondaga cherts came from upstate New York. Colorful Flint Ridge cherts with brown, red, and yellow bands were imported from as far away as the Ohio Valley.



**Higgins site,
Maryland**



**Thunderbird National
Historic Landmark,
Virginia**

Like all people, Native American tool makers tended to favor certain types of raw materials and manufacturing styles at certain times. Paleoindians particularly relied on high quality cherts that were strong, easily worked, and able to retain sharp edges for long periods of time. They made projectile points, knives, scrapers, and other stone tools out of cherts, then affixed them to wood, bone, or horn shafts and handles. Discoveries of far more numerous chipped stone scrapers, knives and the sharp-edged cracked stone flakes produced during tool making show that projectile points were only a small part of the light, portable, and reusable Paleoindian toolkit. Such tools were essential for people who had to travel far, fast, and often. They generally traveled on foot, carrying as little as possible, to take advantage of frequently distant and widely scattered resources only available in certain places or at certain times.

Preserved caribou bones, turtle and fish skeletons, bird eggs, and charred nut shells found with Paleoindian tools in other sites in eastern North America indicate some of the plants and animals hunted and gathered by Chesapeake Paleoindians. Discoveries of sharp bone and horn needles, and stone scrapers used to remove flesh from animal hides, show that Paleoindians made and wore clothing made of skins. And discoveries of layers of ash and charcoal, which we identify as former hearths and fire places, affirm that these people used fire for cooking, warmth, and light.

Little is known about Paleoindian housing and settlement patterns. What is left at most of the known sites are small scatterings of cracked rocks and artifacts—the remains of temporary camps left by hunting and gathering people everywhere. Many sites of Paleoindian occupation are found in flat, open areas that offer commanding views of the surrounding terrain. At one such site, the *Thunderbird National Historic Landmark* which lies just west of the region in the Shenandoah Valley near Front Royal, Virginia, archeologists have uncovered a circular ring of post-molds—small, cone

shaped soil stains that are believed to be the remains of the sharpened tips of support posts and poles used to hold up shelters. This post-mold pattern is a unique find—one of the earliest known examples of the type of small sapling framed houses made of bark, grass, or skin that were erected at such sites. Discoveries of Paleoindian artifacts beneath rock overhangs in places such as Pennsylvania's *Meadowcroft site*, west of Pittsburgh, suggest that Chesapeake Paleoindians also lodged in rock shelters at the bottoms of Coastal Plain cliffs and Piedmont hillsides.

The majority of Paleoindian sites are near reliable sources of both water and rock that can be worked into tools and weapons. More than a few lie near rivers, passes, and other key transportation routes. These sites are far apart, and the remaining deposits indicate that they were of modest size—individual activity areas are rarely larger than a hundred square feet. Together, these factors suggest that the Chesapeake's first people lived in small, mobile bands made up of several related families and friends.

THE PALEOINDIAN CULTURAL LANDSCAPE

□ PEOPLING PLACES

Very little is presently known about population, health, and other matters of demographic interest affecting the Paleoindian cultural landscape in the region. Few intact sites and no clearly identifiable human remains dating to the period have thus far been found in either the Coastal Plain or the Piedmont. The complete absence of human remains suggests that Paleoindian people either cremated their dead or exposed them to the elements in a manner similar to that practiced by other more recently documented traditional societies. To interpret the demographic significance of the few clearly diagnostic stone tools from the period found in Chesapeake locales, we must depend on data from more intact deposits in nearby areas. Such information exists at the *Shoop site* above

Harrisburg, Pennsylvania, the earlier mentioned *Thunderbird National Historic Landmark* in Front Royal, Virginia, and the *Cactus Hill and Williamson sites* in southeastern Virginia.

The date of arrival, demographic composition, and settlement patterns of the first humans in the region are presently unknown. But from the relatively small size of their tools, their wide distribution, and the diverse source materials used to make them, we can surmise that Chesapeake Paleoindians were nomads. They probably organized themselves into small, mobile bands of ten to fifty people ranging across territories of up to several thousand square miles. While these are tiny groups by modern standards, such numbers closely match population figures documented in more recent times among the Canadian Arctic Inuit, the San people of southern Africa's Kalahari Desert, and other hunting and gathering societies living in challenging environments.

Physical evidence of Paleoindian cultural landscapes survives in layers of intact, buried soil at places such as the *Paw Paw Cove site complex* in Maryland's Coastal Plain. We find other information by analyzing stone sources, use patterns, and style differences among Paleoindian projectile points and other tools. Analyzable assemblages of such tools have been found in various sites throughout the region, dredged up from the floors of its rivers and bay waters, and scattered on the surface of its lands.

□ CREATION OF SOCIAL INSTITUTIONS

Recognizable physical evidence of the imprint of Paleoindian social life on the region's cultural landscape is also hard to find. As mentioned, known sites are small and scattered, a pattern which suggests that Paleoindians depended on small, flexible, and highly mobile social groups to make use of natural resources that were often far apart and only periodically available. Discoveries of stones in the region that came from as far away as New York, Ohio, and the Carolinas



Thunderbird National Historic Landmark, Virginia

Cactus Hill and Williamson sites, Virginia



Meadowcroft site, Pennsylvania



Paw Paw Cove site complex, Maryland



Shoop site, Pennsylvania

suggest that people belonging to these societies moved across large areas and occupied varied environments.

Anthropologists working with societies such as the San and the Inuit have found that hunting and gathering people tend to organize themselves into small bands bound together by ties of kinship and agreement. What these ties were and how they operated in Paleoindian society are presently unknown, though we can surmise that these groups had to be flexible socially, because they would have needed to gather together or break into smaller groups to meet challenges and exploit opportunities posed by their environment.

As with other aspects of Chesapeake Paleoindian life, we hope to find further physical evidence of these people's social impact on the region's cultural landscape in layers of intact buried soil. By analyzing stone sources, tool use, wear, and style differences, we may gain new insights into Paleoindian family life and other social institutions.

□ EXPRESSING CULTURAL VALUES

No objects or locales clearly symbolizing Paleoindian cultural values or beliefs are presently known in the region. Some scholars believe that distinctive projectile point styles or toolkits represent particular cultural traditions. Such objects occur widely across entire regions of the continent. Their differences may simply more closely express stylistic preferences or technological needs than unique cultural values.

Some images painted on or pecked with stone hammers into rocks, boulders, and cliffs—known to specialists as pictographs or petroglyphs—have been found at places such as *Safe Harbor* (on the Susquehanna River in the Pennsylvania Piedmont) and other locales. Some of these may one day be found to date to Paleoindian times. There may also be bone, horn, or shell objects, sculpted into animal or abstract forms or decorated with symbolic images, waiting to be found. These could possibly represent



cultural identity, values, or beliefs—as evidently those found in Upper Paleolithic sites throughout western and central Europe do. We might also be able to see Paleoindian cultural values reflected in the locations and distributions of places containing such findings.

□ SHAPING THE POLITICAL LANDSCAPE

As mentioned earlier, archeological evidence indicates that Chesapeake Paleoindians lived in small, mobile groups occupying large territories. Such groups often depend on political decision making systems that are cooperative and flexible. These qualities are essential to people who depend on the natural environment and must rely on one another for survival. As seen in similar societies elsewhere and remembered in present day Native American oral traditions, these types of political organization usually require close kinship ties, widespread social networks, and the abilities of leaders to lead by the power of persuasion rather than the persuasion of power.

We may find evidence of decision making—group movement choices, hunting group coordination, and ways of preserving, storing, and distributing food—in thus far undiscovered intact kill sites, storage caches, and other deposits containing ancient remains of butchered game animals in the region. Future discoveries of objects symbolizing group political life and organization also may provide new insights into political aspects of the Paleoindian cultural landscape.

□ DEVELOPING THE CHESAPEAKE ECONOMY

More is known about the way the economy shaped Paleoindian life during this period. Discoveries of stone cobbles, cores, flakes, and tools, and, more rarely, charred bits of wood, nut shells, and other plant remains preserve a record of the types of tools and raw materials used by Paleoindian people in various parts of eastern North America. Most materials used were locally available, suggesting that people practiced domestic forms of

production. Discoveries of materials, artifact types, and decorative styles from elsewhere further suggest that some goods were taken from or exchanged with people living far beyond the region's borders.

Many archeologists believe that the Paleoindian's need for high quality stones to make the best possible tools and weapons compelled them to center their settlement patterns around quarries at stone outcrops and other sources. The contents of Paleoindian toolkits, dominated as they are by piercing, cutting, and scraping implements, are also revealing. They suggest the economic importance of animal flesh and fur. And the widespread distribution of small sites affirms that Paleoindians had to travel often to particular places to use resources available for limited periods of time, and that they had to move on when those resources disappeared, were used up, or (as with animals) wandered away.

□ EXPANDING SCIENCE AND TECHNOLOGY

Like all people, Paleoindians relied on tested techniques and searched for new solutions to meet the demands of their world. They had to continually expand their frontiers of science and technology to adapt to their unfamiliar, changing, and challenging environment. For instance, Paleoindian hunters used new thinning techniques invented elsewhere in North America to produce lighter and longer projectile points with sharper and more extensive cutting edges. Tool-makers thinned these points by removing long flakes from their sides, allowing the points to be more securely inserted into the notched ends of knife handles and spear shafts. Secure within their sockets and handles, slender points possessing great piercing power were less likely to break or shatter under stress. Evidence found elsewhere in North America suggests that Chesapeake Paleoindians also bred domesticated dogs. They probably used these dogs for companionship, for camp sanitation (eating refuse and killing vermin), to carry or drag light loads and help with hunting, and proba-

bly as food. Future discoveries of such things as water craft, storage containers, evidence of preservation techniques, and medicinal plant remains will provide new insights into the ways Paleoindians used science and technology.

□ TRANSFORMING THE ENVIRONMENT

The evidence shows that massive climatic changes transformed Chesapeake environments during Paleoindian times. We see this both in the transition from mostly softwood to mixed hardwood forests and in the final disappearances of mammoths, mastodons, caribou, walrus, and other species now extinct or living elsewhere. The roles people played in these transformations are the subject of considerable debate. Discoveries of thin coatings of ash on ancient tree rings and soil strata suggest that the earliest Americans may have practiced the kinds of forest and field burning that European settlers saw Indians use during colonial times. But no recognizable evidence shows that Paleoindian burning played a significant role in regional forest transformations at the end of the last Ice-Age. The impact of hunting on the disappearance of many animal species at this time is less clear. Many scientists believe that climate changes were responsible; others think that the arrival of hunters into new environments drove some species away and pushed others that were already stressed by climatic change to extinction.

Little clearly identifiable evidence survives to show how Paleoindian people made their way through Chesapeake lands. Although they almost certainly used passes such as the *Manassas, Thornton, Rockfish, and Harper's Ferry gaps* in Virginia (see Figure 8) to cross high mountain ranges, we find no



Manassas, Thornton, Rockfish, and Harper's Ferry gaps, Virginia



Figure 8: Transportation Landscape: The pass at Harper's Ferry Water Gap by moonlight, 1874.
(Photograph courtesy of the Library of Congress)

lingering traces of paths they might have used there or elsewhere. We know that rivers, streams, and bay waters also served as transportation routes, but we do not know if they used simple rafts or more sophisticated dugout canoes or skin boats.

We may find new insights into the human role in transforming Chesapeake Ice-Age environments in future recoveries of water craft and other transportation artifacts; discoveries of plant, animal, and tool samples large enough to support generalizations; and development of new techniques to more clearly link people to their environments.

CHANGING ROLE OF THE CHESAPEAKE IN THE WORLD COMMUNITY

The coming of people to the Chesapeake linked the region with worldwide events affecting the entire human family. Both the first people moving into the region and those who followed brought tools, skills, and beliefs originally developed to confront challenges posed by other places and times. Archeological evidence indicates that Chesapeake people continually refined their tools and techniques and adopted new technologies and ideas coming from as far away as East Asia and from as near as the Tennessee and Ohio River Valleys. The fact that most Chesapeake Paleoindians primarily used locally available raw materials indicates that the region's inhabitants rarely ventured very far from their home territories. Yet the presence of imported stone in regional site deposits, along with the appearance there of new technologies such as the spear thrower and notched projectile points (first used by people living farther south and west), shows that ideas and materials sometimes came from elsewhere. One thing we know for certain is that the Chesapeake cultural landscape changed dramatically during the final phase of the Paleoindian period.

FURTHER INFORMATION

Up-to-date information on the period may be found in:

Jay F. Custer, *Prehistoric Cultures of Eastern Pennsylvania* (1996:91-131).

Richard J. Dent, Jr., *Chesapeake Prehistory* (1995:69-145).

Theodore R. Reinhart and Mary Ellen N. Hodges, eds., *Early and Middle Archaic Research in Virginia* (1990).

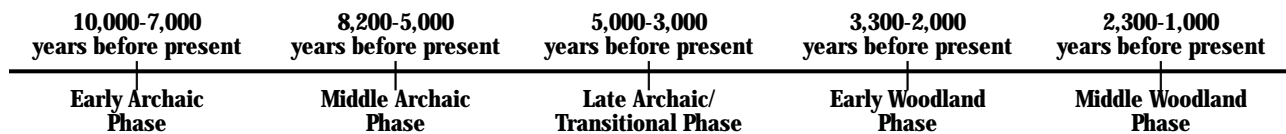
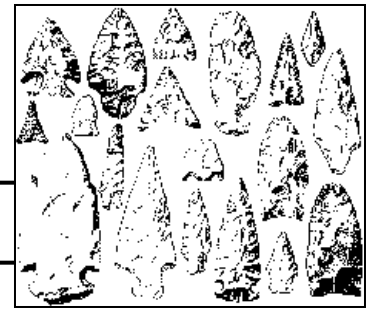
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Chapter Three

Hunting and Gathering Lifeways

in the Chesapeake Region,

10,000 to 1,000 Years Ago



AN ECOLOGY OF PLACE AND PEOPLE

□ PLACE

Beginning about 10,000 years ago, at what scientists call the dawn of Holocene times, climatic conditions grew increasingly warm and dry. Because of this, oak and hickory forests gradually replaced Ice-Age timberlands throughout most of the region. Rising sea levels progressively flooded the continental shelf, causing Chesapeake rivers to widen considerably by 8,000 years ago. As glaciers continued to melt farther north, ever growing volumes of ocean water poured into this widening basin. In parts closest to the ocean, the region's rivers were transformed into tidal estuaries. Between 5,000 and 3,000 years ago, as the climate continued to moderate, these estuaries gradually widened. They joined gradually to form what we now know as the Chesapeake Bay (see Map 4).

Archeological evidence affirms that people quickly began using this new bay and its tributaries for transportation and communication. Shells from Bay waters have been found in sites as far north as Ontario and as far south as the Gulf of Mexico; these were almost certainly carried by people traversing waterways

linking these regions. Discoveries of similar types of pottery, tools, and housing styles in sites around the Bay also indicate that people—probably floating on rafts or paddling dugout canoes—began carrying objects and ideas across Chesapeake waters at this time.

The Chesapeake Coastal Plain still extended many miles beyond its present shoreline at the beginning of this period. Gradually, however, its lowest lying portions were flooded by ocean and Bay waters. Farther inland, a belt of inner Coastal Plain uplands rose more than 160 feet above the mostly flooded outer Coastal Plain.

Rainwater, trickling through sand, silt, gravel, and clay sediments, mixed with glacial meltwater to form vast underground aquifers deep beneath the Coastal Plain. In lower lying areas, saltwater and brackish water wetlands grew or expanded as periodic rises in sea level (known as marine transgressions) raised aquifer water levels to the surface.

Within the region's waters, constant changes in salinity, water temperature, oxygen levels, and amounts of sediment eroding into them created an unstable and frequently harsh environment for underwater life. So aquatic vegetation, important partly because it provides essential food and habitat for other

SIGNIFICANT EVENTS

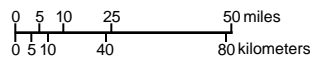
- 6,000 and 3,000 years before present—contemporary Bay shoreline and environment emerge
- 5,000 years before present—people begin encouraging the growth of desirable plants
- 3,000 years before present—regional appearance of pottery begins the container revolution
- 2,500 to 1,900 years before present—distinctive copper, clay, shell, and stone artifacts associated with the Ohio Valley Adena cultural tradition appear in regional archeological sites
- 1,500 and 1,000 years before present—squash, beans, and tobacco first cultivated in the region

Map 4: Hunting and Gathering Lifeways in the Chesapeake Region, 10,000 to 1,000 Years Ago

- KEY LOCALES**
- Maryland**
- Accokeek Creek
 - Conowingo
 - Crane Point
 - Higgins
 - Indian Creek
 - Nassawango Creek
 - Oxford
 - Popes Creek
 - Riverton
 - Rowe
 - Sandy Hill
 - West River
- Pennsylvania**
- Bare Island
 - Chickies Rockshelter
 - Duncans Island
 - Erb Rockshelter
 - Muddy Run Rockshelter
 - Piney Island
- Virginia**
- Boathouse Pond
 - Plum Nelly
 - White Oak Point



- LEGEND**
- ▲ Archeological Site
 - ▲ National Natural Landmark
 - Natural or Cultural Feature
 - National Historic Landmark
 - Bay
 - Plain
 - Piedmont



species, could only haltingly colonize lands submerged by the growing Chesapeake Bay estuary. Nevertheless, meadows of eelgrass and widgeon grass did begin to grow in salty waters, and a more diverse range of plants began to appear in brackish and freshwater reaches of the Bay. Archeological discoveries affirm that small populations of oysters and clams began to colonize Bay waters at this time. They were joined by anadromous fish such as shad and sturgeon, which spawn in fresh water and live in the ocean, and a wide variety of shore birds and migratory waterfowl.

Investigators have found the pollen of plants that survive only under less harsh environmental conditions in soil core samples from Virginia's *Great Dismal Swamp* and other places along the Coastal Plain. These findings provide further indications that the climate did continue to moderate at this time. Pollen data provide an excellent record of landscape change. Ten-thousand-year-old core levels are dominated by spruce and pine pollen, affirming that Ice-Age forests still covered the Coastal Plain during the earliest part of the Holocene period. Increasing percentages of oak and maple pollen in core samples of more recent vintage reflect gradually warmer and drier conditions. These conditions not only encouraged the growth of the mixed hardwood forests, but they also allowed freshwater wetlands and high and low salt marshes to come to dominate Coastal Plain shorelines.

We have comparatively little evidence of Piedmont landscapes during this period. Areas above the present fall line (the line of rapids and waterfalls separating Piedmont waterways from navigable tidal Coastal Plain rivers running from Trenton, New Jersey to Washington, D.C., Richmond, Petersburg, and points south) were somewhat drier and rose much higher above the Coastal Plain. Drained then as now by free ranging, often fast moving rivers and smaller tributary streams only occasionally blocked by beaver dams, tree trunks, and other obstacles, these waterways created few long-lasting wetlands and lake beds.

Because of this, extensive pollen records like those preserved in Coastal Plain sediments were rarely preserved in the Piedmont. So in order to reconstruct Piedmont landscapes during this period, we must rely on data from nearby areas or similar environments. Such records suggest that the period began with an Ice-Age landscape dominated by dense spruce and pine forests, and that this gradually transformed into mixed oak-maple woodlands, similar to those found along upland parts of the inner Coastal Plain.

Throughout the Chesapeake, fire and drought were responsible for the emergence of expansive, park-like woodlands and stretches of open grassland during this period. Spells of drier weather and fires—whether set off naturally, by accident, or by hunters driving game or clearing underbrush—created areas for these new forests and grasslands. Openings cleared in forests allowed enough sunlight to enter to allow grasses, herbs, bushes, and other plants to grow. The seeds of berries and other desirable plants—sowed by wind, water, and the droppings of birds and other animals—were able to germinate and prosper. In turn, these plants attracted animals and the people who hunted them.

□ PEOPLE

These significant changes altered people's lives in the region. New types of tools, new site locations and compositions, and changes in settlement and subsistence patterns signaled that new ways were emerging—ways better suited to life in the new mixed hardwood forests. Archeologists call this period of cultural adjustment the Archaic period.

Preserved remains of game animals, fish, and wild plants found in sites dating to the period's earliest millennia show that Chesapeake people continued to make their living by hunting and gathering. These sites are small and widely scattered, showing that the people inhabiting them were still nomadic—obliged to travel in search of needed resources.

This way of life gradually changed between 5,000 and 2,000 years ago. The transitional period marked the end of the



*Great Dismal Swamp,
Virginia*

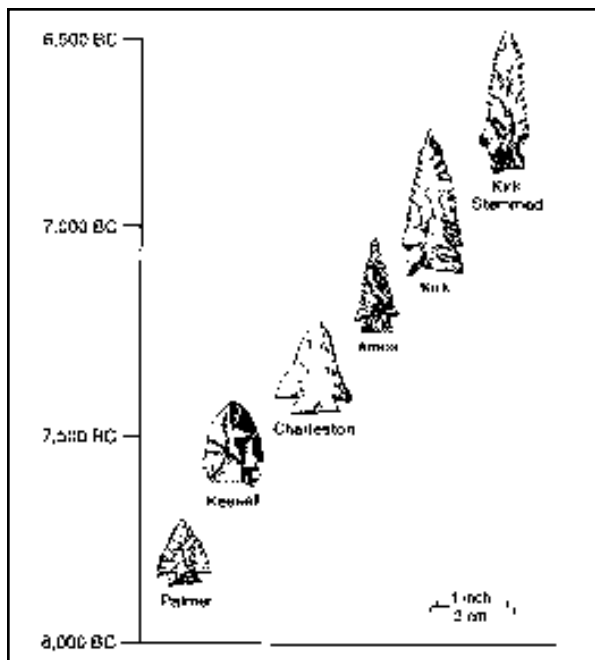


Figure 9: Points along the Early Archaic Landscape.
 (Diagram from *Prehistoric Cultures of Eastern Pennsylvania* used by permission of the Pennsylvania Museum and Historical Commission ©1996)

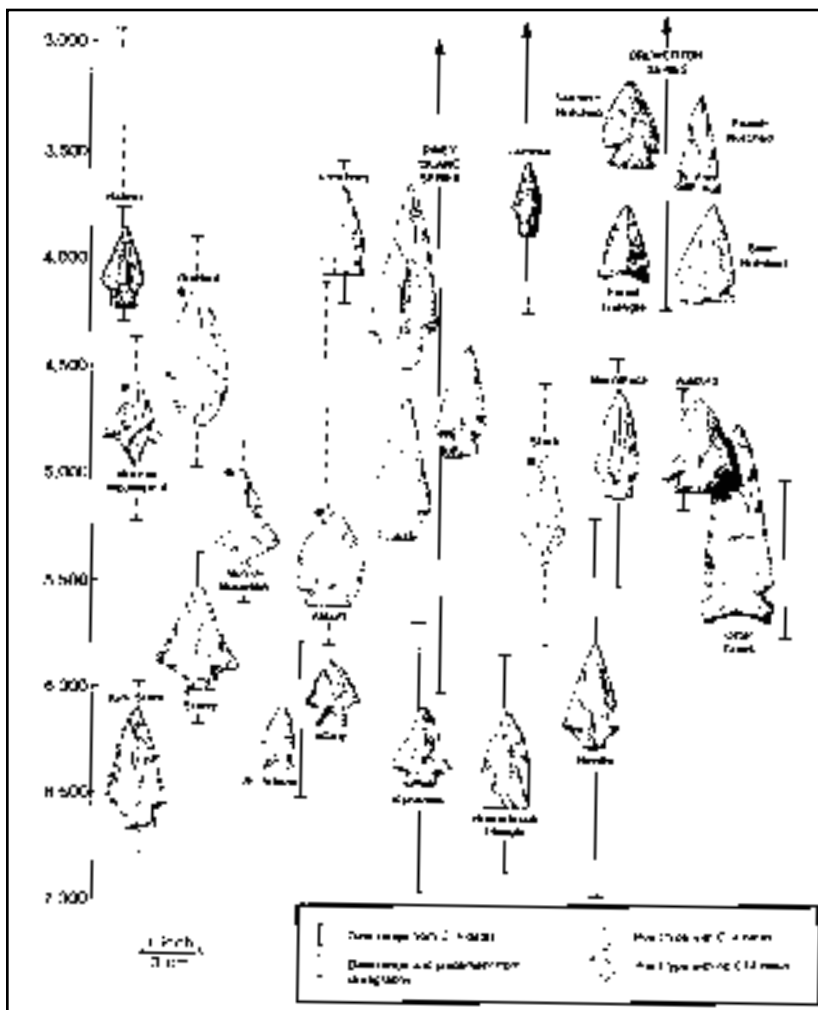


Figure 10: Points along the Middle Archaic Landscape.
 (Diagram from *Prehistoric Cultures of Eastern Pennsylvania* used by permission of the Pennsylvania Museum and Historical Commission ©1996)

Late Archaic and the beginning of the Early Woodland phases of cultural development. Archeologists have discovered seeds, pollen, and charred bits of amaranth, chenopodium, wild mustard, sumpweed (also called marsh elder), and other seed-bearing plants in hearths, pits, and layers of debris called middens. These remains indicate that Chesapeake people began encouraging the growth of economically useful species—the beginnings of food production that would later blossom into agriculture—around 5,000 years ago. The number and size of sites also increased during this period, suggesting that somewhat larger, denser populations began more intensively occupying territories measuring hundreds (rather than thousands) of square miles.

As the timeline at the start of this chapter shows, archeologists divide the Archaic and Woodland periods into several phases of cultural development. Each reflects significant changes in the region's environment. Each is also marked by the emergence and disappearance of distinctive artifacts, settlement systems, and subsistence patterns.

Distinctive chipped stone projectile points appear in Early Archaic phase sites dating between 10,000 and 7,000 years ago (see Figure 9). Many have small notches chipped into their sides or corners to tie them more firmly to handles, sockets, or shafts. Findings of charred wood, bone, and antler also preserved in these sites suggest that Early Archaic people began using smaller notched points as spear heads and lance points to hunt white-tailed deer, black bear, and other animals. Many archeologists believe that the relatively small number of Early Archaic sites in the region reveals how hard it was for Chesapeake people to adapt to the new dense forests of the early Holocene era. Others think most sites dating to the Early Archaic phase have not been found yet.

New forms of small-stemmed chipped stone points dominate tool kits found in the more numerous Middle Archaic phase sites, which date from 8,200 to 5,000 years ago (see Figure 10).

Discoveries of the earliest known ground slate banner stones (named for their resemblance to small flags or banners) suggest that Chesapeake people began using this artifact as a counterweight on spear throwers. The added weight provided by this object increased velocity and striking power of smaller stemmed dart points cast with the spear thrower. Wide, thick, and stubby, these points were also structurally strong tools ideally suited for cutting and scraping.

Archeologists have also found larger and heavier stone tools, such as axes, adzes, grinding stones, and net-sinkers that were chipped, ground, and pecked from larger rocks at these sites. The growing size and specialization of this toolkit testifies to increasingly complex tasks such as woodworking, plant processing, and large scale fishing. People took up these tasks to survive in the region's forests.

Appearances of narrower stemmed chipped stone points that would have been more suitable for piercing than for cutting or scraping mark the advent of the Late Archaic phase. In contrast, broad bladed points—considered characteristic artifacts of the Susquehanna, Perkiomen, and Savannah River cultural traditions—come to dominate toolkits associated with the phase's final millennium (see Figure 11). Scientists know that the earlier narrow stemmed projectile points tended to be crafted from locally available stones. In contrast, many of the stone tools found in broad blade sites in northern parts of the region were made from jaspers and other stones from quarries in the uplands along the present borders of Maryland, Delaware, and Pennsylvania.

Many Late Archaic sites, which date between 5,000 and 3,000 years ago, contain much larger numbers of tools than do earlier deposits. And Late Archaic people evidently continued to use the same types of small, easily erected tents, shelters, and lodges used by earlier inhabitants. The region's earliest known semi-subterranean houses—with floors sunk a foot or two into the ground—date to this time—but such structures did not

come into wider use in and around the upper parts of the region until later times. Storage pits, soapstone bowls carved from soft steatite rocks (which were quarried from outcrops beyond the fall line), and large stone mortars—all of which were required to store or process the greater amounts of food needed by a larger, less mobile population—also appear for the first time in Late Archaic sites.

Sites dating to the first 2,000 years of the Late Archaic phase tend to consist of small scatters of discarded artifacts and garbage, similar to those left behind by earlier people. By contrast, sites dating to

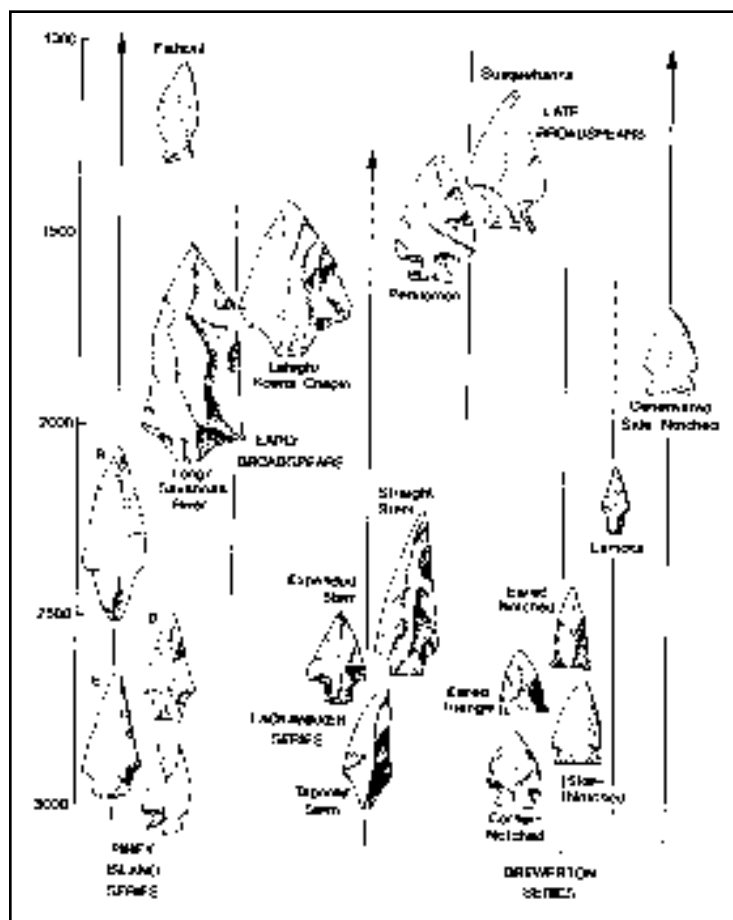


Figure 11: Points along the Late Archaic Landscape.
 (Diagram from *Prehistoric Cultures of Eastern Pennsylvania* used by permission of the Pennsylvania Museum and Historical Commission ©1996)

the final millennium of the phase reveal a dramatic increase in food processing activities. The evidence takes the form of storage pits; garbage pits filled with the bones of white-tailed deer, black bear, and other game animals; shell heaps; and large hearths of fire-cracked rock.

These hearths were used to roast, steam, or bake American oysters, hard clams, soft clams, American shad, and Atlantic sturgeon, which began to flourish in the region as the lower reaches of the Susquehanna, Potomac, and James rivers finally joined into the broad, shallow estuary that is today's Chesapeake Bay.

The appearance of new sorts of artifacts marks the beginning of the third and final period when Indians were the sole occupants of the Chesapeake region. Archeologists find smaller forms of stone projectile points, diamond shaped or narrowly stemmed at their base (see Figure 12), and fired clay pots in sites of

earlier soapstone bowls. If more recent societies are any guide, most if not all of these potters were women. Potters used locally available clays dug from the banks of rivers and streams. They increased the strength and durability of their wares by mixing tempering agents, including crushed steatite, grit, and, unlikely as it sounds, plant fiber, into wet clay before firing pots in hearths. In many known sites from this time, the wide range of cone and bag-shaped pots made with a variety of tempering agents and construction techniques suggests that Early Woodland potters were highly experimental.

The Early Woodland was also a time when influential new technologies came to the region from points farther north, south, and west. New grit-tempered, cone-shaped pots decorated with impressions of cords wrapped around their exteriors resembled wares produced by potters living far to the north. These and other new types of pottery began to appear in sites along upper parts of the Bay by the end of the Early Woodland, between 2,700 and 2,300 years ago. Other objects new to the region included unsmelted, cold-hammered, round and tubular copper beads from the Lake Superior region; chert blades and distinctive stemmed and notched projectile points crafted from stones quarried in Ohio and Indiana; ground slate tubular pipes for smoking mixtures of dried ground bark and aromatic herbs; and decorated perforated rectangular tablets known as gorgets. These resemble artifacts made or used by people belonging to the Early Woodland Adena culture. Best known as the first mound building people, Adena people lived hundreds of miles farther west in the Ohio River Valley.

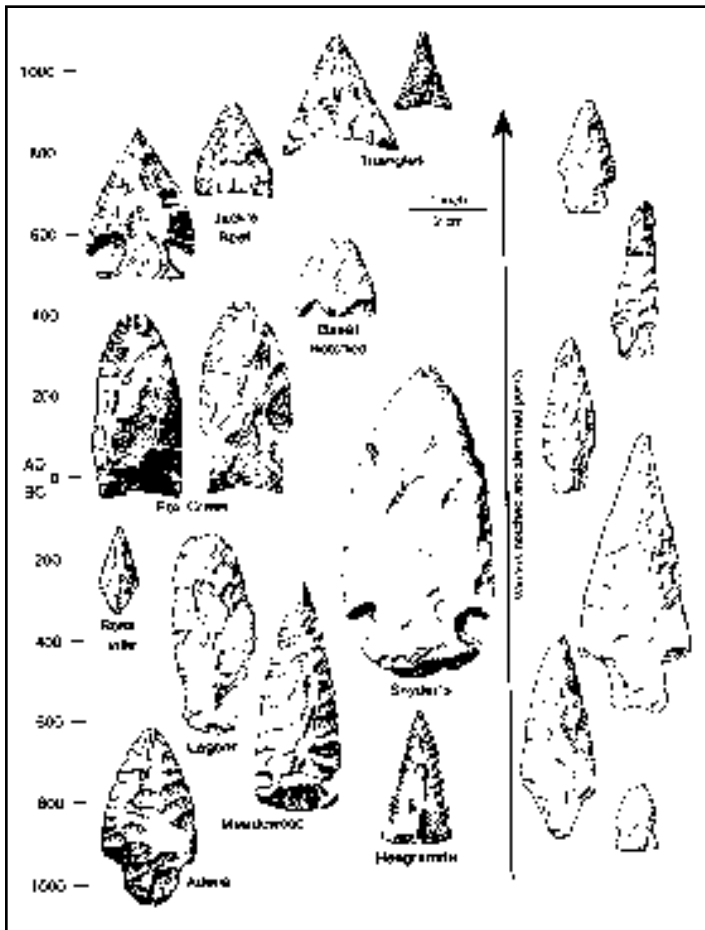


Figure 12: Points along the Woodland Landscape.
(Diagram from *Prehistoric Cultures of Eastern Pennsylvania*, used by permission of the Pennsylvania Museum and Historical Commission ©1996)

**West River, Sandy Hill,
and Nassawango Creek
sites, Maryland**

this period. Named the Woodland period, it is also divided into Early, Middle, and Late phases. The first Early Woodland ceramic pots were coarse, thick bodied, and flat bottomed, like the

No earthen mounds of the type erected by Adena people throughout the Ohio Valley are known in the region. Archeologists have found Adena artifacts in some Chesapeake region burials and living areas, including the *West River site* near Annapolis and the *Sandy Hill* and *Nassawango Creek sites* on the Eastern Shore. Deposits found at these locales

date from 2,500 to 1,900 years ago. Although some scholars suggest that artifacts found in these sites were brought to the Chesapeake by Adena immigrants, most investigators currently think that they were probably imported items treasured by Chesapeake Bay people.

The number of different types of diagnostic stone tools and pottery styles used by people in the region fell significantly during Middle Woodland times, between 2,300 and 1,000 years ago. Thick bodied, capacious, sand-tempered pots are commonly found in sites dating to this phase. These sorts of pots would be useful to a more settled people who did not have to move as far or as often as did their predecessors. Stronger, lighter, and more portable wares—tempered with shell rather than sand—gradually came into widespread use throughout the region during the later part of the Middle Woodland phase. Many of these wares had carefully smoothed exteriors or were decorated with geometric designs pressed or cut into the wet clay before firing.

New forms of stemmed and notched chipped stone points also appeared. Most tool-makers still continued to use locally available, hard, crystalline stones such as quartz and chert. But as the Middle Woodland phase wore on, imported softer sedimentary stones, such as rhyolites from the upper Potomac Valley and argillites from Pennsylvania, grew more popular in north and east parts of the region. Another group of new imports—squash, beans, tobacco, and, finally, corn—would profoundly change life in the region during the following and final phase of the Woodland period.

THE CHESAPEAKE HUNTING AND GATHERING CULTURAL LANDSCAPE

□ PEOPLING PLACES

Very little is known about the Archaic period's demographic aspects. Site distributions and contents suggest that

human beings continued to populate the region thinly at this time. No presently identifiable human remains from Archaic times have been found in the area. Little is known, therefore, about Archaic period human population distributions, densities, or health. As mentioned above, the complete absence of human remains suggests that, like their Paleoindian predecessors, people living during Archaic times either cremated their dead or exposed them to the elements.

Archeologists have found cremated and uncremated human remains with Early Woodland Adena artifacts in single and group graves, and they have identified a mass of intermingled human bones thought to be a charnel house used to shelter honored dead in several Adena sites in the Chesapeake Coastal Plain. Those buried in these sites generally resembled Native American populations elsewhere at the time. Although most archeologists tend to agree that these people were local residents, it is not known whether they were native to the Chesapeake Bay or Ohio Valley immigrants. It is clear, however, that Adena sites have been found only at Coastal Plain locales in and around the Chesapeake region. For reasons still not understood, similar sites have not been found in Piedmont valleys. And no Adena earthen mounds have yet been found anywhere in the region.

During Middle Woodland times, assemblages of ceramics and stone tools from the Coastal Plain and the Piedmont become quite distinct. This suggests that interior Piedmont and tidewater Coastal Plain populations may have become distinct as well. Although much remains unknown on this subject, differences in population composition and density almost surely influenced the different cultures that developed in the region, during both Middle Woodland and later times.

□ CREATION OF SOCIAL INSTITUTIONS

Light, versatile, and highly portable tool assemblages have been discovered in small sites scattered widely across the region. These indicate that Archaic people, like Paleoindians before them, belonged to small, highly mobile bands bound together by friendship bonds and family ties. And over time, the diversity and stylistic uniqueness of artifact assemblages increased, with many of these styles and tool types limited to particular river drainages or valleys throughout the region. This may reflect the emergence of social organizations in particular territories. Encompassing several habitats, each territory could produce enough resources to support a more settled type of society able to allow larger numbers of people to remain in particular locales for longer periods of time. These organizations had influence over hundreds rather than thousands of square miles. People living in such societies had to be socially flexible enough to cooperate and remain together longer than their Paleoindian predecessors.

The growth in the size and number of archeological sites, along with increases in the range and sophistication of tools and technologies found within them, suggest that social life grew more complex during Woodland times. Chesapeake people organized themselves into societies that could coordinate the efforts of even larger populations living in increasingly smaller territories as they adapted and adopted new tools and ideas. Eventually, they even began cultivating crops such as squash, beans, and tobacco. These were imported from distant places, including the Ohio and Tennessee River Valleys. Although direct evidence is lacking, sexual roles and attitudes, too, were almost surely transformed, as the new technologies of pottery and food production were adopted. These technologies have historically been the domains of women.

Social aspects of the Middle Woodland Chesapeake cultural landscape reflect the emergence of more formally orga-

nized types of society. Documented by anthropologists in similar societies elsewhere in the world, such forms of relationship linked people tracing common ancestry living in different—and often widely separated—locales. Successful leaders had to be able to draw and maintain loyal followings. The obligation requiring family members to avenge killers of relatives prevented such leaders from using force to prevent followers from leaving their group or moving elsewhere. In order to keep followers, they had to be successful in diplomacy and war, generous in sharing goods garnered through hunting, gathering, trading, and raiding, and skillful in finding ways to best meet the needs and expectations of their people.

Gradually, these leaders achieved the ability to pass power and influence on to successors. This did not mean one's offspring would take on one's leadership position. Instead, it meant leaders could chose a successor, giving that person opportunities to establish authority. Many archeologists think these changes in Middle Woodland social life are most graphically reflected in the varied appearances and diversity of pottery over time and from area to area.

□ EXPRESSING CULTURAL VALUES

Archeologists cannot identify for certain any expressions of cultural values in Archaic period settlement patterns, archeological deposits, or the artifacts found in them. Some specialists do believe distinctive point styles or unique assemblages of tools represent particular cultural traditions. But, as noted in the preceding chapter, widespread appearances of such objects across entire regions of North America may merely show that certain styles were more popular and certain tools more useful.

It is easier to identify material expressions of cultural values in Early and Middle Woodland artifacts and deposits. People throughout the region began using locally abundant clays to make fired ceramic pots and jars of different

types and with distinctive decorations. Uniquely decorated herb, bark, and tobacco smoking pipes made of clay and stone also appeared by the end of Middle Woodland times. Unlike hard substances such as stone, bone, or horn, potters could mold wet clay into a variety of forms. These forms were easily decorated with design motifs that may have represented spiritual power or other aspects of cultural belief and identity.

People living on the Coastal Plain influenced by cultural developments occurring farther south, north, and west also imported new raw materials to express cultural identity at this time. Archeologists have found copper from the Great Lakes and shells from the Gulf of Mexico along with Adena artifacts in burials and occupation sites at various locales of the Eastern Shore. In the Susquehanna Valley, people buried in caches large numbers of wide, blade-like chipped stone points from Meadowood cultures in upstate New York. During late Middle Woodland times, Piedmont people began burying their dead in low earthen mounds similar to those made by Hopewell communities in the Ohio Valley. Although such things clearly meant something to the people who made them, their exact symbolic cultural meanings remain mysteries to archeologists.

□ **SHAPING THE POLITICAL LANDSCAPE**

Most archeologists think that the pattern of generally small and scattered archeological sites of the Archaic period reflects the existence of egalitarian political groupings characterized by close kinship ties, widespread social networks, and leaders possessing the ability to form coalitions. And many believe that diminishing rates of stylistic variability between pottery and projectile point styles used within smaller areas suggest heightened political boundaries and new concentrations of authority. New customs relating to the handling of the dead—including those placing rare, imported, or exotic artifacts with honored ancestors—also suggests that new

status differences had emerged by Early and Middle Woodland times.

□ **DEVELOPING THE CHESAPEAKE ECONOMY**

We know a good deal more about technological aspects of this era's cultural landscape. Archeologists have found large numbers of stone cobbles, unused centers of worked stone cobbles known as cores, flakes struck from cores, and finished tools in sites from these periods. Discoveries of unsmelted cold hammered copper objects, carved, cut, and burnished pieces of shell, clay, horn, and bone, and charred bits of wood, nut shells, and other plant remains also have been found preserved in pits, hearths, and the floors of living spaces. Taken together, these materials provide a record of the types of tools and resources significant in the region's economies. The use of materials primarily drawn from regional sources indicates that these people created most of what they needed locally. And the presence of materials, artifact types, and decorative styles that originated elsewhere shows that networks for economic exchange extended beyond regional borders.

Archeologists believe that changes in tool types and raw material choices reflect changes in the regional economy. During Early Archaic times, toolkits shifted from inventories consisting almost entirely of chipped stone implements to assemblages incorporating ground stone axes, adzes, and grinding stones. This suggests increased reliance on trees and other plants growing in the region's new forests and fields, as these tools would have been useful in producing food, shelter, and other needed items in a forested environment. In sites dating from 6,000 to 3,000 years ago, we note the appearance of shell heaps, ground stone net-sinkers, and hooks, barbs, lances, and harpoons made of sharpened shell and bone. The presence of such sites and artifacts indicates a growing dependence on resources taken from the waters of the newly formed Chesapeake Bay.

As noted earlier, the earliest known fired clay pots appear in regional sites about 3,000 years ago. Archeologists consider this to mark the beginning of what they call a container revolution. We have only to consider the qualities of pottery to realize why its appearance would be considered revolutionary. Pottery was watertight, light, and relatively easy to make, repair, and replace. Pots permitted the cooking, carrying, and storage of food, allowing people to remain in particular places for longer periods rather than having to chase after new food sources after a day or two. The possibilities opened by technologies such as pottery would significantly transform economic aspects of the regional cultural landscape.

Less is known about how people distributed resources among themselves and their neighbors. As with the earlier period, nothing remains of the trails and footpaths that people used in this era. But unlike the preceding period, preserved wooden dugout canoes reveal one of the technologies people used to move on the region's waters. Although their discovery tells us how they traveled, they neither directly disclose which rivers were used, nor reveal when or how they were used.

Indirect evidence is abundant. In Archaic times, the appearance of similar artifacts throughout the region and the apparent absence of artifact concentrations (such as those that might indicate a specialized service or industry) within particular houses, sites, or regions suggests that goods and services moved with people across considerable areas. The appearance of exotic or unique goods in burials or hoards, for their part, indicates that economically influential individuals, families, or political groups existed in the Early and Middle Woodland phases.

□ EXPANDING SCIENCE AND TECHNOLOGY

Relying on tested techniques and searching for new solutions, Chesapeake people continually expanded the frontiers of science and technology as they strug-

gled to adapt to changing conditions. Several key developments occurred during this era. For example, craftsmen and craftswomen patiently pecked and sanded slate into uniquely shaped and perforated banner stones that could be affixed to the wooden handles of spear throwers. The banner stone's weight magnified the thrower's strength. This and the handle's artificial extension of the length of the thrower's arm increased both the range and striking power of lances and darts. Chesapeake hunters and warriors also used new, smaller projectile points of chipped stone, attaching them to the tips of darts and lances. They relied on these weapons until the appearance of even smaller, triangular projectile points at the beginning of Late Woodland times. These smaller, triangular points signaled the adoption of bow and arrow technology, which was to prove to be vastly more powerful and efficient.

As mentioned earlier, pottery was another area of great technological innovation during the Woodland period. The period's potters experimented with new shapes, production techniques, and tempering agents aiming to increase the strength and carrying capacity of cooking pots and storage wares and to lighten their weight. They sometimes decorated the wet clay by pressing fabrics into them, an innovation that preserves evidence of advances in many fiber technologies, including net construction, cord manufacture, and basket weaving.

Chesapeake people also continued their efforts to domesticate plants and animals during this era. Already breeding domesticated dogs for companionship, camp sanitation, hunting assistance, light hauling, and food, they also may have raised turkeys and cared for bear cubs and other baby animals. Gardeners began seeking fertile, well-watered soils as they encouraged the growth of seed-bearing plants, including amaranth and wild mustard. And highly significant changes in the region's science and technology began when Chesapeake Bay women first planted imported squash and other seeds during Early and Middle Woodland times.

□ **TRANSFORMING THE ENVIRONMENT**

Fire was the primary tool used to transform Chesapeake Bay environments during this era. Although direct data showing how the region's inhabitants used fire in this era is lacking, evidence from elsewhere during the same period strongly suggests that Chesapeake Bay people used fire to both drive game in certain directions and clear underbrush during autumn and spring months.

Fires set by a growing and increasingly concentrated population must have played a part in altering the region's forest and field ecosystems. Fire was used to clear the first garden plots, which were hacked from forest floors with ground stone axes during Early and Middle Woodland times. This early use of fire anticipated the greater impacts that would occur when the adoption of corn, beans, and squash required even bigger areas of cleared land at the beginning of the following Late Woodland phase.

□ **CHANGING ROLE OF THE CHESAPEAKE IN THE WORLD COMMUNITY**

Numerous discoveries of technologies introduced from outside the region attest that the people of this time were in contact with the wider world. For example, both pottery and banner stones were evidently borrowed from people living farther to the south and west. The presence in the region of Adena artifacts from the Ohio Valley, as well as food plants first domesticated in Mexico, further affirms connections with the world community.

Paths, rivers, and finally the fully formed Chesapeake Bay became channels moving ideas, implements, seeds, and people into, out of, and through the region. Although people experimented a great deal during these years, most relied on tried and tested tools and techniques. Only skill and efficiency could make the difference between starvation and survival, and a scant margin often separated the two options. It is understandable, then, that Chesapeake people were care-

ful about making use of new concepts, materials, and technologies, which came from people coping with different conditions living farther south, west, and, to a limited extent, north. We do not yet have clear evidence that those living in the Chesapeake Bay region contributed to developments in those places or elsewhere.

FURTHER INFORMATION

Useful surveys on Archaic and Early to Middle Woodland life in the region include:

Jay F. Custer, *Prehistoric Cultures of Eastern Pennsylvania* (1996:133-261).

Richard J. Dent, Jr., *Chesapeake Prehistory* (1995:147-242).

Theodore R. Reinhart and Mary Ellen N. Hodges, eds., *Early and Middle Archaic Research in Virginia* (1990).

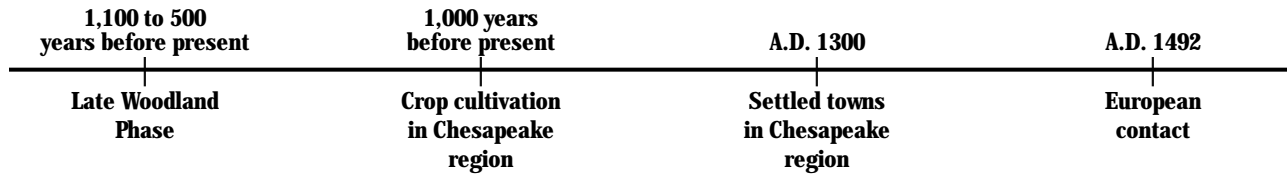
—, eds., *Late Archaic and Early Woodland Research in Virginia* (1991).

—, eds., *Middle and Late Woodland Research in Virginia* (1992).

Chapter Four

The Rise of Townlife,

1,100 to 500 Years Ago



AN ECOLOGY OF PLACE AND PEOPLE

□ PLACE

By the beginning of what archeologists call Late Woodland times, by 1,100 years ago, diverse ecosystems had developed in the Chesapeake region (see Map 5). At the region's center stood the Bay, which by then was filled out into its present form. Its waters were wide, shallow, calm, and clear. The Bay supported a vast and complex food chain. Just as it does now, the base of this food chain consisted of floating microscopic aquatic plants called phytoplankton and tiny animals called zooplankton. All plankton are highly sensitive to seasonal changes in light, temperature, and water quality. One drop of water can contain thousands of plankton. They can live either alone or in groups. Under certain conditions, for example, masses of phytoplankton can gather to form large mats that float on the surface of Bay waters.

The Bay's zooplankton range in size from tiny single-celled protozoa to larger groups of cooperative, specialized cells. Life forms such as sea nettles and other jellyfish are actually communities of interdependent zooplankton cells. Tiny immature organisms—such as larvae of

blue crabs, bay barnacles, and freshwater grass shrimps—are also considered zooplankton. Plankton provide food for other Bay creatures such as bottom dwelling common clam worms and American oysters. These and other invertebrates spend most of their lives in the deeper benthic waters of the Bay. Fish such as Atlantic menhaden feed on these and other organisms. In turn, those fish become food for larger fish, such as spot, American shad, and striped bass.

More than two hundred different fish species are believed to have lived in Bay waters during Late Woodland times. Each species favored particular Bay environments and conditions at various times of its life. Only thirty-two of these species lived their entire lives in Bay waters. Most others were migratory fish, spending part of their lives in freshwater and part in saltwater. Anadromous species, such as American shad, appeared each spring to spawn in freshwater reaches of Bay tributaries. Catadromous species, such as American eels, migrated down freshwater rivers to breed in the open ocean. The remains of these fish and all others that died in the Bay were eaten by scavengers, such as blue crab and horseshoe crab.

As for plants, meadows of salt marsh cordgrass and other salt tolerant plants

SIGNIFICANT EVENTS

- 1,000 years before present—corn, squash, beans, and tobacco become important cultivated crops in the region and bow and arrow introduced
- 1300 AD—people begin building settled towns and Potomac Creek culture, ancestors of the Piscataways, move into lower Potomac Valley
- 1492 and 1497—Europeans first discover the Caribbean and Canada, respectively

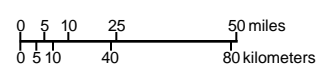
Map 5: The Rise of Townlife, 1,100 to 500 Years Ago

KEY LOCALES	
District of Columbia	Virginia
Nacochtank	Bluefish Beach
	Boathouse Pond
Maryland	Bull Hill Run
Accokeek Creek	Camden
Chicone	DeShazo
Conowingo	Flowerdew Hundred
Cumberland	Governor's Land
Duck's Run	Great Neck
Hughes	Hatch
Juhle	Jordan's Point
Lankford	Little Marsh Creek
Locust Neck	Potomac Creek
Posey/Indian Head	Taft
Ritter	White Oak Point
Rosenstock	
Shepard	
Solomons	
Stearns	
Thomas	
Waveland Farm	
Wessel	
Winslow	

Pennsylvania
Blue Rock/Nace
Murry
Schultz-Funk
Shenks Ferry
Slackwater
Upper Bare Island Rockshelter



LEGEND	
	Archeological Site
	National Natural Landmark
	Natural or Cultural Feature
	National Historic Landmark
	Bay
	Plain
	Piedmont



flourished in tidal marshes bordering Chesapeake Bay waters. Nourished by rich sediments, these few species grew abundantly, molested by few natural predators, and provided shelter and sustenance for many of the region's animals.

Birds too flourished in the Bay. Bay marshes were important feeding and breeding areas for waterfowl. Several species of ducks, geese, and swans feasted on aquatic vegetation and overwintered on the Bay. Sea ducks and other birds that lived mainly on open waters fed on clams, blue crabs, mud crabs, crayfish, fin-fish, insects, and aquatic plants.

The Bay saw a lot of bird traffic, as it stood at the center of what is now called the Atlantic Flyway. On their fall flights south, large flocks of waterfowl stopped in the Bay to rest. Surface-feeding or dabbling ducks, such as American coots and lesser scaups, began arriving in August. Migratory flocks of black ducks, brants, canvasbacks, mallards, wood ducks, and other larger dabblers first began arriving in early September and crowded into Bay waters between early October and the middle of November. Snow and Canada geese, diving ducks such as double-crested cormorants and hooded mergansers, and a variety of other waterfowl also arrived during these months. Some stayed for many weeks; others continued on after only a brief stop in the Bay.

Few migratory birds of any type could be found on Chesapeake Bay waterways between late February and April. In the spring, the birds came back in the same order and on the same routes, migrating north to breeding grounds that for most were in Canada.

Bottomland and flood plain forests in both the Coastal Plain and the Piedmont also became key habitats for many bird species, and forested uplands and wetlands provided nesting and resting spots for neotropical migratory birds that bred in North America and wintered in Central or South America. Because the region had such large populations of species that birds could eat, predatory and scavenger birds, such as red-shoul-

dered hawks, turkey vultures, bald eagles, barred owls, and others—lived there too. Bald eagles, for example, avidly hunted waterfowl and fish in the Bay and its tributaries. Turkey vultures, in contrast, feasted on the corpses of all dead animals.

Passenger pigeons, other dove-like birds, and a wide variety of songbirds and other seed, berry, or insect-eating species also made their homes in Coastal Plain and Piedmont forests. Current estimates suggest that over three hundred distinct species and subspecies of birds, including over thirty-seven species of waterfowl, lived in or passed across the Chesapeake region during this period.

Birds were not the only animals filling Chesapeake Bay skies. Clouds of salt marsh mosquitoes and salt marsh greenhead flies rose over tidal marshes during warmer months. Farther inland, many kinds of worms, beetles, and other insects fed on plants, carrion, and living flesh. Fleas, lice, deer flies, midges, mosquitoes, and other small biting insects made meals of animal blood. Bees, butterflies, and flies pollinated flowering plants. And in the mixed oak, maple, and pine forests that bordered Coastal Plain marshes and Piedmont hydrosere wetlands, insects were the most numerous of the many animals that made their homes there.

A variety of southern mixed hardwood forests grew within the Coastal Plain. Most were mature forests of old adult trees dominated by ancient giants hundreds of years old and hundreds of feet high. Assessing the effects of more than four hundred years of logging, scientists currently estimate that the mature forests of the Late Woodland era stood as much as fifty feet higher than those living in the region today. The tops of these trees tended to grow together into vast canopies, which prevented the sunlight from reaching and sustaining other plants below. The oldest of these trees had thick trunks many feet in diameter.

On higher ground, oaks and hickories tended to dominate mature forests. Communities of red maples, black gum,



Figure 13: Piedmont Forest Landscape: Ferncliff Wildflower and Wildlife Preserve National Natural Landmark

(Photograph courtesy of the Lancaster County Conservancy)

LATE WOODLAND ENVIRONMENTS PRESERVED: NATIONAL NATURAL LANDMARKS IN THE CHESAPEAKE HEARTLAND.

The National Park Service's National Natural Landmark Program recognizes unique environments of national significance to the American people. Only 12 places in the Chesapeake Bay region's heartland have thus far been found to meet the rigorous requirements for such designation (see Appendix Three). Each is believed to preserve the kinds of environments that flourished in the region during Late Woodland and early colonial times. Virginia's Charles C. Steirley Natural Area and the Great Dismal Swamp tract preserve remnants of the cypress, tupelo, and white cedar swamps that once lined the shores of waterways throughout the region's Coastal Plain. The 43,200-acre area of the Great Dismal Swamp tract, for example, preserves a fragment of a vast wetland that extended over 2,200 square miles of southeastern Virginia and northwestern North Carolina three hundred years ago. The mixed-forest community dominated by exceptionally tall beeches, hemlocks, tulip trees, ashes, and red oaks with wide trunks that covers the slopes of the deep ravine in Lancaster County's Ferncliff Wildflower and Wildlife Preserve (see Figure 13), for its part, is regarded as one of the very few stands of untouched virgin forest in the Pennsylvania Piedmont.

Atlantic white cedars, and bald cypresses grew in swampy lowlands. Loblolly pines and other softwood trees thrived on sandy soils along shorelines and across broad expanses of the southeastern Virginia coast.

Farther inland, in Piedmont forests, American chestnuts, a variety of oaks, poplars, American beeches, slippery elms, and several species of ashes, gums, and hickories were abundant. Shrubs, berry bushes, sedges, and grasses grew along the edges of forests, as well as in sunny clearings such as meadows, cliff sides, and swamps. Changes in the climate, periods of drier weather, and fires set off by lightning, accident, and hunters driving game or clearing underbrush, created patches of new forest growth and cleared openings for grasses, herbs, bushes, and other plants.

The Piedmont and Coastal Plain regions were also home to a huge array of other creatures. These included green frogs, bullfrogs, and at least twenty-six other species of amphibians; common snapping turtles, eastern mud turtles, northern water snakes, and thirty-four other reptile species; and more than 120 species of mammals. The opossum, which carries and suckles its young in

pouches, was the only surviving marsupial living in the Bay region—or anywhere else in North America—by Late Woodland times.

All other mammals in the region were placental species. Open ocean aquatic mammals such as porpoises, seals, and whales periodically visited Bay waters. Bats flew through the skies, and otters, muskrats, and beavers swam in the rivers and streams. Mice, voles, and other small rodents made their homes in marshes, grasslands, and forest floors, and a vast number of larger mammals lived in the region's forests and fields. Some were solitary animals, including plant-eating woodland American bison, omnivorous black bears, and predatory cougars, lynxes, and bobcats. Others, such as white-tailed deer, raccoons, and porcupines, gathered together to mate or feed at various times. Still others, such as gray wolves and beavers, were highly social animals living together in families or packs.

□ **PEOPLE**

During the Late Woodland period, the region's human population grew, and these people began to live in larger groups. Archeologists see evidence of

this in the increased number of campsites, shell heaps, garbage dumps, and, most dramatically, in the first appearances of large towns occupied for long periods of time. Such Late Woodland cultural developments as the farming of corn, bean, squash, and tobacco; the use of the bow and arrow for hunting and war; and the rise of political systems of unprecedented complexity, known as chiefdoms, changed ways of life in the region considerably.

People throughout the region began to congregate in bigger and more thickly populated towns where they lived for greater parts of the year. The first clearly identifiable, year-round, permanent villages in the region date to this period. Most were situated near reliable water sources on the fertile soil necessary for growing crops, which the people planted in garden plots they hacked and burned from surrounding forests. Nearby, people built groups of sapling framed houses

ACCOKEEK CREEK NATIONAL HISTORIC LANDMARK. *The Accokeek Creek site is located on a low sandy Coastal Plain river terrace in the lower Potomac Valley in Prince George's County, Maryland. The site is situated on a major transportation and communications route on well-drained soils near reliable sources of fresh water. It is low enough to provide easy access to the water, and high enough to avoid floods and insect pests. The site is located close to several habitats. Fish and shellfish were taken from the open waters and tidal mud flats of adjacent rivers and streams. Plants growing in nearby fresh and brackish water marshes furnished the raw materials of mats and roofing. Arrow arum (also known as tuckahoe), cattail, and other roots and tubers found in wetlands were ground into flour for soups, cakes, and porridges. Swamp lands also provided habitats for birds and other animals avidly sought by hunters and places of refuge when raiders forced people to flee from their village.*

These and other considerations have drawn people to the site at one time or another for the past 6,000 years. It appears, however, to have been most intensively occupied during Late Woodland times, when the fertility of the area's soils would have particularly appealed to farming people. Archeologists have found dense clusters of storage pits, hearths, thick layers of household refuse, and three ossuaries in and around post-mold patterns of houses. Other post-mold patterns indicate that community members fortified their town with a stockade wall.

Analysis of the thousands of projectile points and broken pieces of pottery found in these deposits suggest that people erected villages at least twice at the site during Late Woodland times.

The first of these, built sometime around seven hundred years ago, was protected by a circular wall. A second, larger town, built atop the shoreline and protected from the landward side by a semi-circular stockade, was evidently abandoned by 1550 (see Figure 14). Archeologists have not yet conclusively found traces of either the Indian town of Moyoane, mapped by John Smith near the locale in 1612 and burned in 1630, or the Susquehannock fort known to have been located at the place in 1675.

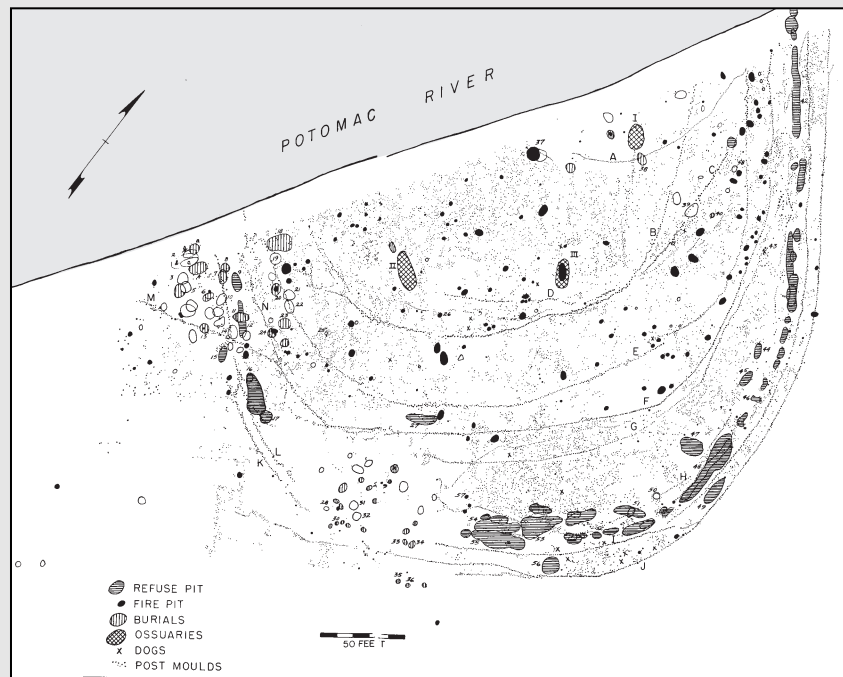


Figure 14: A Preserved Late Woodland Cultural Landscape: Ground plan of archeological deposits associated with the ca. 1550 town site at Accokeek Creek, Maryland. (Diagram from *The Accokeek Creek Site* used by permission of the Museum of Anthropology, University of Michigan ©1963)

covered in sheathings of bark, thatched grass, or woven cattail mats. These communities were moved to new locales every ten or twenty years, after townsfolk had depleted the nutrients in nearby soils and used up all of the easily accessible firewood.

In the Coastal Plain, most towns consisted of collections of structures that seem now to have been haphazardly placed, perhaps more for convenience and nearness to friends and kin than for smooth traffic flow or beauty of arrangement. Many Piedmont towns, by contrast, were planned communities of houses in a circle around open plazas. They were similar in plan to the larger towns of the Mississippian mound builders and the other complex societies then flourishing farther south and west, in mid-America.

Fence walls of log stakes surrounded some of these towns. Most archeologists identify these palisade lines as fortifications and believe that they reveal the rise of political competition and warfare in the region. Many of these fences, however, were very flimsy and may have just served to keep out stray animals, keep wandering children in, and discourage small raiding parties. They also may have been symbolic boundaries, reflecting and reinforcing more abstract concepts of authority and community identity.

Before this time, bodies of the dead were exposed to the elements, cremated, or buried in individual graves or in small cemeteries. But by Late Woodland times, the dead were increasingly buried in large groups. When people living in Coastal Plain communities moved to a new location, for example, they often dug up the bones of dead relatives and buried them together in communal graves called ossuaries near their old home. In contrast, people living in Piedmont valleys at this time buried their honored dead in low cone-shaped or oblong earthen mounds, as did people living farther south and west.

The coming of Late Woodland times also brought dramatic changes in food production, weapons technology, tool type, and pottery style, along with other cul-

tural developments. Discoveries of preserved pollen and carbonized remains of seeds and other parts of domesticated corn, bean, squash, gourd, and tobacco-plants brought by or obtained from people living farther south and west-affirm that food production assumed high importance in many Chesapeake communities at this time. In places where forests grew on fertile, well-drained soils near reliable sources of water, men and women cut and burned the vegetation to make planting grounds. Charred tree stumps were allowed to remain after undergrowth and brush were burned off, and crops were sown between these stumps. The people planted seeds and cared for seedlings with digging sticks and with bone, horn, and stone hoes fastened onto wooden handles. Cultivated plants were grown on raised mounds of soil, a method that offered some protection from frost and eased the tasks of tilling, weeding, and removing insect pests.

Late Woodland planters allowed leafy plants such as berry bushes and succulent greens to grow between cultivated mounds. These plants helped hold soil in place, reduce erosion, and divert insect and bird pests. They also attracted white-tailed deer and other game animals into easy range of hunters' bows and lances. The planters did not use manures as fertilizer; instead, they burned fields in the fall and spring, a practice that returned some nutrients to field soils. However, most plots lost fertility within two or three years and were abandoned. Later colonists called these old fields. Such plots made ideal house sites, activity areas, and gathering places for berries, medicinal plants, edible greens, and strong supple young saplings used for house frames and tool handles.

Men and women gathered a wide variety of plants and animals for food. Women filled twined fiber baskets and bark buckets with greens, tubers, berries, and nuts. Bird and turtle nests were raided for eggs, and beehives plundered for honey. Grubs and larvae—similar in taste and texture to shrimp or shellfish—were considered delicacies. Clams were

collected on beaches and dug from mud flats. The flesh of snakes, frogs, and turtles was prized as a tasty and desirable food.

Archeological discoveries of small, finely crafted triangular projectile points of chipped stone show that newly imported and more powerful bows and arrows became common. Although spears or lances were still used, the bow and arrow probably replaced the spear thrower as the weapon of choice. The new arrow points were widely used. The projectile point varieties used during Middle Woodland times almost completely disappeared, and the banner stones of those times vanished from the archeological record. Superior in range, accuracy, and hitting power, the bow and arrow was a major technological advance for Late Woodland people.

The much expanded Late Woodland toolkit included other stone implements, such as knives, scrapers, and drills of chipped stone; and axes, adzes, net-sinkers, pendants, mortars, gouges, and grinding stones made from ground basalt, limestone, and other rocks. Late Woodland craftspeople also used a variety of other implements, including carved bone needles, awls, fish hooks, and scrapers; beads of bone, shell, and copper; horn arrow points and hammers; and fired clay pots, jars, and tobacco pipes.

Stone, wood, skin, bone, and fiber served as the raw materials for many tools. Men swung heavy axes—made of carefully shaped and sharpened ground stones snugly fastened onto strong wooden handles—against tree trunks to break bark and splinter inner wood. Then they used firebrands to char the splinters, and in turn hacked those away. They repeated this process until the tree fell. Shorn of bark and planed with ground stone adzes, many trunks became support posts for houses and platforms. The insides of others, most often tulip poplars, were hollowed out with ground stone gouges and fire. Carefully smoothed and shaped on the outside with stone adzes, those trunks became dugout canoes, which were essential for

transport and travel on the waters of the Bay and its tributaries.

Men used sharp chipped stone scrapers, planers, and knives to fashion thinner limbs of strong, supple trees such as alder, elm, and cedar into handles, frames, and shafts. Women used the same kinds of tools to scrape the flesh from skins and cut them into clothing pattern pieces. Using twined hemp, milkweed, and other plant fiber or animal sinews as thread, and needles made of bone or horn, they sewed these pieces together into skirts, shirts, leggings, loin-clothes, and other clothing. Tanned skins of snakes were crafted into belts, girdles, and decorative sashes. Shells of common snapping turtles and box turtles were fixed to wooden handles, filled with pebbles, and shaken as rattles by dancers and shamans. Women carried loaded baskets, bundles of fire wood, and other burdens on their backs. They stretched tightly woven, light, and strong fur, hair, or fiber straps—known as tump lines—across their foreheads to help secure the loads.

White-tailed deer, elk, black bear, and a wide range of other animals were sought for their fur, flesh, fat, sinew, and bone. Trappers used string and sinew snares and dead falls of heavy logs to trap beavers, porcupines, and other animals. Woven milkweed and hemp fiber nets often were used to take small game such as rabbits. For larger prey, hunters hurled stone-tipped lances and used bows of alder or elm strung with sinew strings to fire stone and bone-tipped arrows, fletched with turkey and other bird feathers to generate a spinning motion that improved accuracy. People hunted alone, in small teams, or large groups. Groups often used fire and noise to drive panicked animals off the edges of cliffs or stampede them into bogs, rivers, or specially constructed brush and log enclosures, where hunters could slaughter them.

Late Woodland people also used a variety of tools to catch waterfowl and fish on the open waters of the Bay. They designed nets made of twined fiber, hair,

THE ROSENSTOCK SITE: A 15TH CENTURY VILLAGE IN MARYLAND. *The Rosenstock site is located on the Monocacy River, a major tributary of the Potomac, in the Piedmont province of Frederick County, Maryland. The site was first reported by avocational archeologists at the turn of the century when it was under cultivation; the site was laid fallow in the 1920s, and eventually became heavily overgrown, as it remains today. Rosenstock was briefly tested by Maryland state archeologists in 1979, and was then subjected to three intensive 11-day field sessions held in cooperation with the Archeological Society of Maryland, Inc., in 1990-92.*

Excavations revealed a circular village pattern marked by the occurrence of large trash-filled pits at the outer edges of the village. Inside this circle of pits are a number of post-molds marking the locations of houses (although no distinct house patterns have yet been deciphered) and a central “plaza” area which appears to have been largely empty. Remains from the trash pits indicate a diverse diet for the village inhabitants. Faunal remains include deer, elk, bear, cougar, beaver, turtle, raccoon, and a variety of birds; the bones from these species were often recycled into ornaments and functional tools. The size of fish found in the middens runs the gamut, likely indicating that nets or seines were used in the Monocacy, in addition to line fishing as evidenced by the presence of bone fishhooks. Floral remains include a variety of wild plants collected from throughout the rich environmental setting encompassing the site, and at least two cultigens – corn and beans – have been identified. The latter were likely planted on the low Monocacy floodplain opposite from Rosenstock’s thirty-foot-high bluff.

Artifacts from the site are typical of the “Montgomery Complex” of the middle Potomac drainage, and include triangular arrowpoints, cord-marked, collared ceramics known as Shepard ware, tobacco pipes, and tools such as awls, beamers, chisels, and needles. Many of the artifacts and features of this site show influences from the north at a time (circa A.D. 1450) when northern groups appear to have been shifting their settlement locations, perhaps in response to climactic fluctuations associated with the “Little Ice Age.” These northern influences include similarities in Shepard ware to Owasco-like pottery from New York state, a small carved face stone pendant similar to those common among the Munsee, and the occurrence of “keyhole” structures (believed to be sweatlodges) just outside the village proper. The latter resemble examples from Monongahela sites, and the two examples from Rosenstock have their entryway axes at 90 degree angles to each other, as is found at sites in western Pennsylvania.

The role played by the Rosenstock village in the Montgomery Complex of the Potomac-Monocacy-Shenandoah region, remains the focus of continued study. Among the questions yet to be resolved – aside from the site’s relationship to sites found north of Maryland – is how Rosenstock and its people correlate to 16th-century sites in the Coastal Plain commonly associated with historically known groups such as the Piscataway.

(Text courtesy of Dennis C. Curry and Maureen Kavanagh)



Figure 15A (above left): *Excavations at the Rosenstock Village site during the Archeological Society of Maryland’s Annual Field Session in Maryland Archeology, May 1992. These excavation units are near the site’s central plaza area.*

Figure 15B (above right): *Excavation of the lower strata of a section of a large trash-filled pit at the Rosenstock Village site during the Archeological Society of Maryland’s Annual Field Session in Maryland Archeology, June 1990. This pit contained nearly 12 cubic meters of fill; several large rim and body portions of pottery vessels, as well as deer bone, are evident.*



Figure 15C: *Exposed and partially excavated view of one of the two “keyhole” structures found at the Rosenstock Village site during the Archeological Society of Maryland’s Annual Field Session in Maryland Archeology, May 1992. This semi-sub-*

terranean feature, presumably a sweatlodge, contained a broken pottery vessel and a deposit of fire-cracked rock in its entryway (top).

(All photographs courtesy of the Maryland Historical Trust)

and sinew for particular conditions, targets, and tasks, entangling flocks of birds and trapping fish. In the water, carved wooden floats kept these nets on the surface of water, and stone net-sinkers and weights helped them sink and secured them to river beds and the Bay floor. To catch fish in open waters, fishermen used long, sharp arrows; bone fish hooks and barbed spears; and scoop nets fixed to hoop handles made from saplings. They also impounded fish behind traps—known as weirs—which were long fences made of plaited saplings stretched across river narrows or along shallow tidal flats. Crabs, lobsters, and shrimp were taken in nets, caught by hand, and lured into specially constructed traps. Blunt arrows brought down birds without damaging skins or feathers, which were used for ornament and decoration.

New kinds of pottery appeared at various places in the region. The shell-tempered Townsend ceramics frequently found in lower Delaware Valley sites came to be the most common Coastal Plain pottery. By A.D. 1300, grit-tempered Potomac Creek wares, which were first developed in Piedmont communities, became the favorite type of pottery among people living in lower portions of the Potomac Valley as well. And people living in the James River Valley increasingly used grit and shell-tempered wares that resembled pots used by people farther south.

These appearances and disappearances of pottery styles in particular communities or cultures probably reflect political upheavals resulting from changing ways of life. Many archeologists, for example, think that the gradual appearance of Piedmont Potomac Creek wares in sites along the lower Potomac is evidence of the movement of historically chronicled Piscataway people from the interior to the coast. Small numbers of Potomac Creek wares also appeared in sites along the lower James River and in the Eastern Shore communities that used mostly Townsend series pots; this probably shows that the communities had contact with the new immigrants.

Farther north, between A.D. 1550 and 1575, the shell-tempered Schultz wares that were common in the upper Susquehanna Valley gradually replaced grit-tempered Shenks Ferry pots in lower Susquehanna Valley Piedmont sites. Because the disappearance of Schultz pots in the upper valley coincides with the disappearance of Shenks Ferry pots in its lower reaches, archeologists think that the Iroquoian speaking Susquehannock people probably moved south into the Chesapeake Piedmont at this time.

The appearance of planned villages in the Piedmont and the erection of prominent buildings, larger than most other town houses, in Coastal Plain communities suggests that the region's political organizations became chiefdoms. Chiefdoms are dynamic, aggressive forms of political organization. They are headed by powerful leaders and influential families that have influence over large populations and substantial resources. One of these chiefdoms, the Powhatan Confederacy, was led by a man named Wahunsunacock. This chiefdom held sway over most Coastal Plain communities between the James and York Rivers in southeastern Virginia by 1607, when English colonists established their Jamestown colony in the midst of his domain. The story of Wahunsunacock and the contact between his people and European colonists is told in the next chapter.

THE LATE WOODLAND CULTURAL LANDSCAPE

□ PEOPLING PLACES

The earliest appearances of cemeteries and ossuaries in and around sites that contain stylistically distinctive pottery styles limited to specific areas provide evidence that denser, more settled populations occupied smaller territories during Late Woodland times. And two pieces of scientific evidence show that many Chesapeake people relied heavily on corn and other starchy plants at this time. The teeth and jaws of many buried individuals exhibit cavities, abscesses,

and other indications of poor dental health caused by the decay of fragments of starchy food stuck between teeth. And stable Carbon 4 isotopes indicating the presence of corn in diets have been identified in the bones of many Chesapeake Bay people.

As far as the total Late Woodland population and the size of its communities are concerned, the existing archeological evidence is so scattered and fragmentary that it is impossible to estimate accurately. Relying on their traditions, some present day Native Americans claim that Late Woodland populations may have numbered into the hundreds of thousands. But because there is no evidence of the tools, technologies, and infrastructure—sewage systems, roads, and water supply systems—necessary to support such populations in the forest environments of the period, most archeologists think that Late Woodland communities probably ranged in size from a few families to several thousand people. Those numbers closely match population figures that have been recorded more recently among similar societies with similar technologies in comparable environments elsewhere in the Americas, Africa, Asia, and Oceania.



Figure 16: Cultural Expressions on the Late Woodland Landscape: Archeologist Donald Cadzow inspecting petroglyphs near the Safe Harbor Dam, Lancaster County, Pennsylvania, ca. 1930.

(Photograph courtesy of the Pennsylvania Museum and Historical Commission)

□ CREATION OF SOCIAL INSTITUTIONS

The significant increases in the size, number, and complexity of archeological sites and tool technologies dating to Late Woodland times points to increases in social complexity. As they took on new tools, crops, and ideas imported from cultures farther south and west and adapted them to the local social environment, Chesapeake people evidently formed increasingly complex societies capable of handling the needs of larger populations in smaller areas. The bands of former times had probably relied on informal bonds, but Late Woodland people probably started to keep track of more formally organized family lines, which linked people of common ancestry even though they lived in different, often widely separated places. Successful leaders of family lines who could attract and keep loyal followers gradually became able to grant power and influence to successors. Although it is not known exactly when chiefdoms such as the Powhatans began, influential hereditary leaders were exerting control over considerable areas of the region by the end of Late Woodland times.

□ EXPRESSING CULTURAL VALUES

Many apparent expressions of cultural values appear during this time. Cemeteries, ossuaries, shell and copper beads and pendants, rock art in the forms of pecked petroglyphs or painted pictographs (see Figure 16), and greater use of locally distinctive designs on clay pots and smoking pipes appear in and around Late Woodland archeological sites throughout the region. Yet no physical evidence tells for certain what these and other Late Woodland cultural expressions meant. Relying on oral traditions, many present day Indian people regard particular archeological sites, objects, and natural features as sacred. Drawing on accounts written by colonial observers and pointing to examples from similar types of societies elsewhere in the world, scholars suggest a range of

possible explanations for their uses and meanings. At the *Shenks Ferry site* in the Pennsylvania Piedmont, for example, structures and burials are aligned toward the east. This is seen as evidence that the people used the rising solstice sun to time the planting and harvesting of crops. Places and objects themselves, however, cannot speak. Unless we find some more direct form of evidence, we can only guess at the roles, functions, and meanings of Late Woodland cultural expressions.

□ **SHAPING THE POLITICAL LANDSCAPE**

The more authoritarian chiefdoms chronicled by colonial observers first emerged during this period. Archeologists base their understanding of political organization of this time in part on the period's larger, occasionally planned communities, sometimes surrounded by fortified log palisades, which were more concentrated and located in more widely separated portions of the region. More than one scholar has characterized this pattern as a series of small isolated islands of people surrounded by vast seas of forest. Unlike leaders in earlier political systems, who had served their followers as firsts among equals, leaders of chiefdoms became hereditary rulers of more stratified societies. These chiefs had more political control over followers than their predecessors did, partly because they were supported by priests, warriors, and others also claiming higher ranks than those held by other members of the community. This is the kind of political organization that could have commanded the labor and energy that leaves the type of evidence preserved in the Late Woodland archeological record in the Chesapeake region.

□ **DEVELOPING THE CHESAPEAKE ECONOMY**

This archeological evidence suggests that economic productivity increased dramatically during Late Woodland times. Such increases both provided new opportunities and posed previously

unknown challenges. New domesticated crops, including corn, beans, squash, and tobacco, offered possibilities of higher and more reliable plant food yields. This increased dependence on crops that promised better nutrition when harvests were good. But it also brought the possibility of famine when drought, disease, and other disasters lowered production.

Bows and arrows increased the range and striking power of weapons available to hunters and warriors. This technological advance meant more meat in the diet, more furs for clothing, and greater efficiency in warfare. The bow and arrow also enhanced the prospects of increased productivity and peril. Promising protection and prosperity, leaders commanding warriors and hunters armed with such weapons were able to increase control over producers and production. Those chiefs who were skillful at using economic power by redistributing surpluses and overseeing trade gained political control of societies almost everywhere in the region by the end of Late Woodland times.

□ **EXPANDING SCIENCE AND TECHNOLOGY**

As all of these changes and advances worked in tandem, changes in technology affected cultural, social, and political conditions. Potters who wanted to increase the strength and carrying capacity of cooking pots and storage wares, for example, experimented with new shapes, production techniques, and tempering agents such as sand, crushed shells, or ground stone mixed into wet clays to strengthen vessel walls and lighten pot weight. These better pots improved cooking; more effectively protected stored corn and other products from rot, insects, and spoilage; and enabled people to transport larger amounts of goods and products faster, further, and more safely in dugout canoes.

As in the earlier Woodland phases, advances in net construction, cordage manufacturing, basket weaving, and



***Shenks Ferry site,
Pennsylvania***

other fiber technologies are shown in the impressions of fabrics pressed into wet clay as decorations. Corn cobs were also used to decorate wet clay, providing further evidence of the presence of domesticated corn, another major scientific and technological achievement of the period. Genetic analyses of the types of corn grown by Late Woodland people show that Native American cultivators chose and planted particular types of seed to develop strains that were increasingly resistant to disease, drought, and frost.

The larger and wealthier chiefdoms arising in the region required larger and more efficient forms of transportation to effectively navigate regional waterways, so dugout canoes crafted from tree trunks grew in size and importance. And stone drills and grinding stones converted shells gathered from Bay shores into gorgets, beads, and other kinds of spiritually meaningful signs of wealth and status that are vital to powerful chiefs and their communities.

□ **TRANSFORMING THE ENVIRONMENT**

The growing populations living in larger, more centralized food producing communities almost certainly affected regional biological communities. Some of the activities that probably had an impact are intensified hunting, gathering, land clearing, and waste disposal. People helped to maintain environmental conditions by ritually limiting harvests of desirable plants and animals and by accidentally or deliberately setting fires to clear underbrush, return nutrients to the soil, and drive game during group hunts. And the absence of sites in borderlands between historically documented chiefdoms allowed dense undergrowth to flourish; these areas were likely to have been used by people as game preserves and defensive frontiers.

□ **CHANGING ROLE OF THE CHESAPEAKE IN THE WORLD COMMUNITY**

Virtually all known developments in Late Woodland Chesapeake Bay life and culture can be traced to sources outside the region. New ideas and materials traveled on the widespread river systems and trail networks that linked the region to other parts of the continent, and from there they moved eventually to the rest of the world. As in earlier periods, then, the Late Woodland people in the Chesapeake Bay region were largely the beneficiaries of developments coming from elsewhere. This situation changed dramatically with the arrival of strangers from Europe on Chesapeake Bay shores, an event that signaled the end of Late Woodland times.

FURTHER INFORMATION

Studies reviewing what is known and unknown about Late Woodland people and places include the following:

Dennis C. Curry, *Feast of the Dead: Aboriginal Ossuaries in Maryland* (1999).

Jay F. Custer, *Prehistoric Cultures of Eastern Pennsylvania* (1996:263-300).

Richard J. Dent, Jr., *Chesapeake Prehistory* (1995:243-60).

Barry C. Kent, *Susquehanna's Indians* (1984).

Stephen R. Potter, *Commoners, Tribute, and Chiefs: The Development of Algonquian Culture in the Potomac Valley* (1993).

Theodore R. Reinhart and Mary Ellen N. Hodges, eds., *Middle and Late Woodland Research in Virginia* (1992).

Helen C. Rountree, *The Powhatan Indians of Virginia* (1988).

—, and Thomas A. Davidson, *Eastern Shore Indians of Virginia and Maryland* (1997).

Chapter Five

Contact and Colonization,

A.D. 1500 to 1775



Initial European Contacts A.D. 1492 to 1607

Colonial Period 1607 to 1775

1524	1571-1585	1607	1634	1750	1775
Earliest written record of contact	Initial attempts at colonization	Jamestown, Virginia established	Saint Mary's City, Maryland established	Colonial population reaches 380,000	Colonial population reaches 700,000

AN ECOLOGY OF PEOPLE AND PLACE

□ PEOPLE

As it had been for more than 12,000 years, the Chesapeake was an exclusively Indian world when European navigators began making their first tentative landings on North American shores in the early 1500s (see Map 6, page 52). Unlike their ancestors, who lived at the mercy of the climate and the seasons, Late Woodland people used their abilities to produce food, develop ever more sophisticated tools and weapons, and organize larger, more efficient social and political organizations to free themselves from complete dependence on their environment. They built their communities in clearings, surrounded by dense forests and bordering fresh and salt water wetlands. The larger of these towns were fortified communities of as many as a hundred roundhouses and long houses. These houses consisted of bark or grass covered sapling frames (see Figure 17, page 53).

All Late Woodland towns were located on or close to well-drained, fertile soils. Such soils were required by farmers growing corn, beans, squash, and tobacco. As in earlier Woodland times, their small fields had been slashed and

SIGNIFICANT EVENTS

- 1524—Giovanni da Verrazano pens the earliest written record of contact in the region
- 1550 to 1575—Susquehannock immigrants from the upper Susquehanna River supplant Shenks Ferry culture people in the lower Pennsylvania Piedmont
- 1571 to 1585—early Spanish and English colonization attempts fail
- 1600—Powhatan chiefdom develops along the James River Coastal Plain
- 1607—first successful English colony established at Jamestown, Virginia
- 1612—Demand for Virginia tobacco grows in Europe
- 1619—enslaved Africans first brought to the region
- 1634—Maryland founded at Saint Mary's City
- 1638—Virginian trader William Claiborne forcibly ejected from Maryland
- 1642 to 1649—Puritan Parliamentarians and Crown fight the English Civil War; Charles I is executed and England is declared a Commonwealth in 1649
- 1645—Protestant Parliamentarians led by Richard Ingles seize and plunder Maryland during English Civil War.
- 1649—Maryland's Act of Toleration protects Catholic, Protestant, and Quaker worship; Act repealed in 1654
- 1650—war and disease reduce regional Indian population to 2,400, one-tenth of pre-contact size; Colonial population rises from zero to 13,000 during the same years
- 1665—Charles II restores royal prerogatives throughout his domain
- 1675 to 1676—Susquehannocks dispersed and Jamestown burned during Bacon's Rebellion
- 1677—Treaty of Middle Plantation (now Williamsburg) reduces Virginia's Native American population to tributary status
- 1681—William Penn granted charter for Pennsylvania
- 1688—authority of Commonwealth's parliamentary system affirmed after James II deposed during the Glorious Revolution
- 1690 to 1720—Georgian architecture first becomes model for high-style housing
- 1693—College of William and Mary founded in Williamsburg
- 1695—Maryland moves capital to Annapolis
- 1699—Virginia's capital moved from Jamestown to Williamsburg
- 1700—African Americans comprise half the region's workforce and forty percent of its population
- 1707—Act of Union joins Scotland with England, Wales and Ireland as United Kingdom of Great Britain
- 1717—America's first theater opens in Williamsburg
- 1729—Baltimore, Maryland founded
- 1730—Lancaster, Pennsylvania established
- 1738 to 1745—Great Awakening religious revival sweeps region
- 1742—Richmond, Virginia is founded
- 1748—Petersburg, Virginia founded
- 1749—Alexandria, Virginia established
- 1750—colonial population rises to 380,000 (African Americans comprise more than one-third of population); Cooler and wetter climatic regime, known as Little Ice-Age, begins around this time
- 1762—Charlottesville, Virginia founded
- 1764—first tax levies, collectively known as Intolerable Acts, arouse discontent throughout region
- 1767—survey completed on Mason-Dixon Line between Maryland and Pennsylvania
- 1775—regional population reaches 700,000

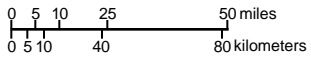
Map 6: Tribal Locations and Contact Archeological Sites



SHENK FERRY CULTURE (1300-1550's)
 SUSQUEHANNOCKS (1550-1670's)
 CONOYS (1670-1750's)

LEGEND

- Archeological Site
- National Natural Landmark
- Natural or Cultural Feature
- National Historic Landmark
- Bay
- Plain
- Piedmont



KEY LOCALES (MAP 6)

CONTACT	Nottingham	Roberts	Jordan's Journey
ARCHEOLOGICAL SITES	Piscataway Complex	Schultz-Funk	Kiser
District of Columbia	Port Tobacco	Shenks Ferry	Lazy Point
Nacochtank	Posey/Indian Head Complex	Strickler	Leedstown Bead Cache
Maryland	St. Mary's City	Washington Boro complex	Little Marsh Creek
Arrowhead Farm	Thomas	Wrightsville	Maycock's Point
Broadneck	Pennsylvania	Virginia	Mount Airy
Burle	Billmyer	Chicacoan complex	Owings
Chicone	Brand	Chickahominy complex	Pamunkey Indian Reservation
Compton	Byrd Leibhart	DeShazo	Pasbehegh/Governor's Land
Cumberland	Conestoga	Downing	Potomac Creek
Ferguson	Conoy Town complex	Flowerdew Hundred	Taft
Heater's Island	Frey-Haverstick	Hatch	Powhatan/Tree Hill Farm
Jefferson-Patterson	Lancaster County Park	Indian Point	White Oak Point
Locust Neck	Oscar Leibhart	Indian Town Farm	Woodbury Farm
			Wright

burned from the forest floor. Groups of families and friends from these towns moved periodically to smaller camps to fish, hunt game, and gather shellfish and wild plants in season. And entire communities relocated every ten or twenty years to new lands, when they had used up the resources at their former site. Concentrated within strictly defined areas and surrounded by vast, uninhabited borderlands, these Native American heartlands were widely separated islands of settlement in the otherwise unbroken expanses of the northeastern woodlands.

Along the coast, many of these settlements were linked into political units held together by powerful chiefs. Among the more influential of these units were the Powhatan chiefdom along the James

and York Rivers and the Potomac chiefdom in the Rappahannock and Potomac Valleys. Supported by priests and warriors, these chiefdoms held sway over territories measuring many hundreds of square miles. Farther west in the Piedmont, Iroquoian speaking Susquehannock people moved south from the upper Susquehanna River. By the late 1500s, they occupied the lands of a nation known to archeologists as Shenks Ferry people. To the south of these lands, Monacans, Manahoacs, and other Piedmont people found themselves increasingly at war with expanding Coastal Plain chiefdoms and the newly arrived Susquehannocks. These wars came about when coastal chiefdom and Susquehannock warriors and hunters pressed into upland Piedmont forests in search of white-tailed deer, black bears, and other game animals far less numerous in their own homelands farther east.

This wholly Indian world changed forever with the coming of Europeans (see Map 7, page 54). The open waters of Chesapeake Bay became the stage for the earliest direct contacts between these peoples in the region. The earliest written record of contact in the region is a chronicle of the 1524 voyage of Giovanni da Verrazano, an Italian captain sailing in the service of King Francis I of France. Other early impressions were recorded by Spanish priests from Florida, who tried to establish a mission at what they called *Ajacán* on the James River in 1570, and English Roanoke colonists,

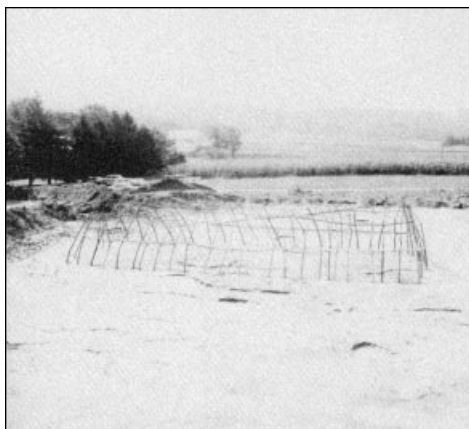
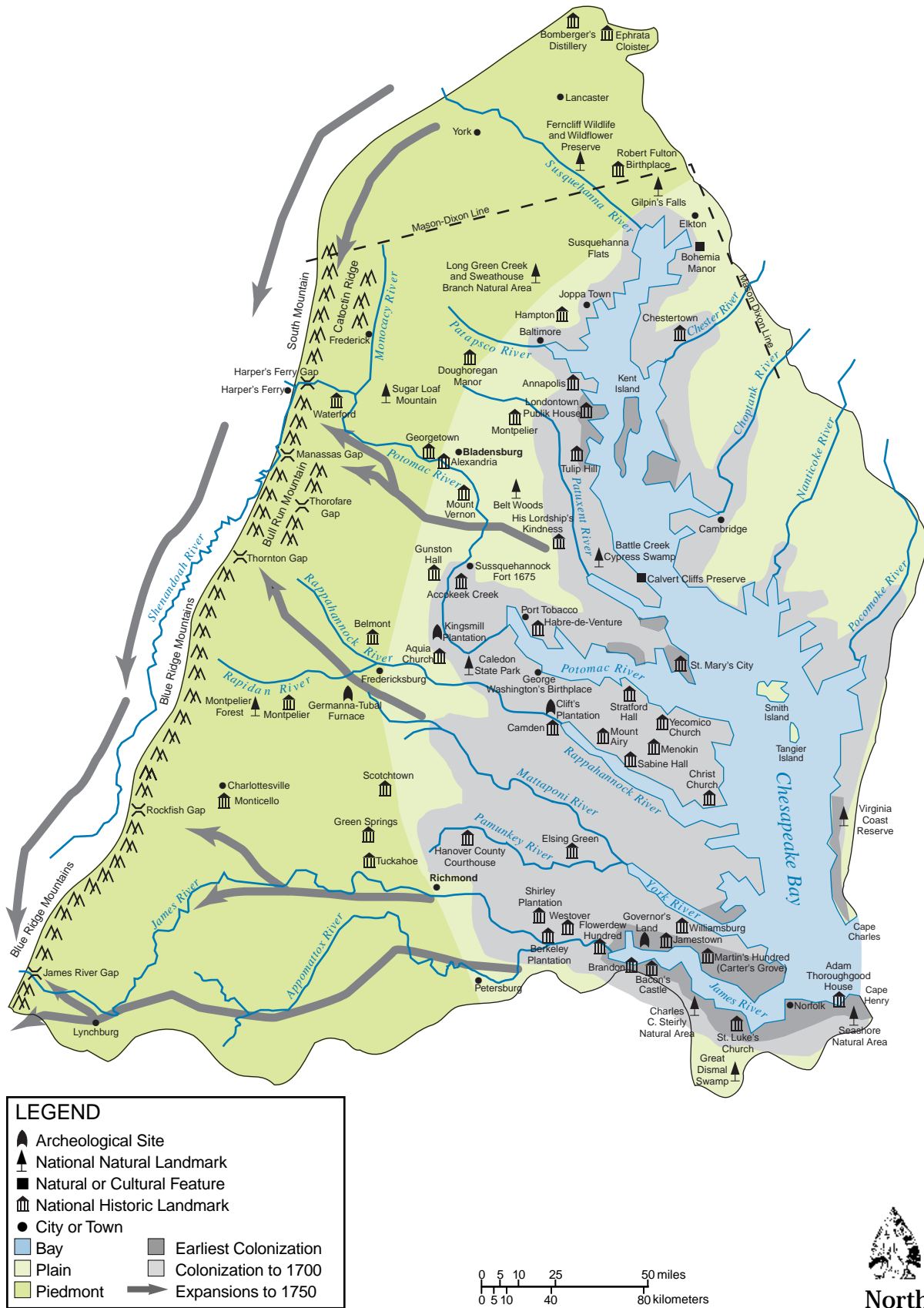


Figure 17: Filling in a Post-Mold Pattern: Reconstructed long house at the Strickler archeological site, Lancaster County, Pennsylvania, 1969. (Photograph from *Susquehanna's Indians* used by permission of the Pennsylvania Museum and Historical Commission, ©1984.)



Ajacán, Virginia

Map 7: Contact and Colonization, A.D. 1500 to 1775



KEY LOCALES (MAP 7)

NATIONAL HISTORIC LANDMARKS

District of Columbia

Georgetown Historic District [18th-19th centuries]

Maryland

Accokeek Creek Site [A.D. 1000-1675], Prince George's County

Chestertown Historic District [18th-19th centuries], Kent County

Doughoregan Manor [ca. 1727], Howard County

Habre-de-Venture [1771], Charles County

His Lordship's Kindness [ca. 1735], Prince George's County

London Town Publik House [ca. 1750], Anne Arundel County

Montpelier [ca. 1745], Prince George's County

Mount Clare [ca. 1763], Baltimore City

Tulip Hill [1756, 1790], Anne Arundel County

Annapolis Landmarks

Brice House [1773]

Chase-Lloyd House [1774]

Colonial Annapolis Historic District [17th-18th centuries]

Hammond-Harwood House [ca. 1774]

Maryland State House [ca. 1772]

William Paca House [1765]

Peggy Stewart House [1764]

Whitehall [ca. 1765]

St. Mary's City Landmarks

Resurrection Manor [ca. 1660], Saint Mary's County

Saint Mary's City Historic District [1634-1695], Saint Mary's County

West Saint Mary's Manor [18th century], Saint Mary's County

Pennsylvania

Bomberger's Distillery [1753, 1840], Lebanon County

Ephrata Cloister [1746], Lancaster County

Robert Fulton Birthplace [ca. 1765], Lancaster County

Stiegel-Coleman House [1758], Lancaster County

Virginia

Aquia Church [1757], Stafford County

Bacon's Castle [ca. 1655], Surry County

Belmont [1761], Stafford County

Berkeley Plantation [1726], Charles City County

Brandon [ca. 1720], Prince George County

Camden [17th-19th centuries], Caroline County

Christ Church [1732], Lancaster County

Elsing Green [1758], King William County

Green Springs Historic District [18th-19th centuries], Louisa County

Greenway Court [1762], Clarke County

Gunston Hall [1758], Fairfax County

Hanover County Courthouse [1735], Hanover County

Martin's Hundred Carter's Grove [17th-18th centuries], James City County

Menokin [ca. 1769], Richmond County

Monticello [1770-1789], Albemarle County

Montpelier [ca. 1760], Orange County

Mount Airy [1762], Richmond County

Mount Vernon [1743, 1792-1799], Fairfax County

Sabine Hall [ca. 1730], Richmond County

Saint John's Episcopal Church [1741], Richmond County

Saint Luke's Church [1682], Isle of Wight County

Scotchtown [1719], Hanover County

Shirley Plantation [1770], Charles City County

Stratford Hall [1730], Westmoreland County

Adam Thoroughgood House [ca. 1640], Virginia Beach

Tuckahoe [ca. 1712], Goochland County

Waterford Historic District [18th-19th centuries], Loudoun County

Westover [1734], Charles City County

Yecomico Church [ca. 1706], Westmoreland County

Alexandria City Landmarks

Alexandria Historic District [18th-19th centuries]

Christ Church [1768]

Gadsby's Tavern [1752, 1792]

Fredericksburg City Landmarks

Kenmore [1752]

James Monroe Law Office [1758, 1786-1789]

Rising Sun Tavern [1760]

Williamsburg City Landmarks

Bruton Parish Church [1715]

Peyton Randolph House [1715]

James Semple House [ca. 1770]

Williamsburg Historic District [1633-1779]

Wren Building, College of William and Mary [1702]

Wythe House [ca. 1755]

who attempted to settle along the nearby North Carolina coast in 1585. The Europeans marveled at what they considered the strangeness of the inhabitants' customs, the temperate nature of the climate, and the lushness of the land.

The native subjects of these observations paddled their log dugout canoes into the Bay to visit the ships anchored off their shores and watched the strangers scribble on pieces of paper. Attracted first by the calm waters of the sheltered bay, European mariners soon charted the deepest channels, where oceangoing sailing ships could drop anchor within coves and inlets.


Trade and commerce dominated initial contacts on these waters. The local inhabitants exchanged furs, food, and facts for metal tools, glass beads, and other European items brought by the growing and diversifying group of visitors. Most of these were men of different nationalities and faiths who only stayed for a few days or weeks. Others tried to remain longer, but they were inexperienced and poorly supplied. Initial colonial efforts, such as the *Ajacán mission* on the James and Roanoke, collapsed quickly. But the English learned from past mistakes, and their Virginia Company managed to establish the first permanent



***Ajacán mission,
Virginia***



Figure 18: Imagining a Colonial Landscape: 1660 Jamestown street scene based on written records, museum artifacts, and archeological research.
(Illustration by Keith Rocco, courtesy of the National Park Service)


Jamestown, Virginia
Bohemia Manor,
Maryland

European settlement at *Jamestown* in 1607 (see Figure 18). Colonists led by captains John Smith and Christopher Newport soon fanned out along the Coastal Plain. They were searching for gold, fur, potent ginseng roots, and a hallucinogenic plant they called Jimson (Jamestown) weed. No gold was found, the fur trade proved unreliable, the ginseng roots were not potent enough to satisfy consumers, and Jimson weed never caught on. Two other plants, growing not wild in forests but cultivated in Indian fields and gardens, would become the economic mainstays of English colonization along the Chesapeake. One of these, sweet or Indian corn, would ultimately feed much of the world. The other, tobacco, would soon become the region's wildly popular and uniquely irresistible export.

Word of the riches to be had in the Chesapeake soon attracted settlers. Thousands began sailing to the region from southern English ports. Malaria, yellow fever, and dysentery killed many of these men and women during their first years of seasoning, as the process of acclimatization was known in the region.

In fact, far more people died from these diseases than in the seemingly endless wars fought with the region's native inhabitants between 1610 and 1675. But neither the threats of disease nor the dangers of attack discouraged settlers searching for trade, wealth, and deeds to pieces of the region's land.

A continual stream of English immigrants replenished the numbers Jamestown lost to disease and war. First brought to the Chesapeake in 1619, a small, slowly growing number of enslaved Africans added to the region's population. Other people attracted to the Chesapeake's bounty settled at various places in the region. For example, the Eries and other Great Lakes native people driven from their homelands by Iroquois warriors during the second quarter of the seventeenth century tried to settle in the Piedmont. And traders traveled south from the Dutch New Netherland colony along the Hudson and Delaware Rivers in search of pelts and plunder. One of them, a central European named Augustine Hermann, established a settlement, christened *Bohemia Manor* in honor of his homeland, at the northeast end of the Bay in 1662.

Virginian claims to the region did not go unchallenged. Powhatan leaders resisted Jamestown colonists until their final defeat in 1646. Susquehannocks fought too, armed with muskets obtained from Dutch traders and Swedish colonists, who were settling their own colony on the banks of the Delaware River between 1638 and 1655. The Susquehannocks challenged anyone asserting authority over their upper Bay domain. And the Spanish authorities issued protests from their capital at Saint Augustine, continually threatening to drive Virginians away from a region they considered part of Florida.

English Catholics established the proprietary colony of Maryland in 1634, led by a favorite of the king named Leonard Calvert, or Lord Baltimore. This marked the most significant challenge to Virginia's authority in the region. Maryland colonists—traveling on transports named the Ark and the Dove—established their first

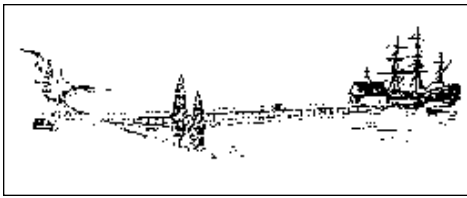


Figure 19: Moving Goods by Water along the Coastal Plain Landscape: Reconstruction of a Chesapeake landing during colonial times. (Sketch by Edwin Tunis, used by permission of HarperCollins Publishers ©)

settlement on the banks of a deep Potomac River bay at a place they christened *Saint Mary's City*. The new settlers purchased land there from the local Yeocomico people, but they soon found themselves embroiled in disputes with both Susquehannock warriors and Virginian colonists, who resented their presence and claimed their land.

These disputes periodically broke out into open warfare. In 1635, for example, the Calverts confronted a Virginian settler named William Claiborne. In 1631, Claiborne had set up a trading post at the southern tip of Kent Island, near present-day Annapolis, to dominate trade with Susquehannocks controlling access to fur sources from the interior. He was defeated by Marylanders in a noisy but relatively bloodless naval skirmish on the Pocomoke River in 1635, but he continued the fight to remain on Kent Island. Though driven from Maryland in 1638, Claiborne carried on the contest from Virginia.

Over-hunting and warfare caused the collapse of the fur trade by mid-century. Plantations such as *Martin's Hundred*, *Clift's Plantation*, and *Governor's Land* replaced trading posts as the most important settlements on the Bay. Planters first erected hastily constructed, earthfast structures whose wooden support posts were sunk directly into the ground rather than in stone, brick, or cement foundations. Although earthfast construction allowed settlers to build houses quickly and cheaply, such foundations rotted swiftly in the wet soils of the region. More substantial structures, known as great or manor houses, only began appearing in large numbers later in the seventeenth century. Most of these buildings were frame and brick edifices resting on stone or

masonry foundations and constructed in the high-styles then popular in England.

Whatever their size or level of style, houses and surrounding plantations were situated on rich, black soils along navigable stretches of waterways coursing through the Coastal Plain. Planters living along shallower stretches had long wooden wharfs built out into deeper waters to accommodate ocean-going ships (See Figure 19). Colonists quickly revealed a preference for home sites, fields, and other tracts already cleared by Indians as they moved onto lands purchased or seized from their original owners. These colonists depended on Coastal Plain waterways to link their scattered sites—plantations, farms, factories, tobacco storehouses (also known as rollhouses, a reference to rollwagons (see Figure 20), large, barrel-like hogshead casks drawn by horses, mules, or oxen, used to store and convey tobacco from farms to docks), shops, churches, courthouses, taverns, and inns (called ordinaries)—with the few small cities established during the first century of colonization. These included *Jamestown*, *Williamsburg*, and *Saint Mary's City*.

Settlers milled lumber cut from local forests to build small shallow drafted one or two masted sailing ships, known as shallops, and other small craft. These were used to ply the shallower tidewater bays and inlets, where English colonists located most of their settlements. Slowly, the Bay grew into an important commercial artery. Oceangoing sailing ships carrying settlers, slaves, and imports from Europe, Africa, and the Caribbean laid up alongside various docks to take on



Saint Mary's City, Maryland



**Jamestown and Williamsburg, Virginia
Saint Mary's City, Maryland**



Martin's Hundred, Clift's Plantation, and Governor's Land, Virginia



Figure 20: Moving Goods Overland Across the Coastal Plain Landscape: Reconstruction of an ox-drawn hogshead roll wagon used to convey tobacco on rolling roads. (Sketch by Edwin Tunis, used by permission of HarperCollins Publishers ©)

cargoes of lumber, grain, tobacco, and other Chesapeake products. On shore, small fishing communities grew up alongside major port towns. Tidal water and wind powered mills and pumps began draining more accessible wetlands for fresh groundwater.

European settlers faced challenges they could not have predicted. For example, the tidewater soils—well watered and highly organic—were initially too rich for European crops. Wheat planted in new fields grew extravagantly abundant foliage, but produced little grain. Tobacco, however, thrived in such soils (see Figure 21). But tobacco was a demanding crop, requiring constant care and exhausting even the richest ground after three or four years. Large amounts of cow, horse, pig, and chicken manure spread on these spent fields could restore the degree of fertility needed for wheat, corn, flax, and other crops, but manuring was time consuming and expensive. Instead, because the expanses of land in the tidewater seemed limitless, most planters abandoned their old fields and temporary support structures and moved on. Such practices soon produced the tidewater landscape that colonial observers decried—one of broken down farms and weed-strewn, exhausted fields.

Demand for labor increased as cultivation consumed ever-larger expanses of new lands. Plantation owners used indentured servants, free laborers, and, increasingly, enslaved Africans to grow tobacco for export and to raise corn, cotton, flax, cattle, and pigs for local

consumption. African Americans made up fully half the region's workforce by 1700. Not all Africans coming to Chesapeake Bay labored as slaves. And, most of the region's first laborers were impoverished Europeans who agreed to work for a stipulated number of years for landowners willing to pay their passage. African servants of frontier traders occasionally played important roles, establishing close relationships with Indian clients. By learning Indian languages and becoming familiar with their customs, several became significant culture brokers, go-betweens possessing skills essential to conduct business and diplomacy among people belonging to vastly different cultures.

As conflict continued to plague the region, diplomatic skills became increasingly important. Intercolonial struggles and wars with Indians devastated communities everywhere. Conflicts between rich and poor and between those favoring local control and those defending royal privilege sometimes broke out into open warfare. And a combination of economic competition, border disputes, and religious disagreements kept Virginia, Maryland, and their provincial neighbors to the north and south in constant conflict.

Old World struggles, too, spilled across the ocean to ensnare Chesapeake people. These included the English Civil War of 1642-1649, the Glorious Revolution of 1688, and the four European imperial wars fought in the Americas by Britain, France, and Spain between 1689 and 1760. The first shots of this last war, known as the Seven Year's or French and Indian War, were fired in 1754 by troops led by a young Virginian militiaman named George Washington. Sent beyond the Blue Ridge by Virginia's royal governor, Robert Dinwiddie, Washington and his troops were contesting French expansion into western lands claimed by his province.

Other disputes dragged on for years. The protracted boundary dispute between Pennsylvania and Maryland, which had begun when Pennsylvania received its charter in 1681, was only settled with the



Figure 21: Agricultural Landscape: Maryland tobacco field and barns.
(Photograph courtesy of the Maryland Historical Trust)

completion of the *Mason-Dixon survey line* in 1767. Protestants periodically tried to drive away Catholic colonists, as when Puritans supported Parliamentary partisan Richard Ingle's seizure of Maryland from the Catholic Calverts in 1645, during the English Civil War. At other times, Maryland Catholics tried to suppress Protestant denominations. And Protestants also fought among themselves in these years. Anglicans supporting the king periodically clashed with militant Puritans; Maryland Catholics allied themselves with one Protestant faction or another when political struggles swept through the region. Finally, but not in an eager or an organized manner, contending provinces and factions had to band together to resist both Indian attacks and the threatened invasions of rival European powers.

Native and new diseases continued to ravage communities without regard to their politics, religion, or race. Indian nations, unable to replenish populations devastated by war and new diseases such as smallpox, were forced to submit to English rule. The English were able to replace losses with a seemingly endless flow of new immigrants and supplies from the mother country and other colonies. Drawing on their vast support network, which stretched across the North Atlantic world, the English finally managed to consolidate political control over Chesapeake Bay's Coastal Plain by 1700.

The English employed a variety of frameworks to govern their colonies. Virginia began as a charter colony under the control of the Virginia Company. The Crown granted charters to boards of corporate stockholders extending rights to colonize and govern often vaguely demarcated areas not yet reduced to royal control. In 1624, Virginia also became the first English province to become a royal colony under the direct control of the Crown. Maryland and Pennsylvania, by contrast, were organized as proprietary colonies under the control of influential proprietors granted authority over particular areas by the English crown. The Penn family was given control of the government and all lands within Penn-

sylvania; the Calvert family, whose successive heads held the title Lord Baltimore, had the same rights in Maryland. Both families held monopolies on the sale and rental of all provincial lands within their proprietary bounds, and both zealously maintained these rights up to the time of the Revolution.

The English organized their colonies into political units, each with its own boundaries, rights, and responsibilities. They called these units provinces, counties, parishes, townships, municipalities, and hundreds. The origin and meaning of hundreds—and the exact amount of land they included—are only vaguely understood today. We do know that hundreds were judicial districts, larger than parishes and smaller than counties. An area could be considered a hundred if it either contained a hundred eligible voters or could mobilize a like number of militiamen.

Social boundaries, too, became more pronounced, as profits from free and slave labor concentrated wealth in the hands of influential families and, depending on the type of colony, proprietary authorities, corporate directors, or placemen appointed to positions of power and influence by the Crown. Governors-general, appointed by the Crown and responsible for both the governance and defense of their colonies, consulted with provincial councils and assemblies made up of these new elites. By 1700, these groups had established new state capitals at *Annapolis* in Maryland (1695) and at *Williamsburg* in Virginia (1699). Several Chesapeake cities were laid out in accordance with carefully designed ground plans. Others developed in a somewhat more haphazardly spontaneous manner. Many population centers grew up around county courts, community churches, river fords, and important crossroads. The legal and religious needs of isolated communities were served by judges and ministers making regularly scheduled circuits through thinly populated districts.

Numbers and densities of English and African populations increased dramati-



***Mason-Dixon survey
line, Maryland and
Pennsylvania***



***Annapolis, Maryland
Williamsburg, Virginia***

COLONIAL ANNAPOLIS HISTORIC DISTRICT. Designation as an historic district preserves the distinctive street plan and buildings constructed after Annapolis was made Maryland's capital in 1695 (see Figure 22) Unlike the earlier capital at Saint Mary's City, which was built alongside a relatively small, shallow harbor that was close to the mouth of the Bay and vulnerable to sudden attacks from the sea, Annapolis was located in a more secure position farther up the Bay on the banks of a well-sheltered deepwater harbor. Easier to reach by its citizens, it was also much farther from Virginian rivals.

Provincial governor Francis Nicholson planned the city. Naming it for his sovereign, Queen Anne, he used the Baroque layout of the French court at Versailles and adapted by architects Christopher Wren and John Evelyn during the rebuilding of London after the Great Fire of 1666. The provincial State House and the state-supported Anglican church were located in circles on high ground dominating the town and the harbor. Narrow streets stretched from these circles like the spokes of a wheel. Although the plan was designed to provide clear vistas of city's twin centers of authority, lack of expertise resulted in misalignment of several streets.

Construction of the current State House began in 1772 and was completed twelve years later. The Continental Congress met in session in the building from 1783 to 1784. During that time, Congress ratified the Treaty of Paris ending the Revolutionary War and accepted Washington's resignation of his commission as commander in chief of the Continental Army. The city's oldest standing building, the Old Treasury (built between 1735 and 1737) stands near the State House. Although some streets have been widened and others renamed, the modern-day street plan is little altered from the original design.



Figure 22: Urban Landscape Preserved: Colonial Annapolis Historic District, 1995. (Photograph courtesy of the Historic Annapolis Foundation)



**Port Tobacco and
Baltimore, Maryland**



**Richmond, Shoccoe's
Warehouse, Petersburg,
Alexandria, and
Hunting Creek
Warehouse, Virginia**

cally in most parts of the Coastal Plain in the 1700s. Population expansion and the closing of established harbors, such as *Port Tobacco* after it filled with silt eroded from cleared fields and forests, required construction of new cities and towns. Many, such as *Baltimore* (established in 1729), were built alongside wide harbors providing sheltered deep water anchorages for large numbers of oceangoing vessels. Others were constructed on mostly level plots of land near rapids. Such plots were highly valued, as they could both accommodate warehouses and be near the fall of water needed to power mill wheels. The larger of these towns were built at the heads of navigation of rivers (the uppermost limits of oceangoing boating) in fall line locales such as *Richmond* on the James (founded at the site of *Shoccoe's Warehouse* in 1742), *Petersburg* on the Appomattox (established in 1748), and *Alexandria* on the Potomac (founded at the *Hunting Creek Warehouse* in 1749).

Although swamps and pine barrens were hard to penetrate, farms grew on clear

cut, arable land throughout the Coastal Plain as more enslaved Africans were brought into the provinces of Maryland and Virginia. Larger farms relying on the labor of large numbers of slaves grew into opulent plantations. Slaves cut timber into fence rails to enclose ever larger fields, to demarcate their master's property, and to protect crops from free ranging livestock. Much more than fences came to separate people living side by side as slaves and freemen. These social divisions created a new world in tidewater areas, a world marked by increasing extremes of wealth and poverty.

As the most favorable Coastal Plain locales were taken up, tidewater speculators began staking claims to lands above the fall line in the Maryland and Virginia Piedmont. Although European explorers traveled up the rivers coursing through the Piedmont by the 1650s, no permanent English settlements had yet been built in the interior. This situation changed dramatically after Bacon's Rebellion broke out in 1675. Named after its leader, Virginian Nathaniel

Bacon, this revolt broke out when poorer settlers, resenting the government's failure to protect them from Indian attack (among other grievances), rebelled against royal authority. Fighting started after colonists attacked Susquehannocks, who had been ordered by Maryland authorities to settle on the Potomac to protect provincial frontiers from attacks by other Indians. Retaliating Susquehannock war parties soon devastated farms along the Blue Ridge frontier. Unable to avenge themselves on the Susquehannocks and resenting the prerogatives of powerful, well placed landowners whose privileges came in part from royal favor, angered colonists ransacked the homes of wealthy planters and captured and burned the city of *Jamestown*. After gaining control over much of the colony, Nathaniel Bacon died suddenly (probably of dysentery), and the revolt was quickly suppressed. Taking advantage of the situation, Virginian authorities reduced all remaining Indians in the province to tributary status at the 1677 Treaty of Middle Plantation (present-day *Williamsburg*) regardless of whether or not they had supported the Susquehannocks in the fighting. Wealthy tidewater families soon claimed the lands of the Susquehannocks and those of other Indian nations driven out by the fighting.

Tidewater residents and new immigrants from Europe purchased the first Piedmont lands and established farmsteads near the banks of the James and other major rivers. They dammed fast running streams flowing into these rivers and erected mills to grind grain, saw wood, run bellows, and crush iron and other ores extracted from nearby mines and quarries. An influx of Scots-Irish and German refugees, forced from their own homelands, quickened the pace and scope of penetration in the early 1700s. These immigrants began moving southwest from Pennsylvania's Delaware Valley into unsettled portions of the Piedmont.

They and other settlers encountered a Piedmont landscape dominated by dense, tangled forests. These had not existed before warfare, disease, and dislocation virtually ended Indian burning practices that cleared undergrowth from large areas of woodland. Armed with steel axes and using water driven saw mills, colonists soon began clearing timber from the richest, best drained soils. They used whole trees, sawn planks, and split shingles to build log cabins and frame houses and barns. And, using river cobbles, quarried stone, and bricks fired from riverbank clay, they built homes, churches, and other structures. They fashioned split wooden rails



Jamestown, Virginia



Williamsburg, Virginia

SOTTERLEY PLANTATION. *The plantation was built in 1710 on a bluff providing a commanding view of the Patuxent River in Maryland's Saint Mary's County. Like most other tobacco plantation houses of the period, Sotterley's manor house was originally constructed as a vernacular wood-frame earthfast/false plate structure. Later modifications transformed the building into an opulent Georgian show place, complete with a majestic winding Chinese Chippendale staircase and a wood-paneled drawing room and parlor.*

Further modified in more recent years into a Colonial Revival country seat, this building today stands within a ninety-acre farming tract. Planting fields, a formal garden, a brick necessary and stable, a river wharf, the rolling road running from the wharf to the plantation's tobacco barns, and one of the few slave cabins (built around 1840) surviving to the present day (see Figure 23), are preserved on the property.



Figure 23: Preserving a Landscape of Servitude: Slave cabin at Sotterley Plantation, 1998.

(Photograph courtesy of the National Park Service)



Lancaster, Pennsylvania
Frederick, Maryland
Charlottesville, Virginia

and piled fieldstones into fences surrounding fields and pens. Earthen dams impounded ponds that watered their free ranging livestock and provided power to drive mill wheels. Laboring on their own holdings, Piedmont settlers created a patchwork of miniature environments that increasingly transformed the region's landscape. Level, graded sunken roads bordered Piedmont fields, forests, and millponds. Hard packed dirt paths soon grew into a network linking communities throughout the area. Before long, town centers began growing in places such as *Lancaster*, Pennsylvania (1730); *Frederick*, Maryland (built as a county seat in 1748); and *Charlottesville*, Virginia (made a county seat in 1762).

Almost the entire Chesapeake Bay region was intensively settled by the mid-1700s. In the Coastal Plain, a small number of established families and the newly rich acquired more and more slaves and erected ever larger and more lavish plantation houses. Most Coastal Plain landowners lived more modestly, in small frame or brick houses on holdings rarely over two hundred acres. Farther inland, the few larger estates of powerful families (such as *Monticello*, begun by Thomas Jefferson at Charlottesville in 1769) were surrounded by the more modest homesteads of newcomers from the tidewater and those of even newer immigrants from England, Scotland, Ireland, and the German states. Seeking new lands and new profits, tidewater natives and Piedmont pioneers soon began staking claims to Indian territory beyond the Blue Ridge Mountains.

Social tensions proliferated between rich and poor, male and female, slave and free, old settler and newcomer. These provided fertile ground for the Great Awakening, a religious revival movement that swept through the British American provinces between 1738 and 1745. Promoting social and racial equality in the eyes of God, its leading lights—including Presbyterian minister Samuel Davies, New England immigrant Baptist preacher Shubal Stearns, and African American missionary John Marrant—encouraged a more personal, emotional

form of worship that freed participants from the restraints of more controlled church hierarchies. Also on the religious front, forerunners of today's Plain Sect communities and members of other pious orders persecuted in Europe established settlements in the Piedmont country, drawn by promises of religious tolerance. These immigrants were meticulous craftspeople, and their experiments with existing technologies resulted in the development of such improvements as the Conestoga wagon and the Pennsylvania long rifle.

Although they were growing more and more able to produce life's necessities themselves, Chesapeake Bay colonists relied on trade for products that were locally unavailable for luxury items, and for new ideas and fashions. The British attempted to limit provincial development and raise their colonial income by regulating this trade and imposing new taxes. These tactics caused increasing unrest throughout the region in the third quarter of the eighteenth century. By 1775—the end of the period covered by this chapter—a rebellion had broken out in British America. Feeling threatened by the extension of imperial authority, powerful families such as the Washingtons, Lees, and Jeffersons led large numbers of Chesapeake Bay colonists in revolt.

□ PLACE

As in all earlier periods, geological research supplies much of the available information about the environment in the Chesapeake Bay region between 1500 and 1775. Like archeologists, geologists use radiometric techniques to date bits of organic matter in naturally buried soil strata recovered from core samples, drilling at sites throughout the region. But such techniques must be used with care. Single assays sometimes render date ranges extending over several hundred years. The broadness of such date ranges requires the testing of multiple samples from deposits less than five hundred years old.

Archeologists, too, continue to uncover floors of living spaces as well as pits,



Monticello, Virginia

shell heaps, and other deposits containing bones, charred wood and plants, pollen, and other indicators of past environments. All plants and animals require specific environmental conditions. Comparative analyses of remains of biological communities in a single locale can reveal the range of climate conditions at a particular time.

Written records first begin to supplement geological and archeological evidence as sources of environmental information during this period. Ships' logs, settlers' diaries, more detailed observations by contemporary naturalists such as John Banister and John Clayton, and other manuscripts produced by European colonists preserve the earliest written records of the region's plants, animals, geology, weather, and climate. And several English herbarium collections preserve to this day the plant specimens gathered by botanists such as Hugh Jones and William Vernon. Lacking precise instruments, these observers of nature were generally limited to impressionistic statements regarding soils, winds, waves, or weather. Although their writings document an environment generally resembling current conditions, scholars continue to assess the ecological impact of deforestation, intensive cultivation, and other environmentally transforming colonial practices.

According to both archeological evidence and colonial observations, the region's climate in the 1500s was somewhat wetter and cooler than it is today. Weather moderated between 1650 and 1750. Then, from 1750 to 1800, temperatures cooled into what is often called a Little Ice-Age. But the form and content of Chesapeake Bay itself largely resembled its current condition. Very little is known about plant life in the Bay's open waters during this period. But archeological evidence affirms written accounts noting that oysters and many species of fish, mammals, shellfish, and plankton lived in these waters. Sea grasses, juvenile fish, crabs, and migratory waterfowl made their homes in shallower portions of the Bay.



Figure 24: Nature's Hand on the Landscape: A wind-blown sand dune advances on a Coastal Plain forest, Cape Henry, Virginia, ca. 1905. (Photograph courtesy of the Detroit Publishing Company and the Library of Congress)

Then as now, sandy and gravelly beaches lined Bay shores. Beaches covered by tidewaters supported communities of shellfish, insects, and migratory birds. Salt marsh and salt meadow cordgrasses, American holly, saltgrass, and other plants resistant to salt spray supported a wide variety of insects, mammals, and birds; these plants also stabilized dunes and bluffs above the high tide mark (see Figure 24). Preserved pollen samples affirm colonial accounts of extensive salt, brackish, and freshwater marshes and swamp lands alongside the region's watercourses. An abundance of species such as wild celery, coontail, common waterweed, eelgrass, southern naiad, and curly pondweed (an early introduction from Europe) were noted by contemporary observers.

Neither Indians nor colonists spent much time in Chesapeake swamp lands, aside from using them as places for refuge during conflict or for brief hunting, fishing, and gathering excursions. Mosquitoes, flies, and other pests deterred visitors in warmer months. Early colonial activities altered wetland habitats—small landfills undergirded docks and wharves in sheltered harbors, and dikes enclosed salt marsh grasses serving as cattle pasture—but did not have an extensive impact on water plants or their environments. This situation changed when deposits of iron nodules were discovered in bogs during the 1730s and 1740s. This discovery stimulated the development of iron furnaces and mills at Coastal Plain locales to smelt bog ore into pig iron ingots and

cast iron stove plates, fire backs, and other wares. And soils eroding from forest lands cleared to fuel these furnaces washed ever greater amounts of soil sediment into Bay waters, decreasing the amount of light reaching submerged plants. Although direct evidence is lacking, such changes almost surely damaged plants not adapted to lower light levels.

Mature, old growth forests covered as much as 95 percent of the region in 1500. Southern mixed hardwood forests grew throughout the Coastal Plain. Oaks and hickories dominated higher ground, while red maples, gums, Atlantic white cedars, and bald cypresses grew in swampy lowlands. Loblolly and other pines occupied poor or sandy soils. Farther inland in the Piedmont, American chestnuts and a variety of oaks, poplars, and hickories dominated the forests. Shrubs, berry bushes, sedges, and grasses grew on forest margins, meadows, swamps, and other sunny clearings opened by flooding, windfalls, or fires. Some of these fires occurred naturally or by accident; others were deliberately set to clear underbrush and drive game during group hunts.

By 1775, colonists had cut and burned as much as 30 percent of the Coastal Plain forests. Tidewater bog iron furnaces also consumed increasing quantities of wood. Farther inland, Piedmont forests also began falling to the axes of settlers clearing lands for farms, firewood, fencing, and charcoal to fuel their new iron works at Virginia's *Tubal Furnace* and other locales. Ironically, slaves forced to clear-cut old-growth trees to fuel the Tubal Furnace created the huge tangled expanse of snarled undergrowth south of the Rapidan River that later entangled contending Union and Confederate armies at the battles of Chancellorsville (fought in early May, 1863) and the Wilderness (fought in the same place one year later).

Because of the rapid loss of open space and the sixty or so species of exotic Old World plants brought in by settlers, some native species declined in number. Many of the new species were deliberately

introduced. Some were cultivated plants such as wheat, apple trees, and grape vines. Johnny jump-up (the ancestor of the modern pansy), mallows, and oxeye daisy were among the many European plants imported for their medicinal value. Ornamental plants, such as lilacs (first brought to England from Persia during the 1500s) were carried to Virginia by early settlers and fostered in garden beds. Dandelion leaves were prized as salad greens and brewed to make diuretic teas. Other plants, such as Queen Anne's Lace, were weeds spread from seeds accidentally brought into the country in bales of fodder, seed bags, livestock hides, or manure. Newly introduced tropical plants, such as oranges, only flourished in the artificial environments of greenhouses.

Both natives and newcomers took care to protect desirable plants. Indian people practiced rituals respecting plant spirits; colonists used laws to protect white oaks and other economically valuable trees from overcutting. Other native plants were cultivated in colonial gardens, such as poison ivy, which was prized for its shiny leaves. But the most significant impact on regional vegetation patterns were the new uses for established crops such as tobacco and the introduction of exotic, Old World field crops. We still do not fully understand the ecological effects of field agriculture. But, as mentioned earlier, tobacco cultivation quickly used up soil fertility, requiring frequent moves to new and ever-larger expanses of land. Abandoned farmsteads and fields created a messy, depleted physical landscape that encouraged the growth of weeds and pests. And contemporary descriptions remark on the increasing murkiness of many regional rivers and streams, affirming that ground-clearing caused growing amounts of sediment to pour into regional rivers.

As for diet, Indian people ate shellfish and crafted their shells into beads and other ornaments. The first European colonists also depended on shellfish for subsistence. At first, they even adopted shell beads (known as wampum, peake, or roanoke) as their currency, until enough



Tubal Furnace, Virginia

of their own coinage was available. Shell heaps and other archeological evidence confirm what the earliest colonial written records document: the presence of extensive oyster beds in Chesapeake Bay waters. Crabs, shrimp, hard and soft clams, and other shellfish were also abundant. At first, people collected most shellfish from shallow waters. Later, they used metal tongs mounted on long wooden poles, which enabled them to exploit oyster beds in deeper waters. But despite these harvesting activities, neither group had the technology nor the desire to exhaust the riches of Chesapeake Bay shellfish communities during this period of contact and colonization.

Those trying to exploit the Chesapeake Bay region's natural environment faced significant challenges. Early European chroniclers wrote of the clouds of mosquitoes and flies that rose over Bay shores in warmer months, and they chronicled the struggles of farmers with the many kinds of worms, beetles, and other insects that preyed on their garden plants and field crops. These writers also complained of the fleas, lice, and other small insects that infested their homes, clothes, and bodies. Early attempts to put insects to economic uses met with mixed success. Beekeepers successfully extracted honey from hives, but attempts to raise silkworms on mulberry trees failed.

Indians and settlers used nets, traps, spears, and hooked lines to catch numerous types of fish—deepwater fish such as striped bass, shad, and herring; smaller saltwater fish such as smelts and eels; and freshwater fish such as trout, bass, and pickerel. Both peoples also valued the large runs of shad and other fish that spawned in freshwater streams in the spring. Many settlers converted dugout log canoes into fishing vessels with sails. Many Indians, for their part, adopted the shallow draft sailing ships with plank hulls and the metal ship furnishings introduced by colonials. As with the shellfish, neither natives nor newcomers had the technology or the desire to devastate Bay fish stocks during this period. Even so, by 1680, Virginian legislators felt compelled to enact a law preventing

wasteful harvests of fish stocks in the Rappahannock River. By the 1700s, seafood became more of a supplement than a staple in the colonists' diet, as domestic animals were their chief food source. Still, commercial fishing for herring and shad began in the 1760s and 1770s.

Colonial chroniclers noted the various species of snakes, frogs, toads, salamanders, lizards, and turtles residing in the region today. Observers were most impressed by venomous reptiles, such as the eastern rattlesnakes and copperheads in the Piedmont and the eastern cottonmouths along the Coastal Plain. Indians regarded these reptiles with respect. Colonists treated them as economically useless pests and killed them when they ventured into settled areas. Turtles, such as freshwater common snapping turtles and saltwater northern diamondback terrapins, were hunted for their flesh, shells, and eggs. Free ranging pigs and other animals introduced by colonists were avid hunters of snakes. Still, contemporary evidence suggests that most populations of snakes and other cold blooded animals were not significantly disturbed by people in these years.

Both archeological evidence and colonial writings affirm the presence of great flocks of herons, ducks, geese, and other migratory waterfowl in Chesapeake Bay waters. Least sandpipers, common terns, and other shorebirds flourished on Bay beaches. In the forests and fields of the Coastal Plain and Piedmont, pigeons, songbirds, birds of prey, scavengers, and many other kinds of birds made their homes. Colonists seeking meat for their tables and feathers for their beds used nets, traps, and muzzle loading shotguns to take large numbers of waterfowl. Farther inland, Piedmont farmers hunted partridges, wild turkeys, and other game birds. Grain from farm fields and the many fruit and nut-bearing trees planted by colonists may have helped increase the numbers of passenger pigeons, which lived in vast flocks in the region.

Many large and small mammals lived in the region during this period of contact and colonization. Porpoises and other sea mammals swam regularly into

Chesapeake Bay. Indians and colonists hunted and trapped beavers, muskrats, otters, and other furry mammals. Farther inland, both peoples frequently used dogs to help them hunt the white-tailed deer, black bear, raccoon, elk, wildcat, woodland American bison, and other animals for flesh and fur. Powhatan and other Coastal Plain people regarded rabbits as a holy animal and refrained from hunting them, but colonists had no such reservations.

Settlers introduced horses, sheep, cattle, pigs, and other domestic animals to the region. Although some were penned, many ranged freely on unfenced lands. Free ranging animals tended to feed on acorns, nuts, and other forest products that colonists called mast. These animals also broke into unfenced or untended gardens and fields. The bobcats, cougars, and wolves that preyed on these animals were viewed as pests. Colonial governments sponsored extermination campaigns and offered bounties for animals killed, resulting in the virtual extinction of these creatures in settled portions of the tidewater area by 1750. Game also began to grow scarce as population grew and forests shrank. Alarmed, provincial legislators began declaring certain seasons off limits for hunting. Farther inland, hunters had all but eradicated woodland American bison from Piedmont forests by 1775.

Overall, the archeological, geological, and archival evidence suggests that native species, having adapted to local conditions over several thousand years, continued to live in the region's waters, wetlands, and forests. Indians only introduced exotic domesticated plants such as corn, beans, squash, and tobacco in small clearings that had been slashed and burned out of the forest. Until driven away or restricted to small reservations, they also continued to deliberately burn other portions of woodland during seasonal game drives to create the clear, open park-like forest floors recorded by impressed colonial chroniclers. The colonists cut, burned, plowed, and fenced ever larger tracts of land as they introduced new species of wild and

domesticated plants and animals to the region and deliberately tried to exterminate wolves, panthers, and other native animals considered dangerous or bothersome. Although few native species completely disappeared from the region in this period, those that remained shared a vastly transformed environment, one containing new land forms and uses as well as imported life forms.

THE CULTURAL LANDSCAPES OF CONTACT AND COLONIZATION

□ PEOPLING PLACES

The population of the region changed as never before in the period of contact and colonization. The territories of Coastal Plain chiefdoms rose, grew, and shrank with their leaders' changing fortunes. Further inland, war and disease caused entire Piedmont native communities to disappear or move elsewhere. European invasion significantly quickened the pace of demographic change. New diseases such as smallpox ravaged Indian communities. Warriors armed with guns fought with their Indian and European enemies in wars, suffering heavy losses in lives and lands. Indian population throughout the region may have declined by as much as 90 percent between 1500 and 1650, from an estimated peak of 24,000 in 1500 to less than 2,400 by 1650.

By contrast, the combined population of English colonists and enslaved Africans rose from zero to nearly 13,000 in the same period. Beginning in 1607, colonial population in the region doubled every twenty years. It rose to 380,000 in 1750. Total colonial population in the Chesapeake Bay area reached 700,000 in 1775. More than a third of this number were Africans, mostly enslaved. Although English settlers still made up the majority of the region's population in this period, the number of Scots-Irish and German immigrants grew significantly in the decades after 1775.

Indians of several nations were the region's sole inhabitants in 1500. This situation had changed dramatically by 1775. By 1650, the Coastal Plain nations had lost many people to war and disease. Those who remained were restricted to small tracts around their traditional core communities. Farther inland, most aboriginal Piedmont populations were forced to move away, or were scattered or destroyed during these same years. To the north, Susquehannock immigrants erected their towns on the banks of the lower Susquehanna River, in and around present day Lancaster County, Pennsylvania. Farther south and east, English colonists and enslaved Africans quickly moved outward from colonial centers such as Jamestown. By the mid-1600s, many lived on farmsteads on easily cultivated stretches of riverbank in the Coastal Plain. As mentioned above, much of the English population and nearly all Africans remained in the Coastal Plain throughout the period. In the later decades of the period, tens of thousands of German and Scots-Irish immigrants settled in the Piedmont area.

□ CREATION OF SOCIAL INSTITUTIONS

Although archeologists and scholars disagree about their identity and social development, most agree that the Indian cultures of the region were already experiencing dramatic cultural change by 1607, nearly a century after the first Europeans traveled into Chesapeake Bay. As mentioned earlier, Susquehannocks fleeing Iroquois enemies and seeking new lands near rich resources moved south onto the Piedmont lands of the Shenks Ferry people by 1575. Farther south, members of what archeologists call the Potomac Creek culture evidently pressed eastwards, for reasons still unknown, down the Potomac and Rappahannock Rivers onto the Coastal Plain, where they became known as Potomacs, Rappahannocks, and Nanticokes. And everywhere, Indian communities came together in new combinations and developed new cultural identities.

Many Chesapeake Bay native people, then, were driven into exile. But those who were not had to adopt new cultural practices to better resist European invasion and, eventually, adjust to life on small reservations surrounded by newcomers from Europe and Africa. These newcomers also adopted new cultural patterns, adjusting old customs and beliefs to fit new realities. This nearness to foreign cultures affected everyone. Native people struggling to survive often created new identities that set them apart from neighbors and newcomers. Formerly independent nations on the Potomac and Eastern Shores, for example, merged together during the 1600s to form more unified communities today known as the Piscataways and the Nanticokes. And both they and other Indians in the region integrated European dress, technology, religions, and other foreign introductions into their cultures.

Indians, Europeans, and Africans also came more and more to consider themselves and each other as distinct races. Free, enslaved, and indentured people distinguished themselves from one another, while rich merchants and farmers claimed the privileges and respect accorded nobility in their mother countries. In the Piedmont region, many immigrants from Scotland and Ireland established what scholars refer to as a backwoods cultural identity, which was closely tied to an emerging frontier ethos. In contrast, the tidewater society was dominated by the same kinds of Englishmen as those ruling the home country. And whatever their race, class, or caste, people in particular provinces began to form provincial identities. Eventually, all became Americans.

The social lives of all Chesapeake Bay people centered on the family. Indian families tended to be large groups of kin tracing relations back many generations. These were linked to other families and communities by bonds of marriage and alliance. By contrast, colonial families generally consisted of a single set of spouses, their children, and a few other relatives, all living in a single household.

Both natives and newcomers hoped for many children. Children shared household chores, and a large number assured that the family would continue, as many of those born did not live to reach maturity.

Both Indians and colonists divided labor along gender lines. Although particularly talented women could rise to leadership positions in both societies, men usually dominated public life. Women took care of domestic responsibilities and played prominent roles in religious life, food processing, and marketing. Men's first responsibility was to protect the community from harm, but they also hunted game and performed heavy labor. Both colonial men and women did farmwork, but only women cultivated planting fields in native communities. Although colonial women could and did own property, customs limiting their right to vote resulted in legal codes favoring men. Indian law focused on matters of concern to families and communities, and it allowed both men and women to voice their concerns and interests.



□ EXPRESSING CULTURAL VALUES

All Chesapeake Bay Indian societies believed in a Great Spirit, in the presence of a spiritual essence in all matter, and in an afterlife. Each honored these beliefs with their own rituals, ceremonies, and traditions. Organized priesthoods drew members from influential families. These priests ran religious ceremonies in Coastal Plain chiefdoms. Piedmont people, in contrast, followed the guidance of individual medicine men and women blessed by visions. Indian families oversaw the education of their young and the assimilation of adopted war captives, foreign spouses, and other outsiders.

Protestant ministers and Catholic priests urged Indian people to convert to Christianity. Although most native people who chose to remain in their homelands did convert, many also continued to practice their traditional religions. Exiled from home and isolated from their countryfolk, enslaved and free Africans also did what they could to maintain their

traditional beliefs. Indians and Africans were not the only people whose spiritual traditions were challenged by change in this period; members of different Christian denominations found themselves at odds with one another as well. Political changes in the home country resulted in struggles pitting Catholic, Anglican, and Puritan colonists against one another. And the Great Awakening challenged the authority of established Protestant denominations. This religious revival, as mentioned, swept across the region in the mid- to late 1700s. Ministers preached what became known as New Light doctrines, promoting social equality in the eyes of God. This reflected and stimulated desires for freedom that found expression when the War for Independence broke out in 1775.

As with the Indians, European and African families saw to the education of younger children. For further study, churches or church societies operated schools of higher learning, such as the *College of William and Mary*, which was opened in Williamsburg, Virginia in 1693. These schools educated the children of colonial elites and small numbers of Indian converts.

Indian people in the region made many objects to represent the spiritual powers underlying their beliefs. These included masks and regalia, carved posts, charms, tobacco pipes, and line drawings cut into or painted on rocks, cliffs, and boulders. Coastal Plain priests managed temples, shrines, dancing grounds, and group burial sites. Piedmont people worshiped on town dance grounds, in the houses of chiefs, and at hidden, sacred places at rapids, caves, and other locations they regarded as passages to the spirit world. Piedmont families buried their dead individually or in cemetery enclosures. They marked graves with wooden posts, offerings, and mementos.

Colonists also left cultural imprints on the landscape of this period. Protestant and Catholic settlers marked many of their settlements with the spires of frame, brick, or stone churches. Most were narrow structures containing rows of pews

divided by a central aisle. Ministers and priests ran the services from altars and speaking platforms at the end of this aisle; baptismal fonts were generally on the side of the building. The steeples at the tops of the buildings held crosses, and these steeples housed bells rung to call congregations to worship. Those living in or near settlements buried their dead in graveyards next to places of worship. Plantation and farm families in remote locations tended to bury family members and slaves in separate graveyards on their property (see Figure 25). Today, we can see the beliefs, values, and traditions of the colonists of this period most visibly in their churches, graves, and college campuses.

Chesapeake colonists also supported more secular cultural institutions as time went on. Many settlers expressed themselves through what we now call folk painting and carving. Theater first came to the colonies when Scottish merchant William Levingston opened the first playhouse in Williamsburg in 1717. Limited by the region's lack of suitably trained actors, Levingston solved the problem by offering indentures to actors and actresses willing to bring British theater skills to the colonies.

□ SHAPING THE POLITICAL LANDSCAPE

Coastal Plain Indian societies were ruled by chiefs born to leadership. Farther inland, Piedmont communities chose chiefs according to their abilities and merit. Whatever system was used, all Chesapeake Bay Indian people relied on consensus to make decisions throughout this period. Community members responded cooperatively to problems and opportunities, working collectively whenever possible to shape their political landscape. But the shape of this political landscape changed dramatically through contact with Europeans. Europeans used a complex political system that balanced inherited leadership positions with leaders appointed for their abilities to lead. Effectively using this system combining prerogative and skill,



Figure 25: Memorial Landscape: Family grave plot at Wye House, Maryland, 1998. (Photograph courtesy of the National Park Service)

Europeans managed to seize control of the region by the third quarter of the seventeenth century.

Provincial governors and their lieutenants were appointed or approved by the Crown. They were advised by councils made up of influential colonists. Each province had a legislature, whose members were periodically elected by property owning freemen who represented voting districts such as counties and parishes. This legislature was responsible for enacting laws and raising revenues to pay the governor's salary and cover other costs of government. During this period, provincial legislators—all men—did not extend voting rights to Indians, Africans, Jews, indentured servants, or their wives and most other colonial women. Some people supported the concept of autocratic rule by hereditary nobilities. Others favored opening government to all people of proven ability regardless of background. People were further divided by differences in class, religion, locality, ethnicity, and opinion. Tensions between such groups flared up often, but open violence of the type briefly acted out in Bacon's Rebellion did not become widespread until the Revolutionary War broke out in 1775.

□ **DEVELOPING THE CHESAPEAKE ECONOMY**

Indian economies centered on hunting, fishing, foraging, and cultivating gardens at the beginning of this period. Deer, bear, and other animals provided meat and fat for food, bone and sinew for tools, and skin for clothing and shelter. Fish, shellfish, wildfowl, wild berries and nuts, corn, beans, and squash appeared on menus in season. Since they depended mostly on resources available at certain times and locations, Indian people periodically moved from place to place to harvest economically important minerals, plants, and animals. Although some long distance trade occurred, most Chesapeake Bay people depended on local systems of production and exchange.

In early contacts with Europeans, Indians began participating in an exchange economy in which they traded furs, food, and information for metal tools, glass beads, cloth and woolen textiles, and other manufactured goods. Pressing ever westward to new markets and supplies, the fur trade played a significant role in the changing economic fortunes of Indians and those doing business with them. It continued to do so in later years, as we will see in the next chapter. Indians in the Chesapeake Bay region grew dependent on trade with Europeans in this period, but they lost neither the ability nor the desire to feed, clothe, and shelter themselves.

The English settlers also valued self sufficiency. To attain it, they quickly developed agricultural economies able to sustain their new colonies. At first they adopted Indian crops. Then they used their growing numbers of slaves to clear enough land to grow wheat and other Old World grains. Their imported, free ranging pigs and cattle provided meat and leather and ravaged unfenced Indian gardens. Horses and oxen drew plows and pulled wagons on new dirt roads. Dammed Piedmont streams and Coastal Plain winds and tidal waters powered grinding stones, pumps, presses, and hammers in the region's mills.

The colonists also grew and processed tobacco in increasing quantities. Tobacco became the export item that moved the colonial economy beyond basic subsistence. Used as a medium of exchange in the cash-starved region, tobacco was shipped overseas, and its value was returned in the forms of manufactured goods, slaves, and other imports. Many Coastal Plain planters soon started buying and selling goods, thus becoming merchants. Merchants traded imported items for the timber being cut and milled in the Piedmont. They soon began building ships, docks, and warehouses in ports along navigable stretches of Chesapeake Bay waterways. This trade became so important to the region's economy that the Crown's efforts to regulate it played a major role in convincing many Chesapeake Bay colonists to resist extension of royal authority in the region.

□ **EXPANDING SCIENCE AND TECHNOLOGY**

Chesapeake Bay Indian technology consisted primarily of stone, bone, shell, horn, wood, clay, fiber, and unsmelted copper implements at the beginning of this period. They fashioned clay into cooking and storage pots and tobacco pipes. They spun milkweed and hemp into cordage and knitted it into baskets and bags. They quarried stone from outcrops or gathered cobbles in streams, then chipped or ground them to fashion hatchets, knives, scrapers, spearheads, and other tools that they tied, glued, or inserted into handles of wood, bone, or horn. Chipped stone projectile points also tipped arrow shafts, while ground stone hatchets cut down trees and chipped charred wood from the hearts of logs hollowed out to fashion canoes.

Europeans brought other forms of technology to the region, ones based on smelted metal, glass, and spun fabric. Unlike Indians, who relied mostly on fire and their own muscles for power, colonists also harnessed the energies of wind, water, and domesticated animals. Indians adopted those aspects of

European technology that fit their needs and tastes. Far from destroying their cultures, this gradual adoption of aspects of European technology helped native people adapt to the stresses of contact in this period.

Potters and other colonial artisans along the Coastal Plain kept abreast of technological developments in Europe, and great changes also came from Europe to the interior. German and Scandinavian immigrants built log houses in the Piedmont that resembled those common in their home countries. Piedmont immigrants tended charcoal fired furnaces to smelt iron ore quarried from nearby mines. And, as noted, these immigrants even improved on existing technologies. Immigrant artisans developed glassworks near exposed outcrops of sand, transformed smoothbore musket technology into the highly accurate long ranged Pennsylvania long rifle, built sturdy Conestoga wagons from the region's abundant wood and iron resources, crafted cast iron plows, and produced other implements using local materials to create tools adapted to cope with American conditions.

□ TRANSFORMING THE ENVIRONMENT

Most scholars agree that the first centuries of contact between Indians, Europeans, and Africans resulted in the greatest environmental change in the region since the last Ice-Age. As mentioned earlier, ecological relationships in forest communities had long been maintained by periodic burning, but this stopped when Indians were forced from entire areas. Leaving unused woodlands unmanaged, Europeans cut all of the trees from increasingly vast areas to create planting grounds, mill lumber, and produce charcoal.

The colonists' actions resulted in the exposure of formerly forest-covered soils and in new bodies of standing water impounded behind mill dams. Conditions in these new miniature environments differed from those surrounding them. They were characterized by

changed temperature, humidity, and groundwater levels, as well as by increased erosion. River-borne sediments and nutrients rose as the overall volumes of dammed rivers fell. And nutrient-rich, slow moving or still water provided ideal breeding grounds for mosquitoes and other insects. These insects carried malaria, yellow fever, and other diseases affecting people and other animals. And when these altered waters flowed into Chesapeake Bay, they changed conditions in spawning grounds, hatcheries, shellfish beds, and other habitats.

Further inland, sediments washing into waterways from deforested lands gradually made smaller rivers unnavigable. Early port towns, such as *Bladensburg*, on the Anacostia River across from present-day Washington, D.C., *Joppa Town* on the Gunpowder River above present-day Baltimore, and, most notably, *Port Tobacco* at the mouth of the lower Potomac tributary of the same name, fell into decline after silt filled their waterways and closed them to commerce.

Contact also resulted in the introduction of many new species and the reduction or disappearance of others. Mostly because Europeans valued the furs of certain animals highly and Indians trapped these animals to sell them, the populations of these animals fell drastically. And because Old World domesticated animals such as pigs, cattle, and horses were allowed to forage freely in forests and salt meadows, they altered environments and competed with native animals for food and shelter. As mentioned earlier, settlers in the region all but eradicated wolves, panthers, and other predators because they preyed on these domestic animals. Accidents also influenced the environment; unintentionally introduced plants and animals such as honeysuckle vines, blue grasses, Norway rats, and domestic cats also transformed regional ecologies. And, as mentioned, some scholars believe that the large amounts of fruit hanging on newly planted orchard trees in this period may have helped raise the population of passenger pigeons to unstable levels. Passing flocks of these birds were said to



***Bladensburg,
Joppa Town and
Port Tobacco,
Maryland***

blot out the sun for hours at a time, until hunters slaughtered them to extinction a century later.

Larger environmental shifts, such as the Little Ice-Age that lowered temperatures throughout the world in the second half of the 1700s, also affected ecological relationships in ways that are still not clearly understood. Although greater changes would occur in subsequent years, the beginnings of many transformations in the regional environment can be traced to this period.

□ CHANGING ROLE OF THE CHESAPEAKE IN THE WORLD COMMUNITY

Contact between Indians, Europeans, and Africans in the Chesapeake Bay region opened a wider world than any of these groups had ever known. Each discovered people, practices, and possibilities never imagined. And, forced to live together, all were transformed. Because they needed to bend somewhat to survive in this new social setting, new beliefs, customs, and identities emerged. In the Chesapeake, these accommodations created several new sorts of society. One, centered on the Coastal Plain, was a slave-based economy of large and small tidewater plantations, rationalized by a new ideology of race. Another was a new Piedmont backwoods culture that valued self reliance, innovation, and dominance over Indians, who were forced into isolated reservations in remote, barren lands and swamps.

At first the Chesapeake Coastal Plain was a frontier on the borders of Indian, European, and African worlds. Gradually it combined elements of these worlds to create a unique cultural identity. Tidewater people built, sailed, and erected harbor facilities for oceangoing vessels capable of making an Atlantic crossing in as little as six weeks. Such vessels permitted the importing and exporting of goods and ideas quickly and with relative ease. Farther west, the Piedmont became a frontier to this cosmopolitan tidewater culture. When war broke out in

1775, then, locally born Chesapeake residents and new immigrants fought the war as people who had grown apart from their mother countries and transformed themselves into a new society.

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Chapter Six

The Early Republic,

1775 to 1820



Revolutionary War and Early National Period
1775 to 1789

Federal Period
1789 to 1820

1775	1775-1783	1789	1800	1812-1814	1817
Colonial population reaches 700,000	Revolutionary War	Constitution ratified	Population reaches 1 million	War of 1812	Baltimore Gas Lighting Company nation's first gas utility

AN ECOLOGY OF PEOPLE AND PLACE

□ PEOPLE

The outbreak of war between Great Britain and its North American colonies in 1775 significantly altered people's lives throughout the Chesapeake Bay region (see Map 8). As the War for Independence intensified, Coastal Plain and Piedmont communities increasingly took on a wartime footing. They prepared defenses, mobilized communities, and dedicated resources to maintaining the war effort.

The first years of the war were marked by confusion and hardship. Although opinions about the war were divided, all Chesapeake Bay people suffered from shortages caused by the British blockade begun in 1776. Conditions improved when the British were forced to lift the blockade following France's entrance into the war on the American side in 1779. And some Chesapeake Bay merchants even benefitted from the war. Sailing from ports throughout the region, they took advantage of new opportunities for plunder and the opening of markets of rival powers formerly officially closed to them. Loyalist skippers—employed by established firms based in larger ports such as *Baltimore*, *Annapolis*, and *Norfolk*—plied a burgeoning trade with New York and other British held ports. Entrepreneurial captains of rebel vessels sailing from smaller ports carried cargoes to Philadelphia, Boston, and other American held harbors. Many of these men made fortunes as privateers (sailors on armed, private ships licensed by their government to attack enemy ships). Roaming the waters of

SIGNIFICANT EVENTS

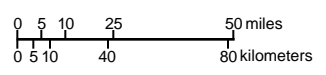
- 1775—total population reaches 700,000
- 1775 to 1783—Revolutionary War
- 1776—United States declares independence
- 1781—Cornwallis surrenders army to General George Washington and the Comte de Rochambeau at Yorktown, Virginia, to end fighting in North America
- 1789—U. S. Constitution is ratified
- 1790—Bank of Maryland established
- 1791—Maryland and Virginia provide land and funds for new national capital
- 1792—nation's capital moved to newly established District of Columbia (later Washington, D.C.)
- 1792—Cape Henry Lighthouse built
- 1793—construction begins on the United States Capitol
- 1793 to 1794—yellow fever ravages region
- 1800—regional population reaches 1 million
- 1800—nation's first modern highway completed; Philadelphia-Lancaster turnpike
- 1804—work begins on Chesapeake and Delaware Canal
- 1808—federal government abolishes importation of slaves
- 1812 to 1814—War of 1812 renews hostilities with Great Britain
- 1813—first commercial steamboat on Chesapeake Bay waters begins service
- 1814—British troops burn Washington and besiege Baltimore
- 1816—University of Virginia established
- 1817—nation's first gas utility chartered; Baltimore Gas Lighting Company
- 1819—construction begins on Fort Monroe

Map 8: The Early Republic, 1775 to 1820



LEGEND

- National Historic Landmark
- National Natural Landmark
- City or Town
- Natural or Cultural Feature
- Canal
- Bay
- Plain
- Piedmont



KEY LOCALES

NATIONAL HISTORIC LANDMARKS

District of Columbia Landmarks

Cleveland Abbe House [1805]
Newton D. Baker House [1794]
Decatur House [1819]
Georgetown Historic District [18th-19th centuries]
Hiram W. Johnson House [ca. 1810]
Lafayette Square Historic District [18th-20th centuries]
Octagon House [1800]
Sewall-Belmont House [1820, 1929]
Tudor Place [ca. 1815]
United States Capitol [1793-1865]
United States Marine Corps Commandant's House [1803]
Washington Navy Yard [1800-1910]
White House [1792, 1815]

Maryland

Chestertown Historic District [18th-19th centuries], Kent County
Colonial Annapolis Historic District [17th-18th centuries], Annapolis, Anne Arundel County
Riversdale [early 19th century], Prince George's County
Sion Hill [19th-20th centuries], Harford County
Tulip Hill [1756, 1790], Anne Arundel County
Wye House [1784, 1799], Talbot County

Baltimore City Landmarks

First Unitarian Church [1818]
Homewood [1803]
Minor Basilica of the Assumption of the Blessed Virgin Mary [1806-1863]
Peale's Baltimore Museum [1814]
Saint Mary's Seminary Chapel [1808]
Star-Spangled Banner House [ca. 1793]

Virginia

Benjamin Banneker SW-9 Intermediate Boundary Stone [1792], Arlington County
Bremo Historic District [early 19th century], Fluvanna County
Cape Henry Lighthouse [1792], Virginia Beach
Fort Monroe [1819-1834], Hampton City
Green Springs Historic District [18th-19th centuries], Louisa County
James Monroe Law Office [1786-1789], Fredericksburg City
Monticello [1770-1789], Albemarle County
Mount Vernon [1792-1799], Fairfax County
Oak Hill, James Monroe House [1820-1823], Loudon County
Oatlands [1800], Loudon County
Poplar Forest [1808-1819], Bedford County
Patowmack Canal Historic District [1786-1830], Fairfax County
Spence's Point [1806], Westmoreland County
John Tyler House [1780, 1842], Charles City County
University of Virginia Historic District [19th-20th centuries], Charlottesville City
Waterford Historic District [18th-19th centuries], Loudon County
Williamsburg Historic District [1633-1779], Williamsburg City

Alexandria City Landmarks

Alexandria Historic District [18th-19th centuries]
Gadsby's Tavern [1752, 1792], Alexandria City
Woodlawn [1803-1805]

Richmond City Landmarks

Dr. John Brockenbrough House [1818]
Virginia State Capitol [1785-1792]
John Marshall House [1790]
Monumental Church [1814]
Virginia Governor's Mansion [1811-1813]
Virginia State Capitol [1785-1792]
Wickham-Valentine House [1812]



Figure 26: Fragment of an Industrial Landscape: The smelting stack at Principio Iron Furnace, Havre de Grace, Maryland, in 1997. (Photograph courtesy of the National Park Service)

the Bay and ranging far out into open ocean waters, Chesapeake privateers preyed on the ships of Great Britain and her allies.

Fighting on the land also ravaged the region throughout the war. Virginia's royal governor, John Murray Dunmore, conducted a series of raids on rebel positions throughout *Hampton Roads* during the war's first years. In 1777, a large British army commanded by Major General Sir William Howe moved up Chesapeake Bay on its way to Philadelphia. The British made three other incursions into the region between 1779 and 1781 before the combined American and French armies under the joint command of George Washington and the Comte de Rochambeau compelled Lord Charles Cornwallis to surrender his army at *Yorktown* on October 19, 1781. This effectively ended the fighting in North America.

The conclusion of the War for Independence also provided the last act in the war for the inland empire of the Ohio Valley. This conflict had begun in the mid-1750s, when Virginia tidewater land speculators anxious to assert claims to lands west of the Blue Ridge played a central role in starting the global conflict known as the Seven Years' War. By 1790, many of these speculators had grown rich, not on Ohio lands (which were acquired by Pennsylvania or formed into new states like Kentucky), but on a form

of commercial agriculture based on plantations staffed by craftsmen, commission agents, and middle managers such as overseers and stewards. Enslaved Africans were the principal laborers for almost every aspect of this economy. Reaching beyond plantation boundaries, slaves furnished the skilled and unskilled labor essential for constructing buildings and roads, working fisheries, building ships, and toiling in the region's mills and embryonic iron industry (see Figure 26).

The Chesapeake Bay economy was closely integrated into the emerging political order of the new nation. Established landowners and powerful families competed with entrepreneurs in a widening network of international trade. These were only two factions in a new nation struggling to cope with a growing and diverse population. Social ferment generated by competition between contending classes, castes, and interests shaped the particular sense of identity and purpose developing in the region as the new nation took its place in the world community. Creation of a national identity became a conscious and compelling concern as citizens searched for ways to express, celebrate, and strengthen the bonds linking them together.

Although most communities in the region maintained a rural way of life, population growth spurred development everywhere. New roads connected Piedmont communities, and county seats along overland transportation routes—such as the Virginian villages of *Charlottesville*, *Warrenton*, and *Leesburg*—grew into town centers. These county seats were centrally situated—ideally within a day's ride of any locale in the county (districts of English shires were known as ridings)—and provided courthouses, warehouses, inns, shops, churches, and other institutions serving the needs of county residents.

Farther east, counties on both shores of the Bay grew more urban. Population growth was greatest in older cities such as *Baltimore* and *Richmond*; newer cities grew slowly, including the new



**Hampton Roads,
Virginia**



**Yorktown, Virginia
Charlottesville,
Warrenton, and
Leesburg, Virginia**



**Baltimore, Maryland
Richmond, Virginia**



Figure 27: Early National Capital Landscape: Capitol Hill, Washington, D.C. in 1832. (Painting courtesy of the Library of Congress)

national capital of *Washington, D.C.* (See Figure 27), established across the Anacostia River from the formerly bustling port city of Bladensburg in 1791. New construction abounded in city centers. Demographically, these regional towns resembled the nation's other developing urban centers, such as New York and Philadelphia. They contained an even balance of men and women, as well as significant numbers of children.

In the decades following the Revolution, economic growth in the region was slowed by external forces. Although the war was over, the British continued to prey on American ships, seizing cargo and forcing American sailors into service in the Royal Navy as seamen. In addition,

blockades maintained by warring powers in Europe resulted in the confiscation of many American cargoes and the closing of ports to American commerce. In response, the United States Congress passed the Embargo Act of 1807, which prohibited exports to Europe and limited imports from Great Britain.



Figure 28: Capital Landscape Afire: The Washington waterfront burns, 1814. Watercolor by William Thornton.

(Painting courtesy of the Library of Congress)

Differences with Great Britain finally erupted into open war in 1812. The War of 1812 brought new devastation to Chesapeake Bay country. Maryland was particularly hard hit in 1814, when British troops and naval units attacked several Bay towns, defeated an American army at *Bladensburg*, burned Washington's public buildings (see Figure 28), and besieged Baltimore. Today, an entire



Washington, D.C.



Bladensburg, Maryland

MARYLAND'S WAR OF 1812 INITIATIVE. *Funded by a National Park Service American Battlefields Protection Program grant, the Maryland Historical Trust and the Maryland Tourism Development Board are working together as partners with the Defense Department and the National Park Service to study, preserve, and interpret twenty-one War of 1812 military sites in Maryland for the benefit of the public. Unlike past studies that have focused exclusively on the sites of land battles, this initiative includes shipwrecks and other submerged resources.*

Underwater archeologists using written records and the results of sonar, electro-magnetic, and other remote sensing survey techniques have found and begun tests on two of Commodore Joshua's Barney's gunboats scuttled in the Patuxent River between the first and second battles of St. Leonard's Creek in 1814 (see Figure 29). Current plans call for similar surveys at Cedar Point, Tobacco Stick, the Upper Patuxent, Frenchtown, and other sites of naval actions. On land, archeological field crews will use survey and testing techniques to better understand evidence surviving in the ground at several War of 1812 battlefields. Later studies will examine written, architectural, and archeological evidence associated with 159 contemporary non-military sites to form a fuller picture of life in Maryland during this era.



Figure 29: War on Water: Action in Saint Leonard's Creek, 1814. (Painting attributed to Charles T. Warren. Courtesy of the Calvert Marine Museum)

flotilla of American vessels scuttled to avoid capture lies beneath the waters of the upper reaches of the Patuxent River.

The pace of development quickened following the end of the war in 1814. Baltimore, for example, rose from a small town to a major port. By 1820 it had become the nation's third largest city, with a population of more than 62,000. Eclipsing rival ports, Baltimore became a principal shipping point for grain, tobacco, and manufactured goods from Virginia, Maryland, and the Susquehanna Valley.

□ PLACE

Two wars and the rapid expansion of the population left their mark on Chesapeake lands and waters during this period. The shortages and destruction caused by war stimulated peacetime development. Although agriculture continued to dominate the region, emphasis shifted from farming tobacco to raising

livestock and producing bulk foods such as wheat and corn. Still representing the majority of landholdings, small Coastal Plain farms continued to be worked by small numbers of slaves. Larger tidewater plantations remained vast enterprises, often employing the labor of large numbers of slaves. Slavery did not play a major role in many Piedmont locales. Many of the farms in the region were owned by new Scots-Irish and German immigrants. Unwilling or unable to underwrite the expense of slaves, most of these people instead relied on their large families for farm labor.

Increases in agricultural production stimulated the growth of population centers throughout the region. Piedmont towns in particular became centers of commerce. Sustained by local agriculture, located near valuable timber, water, and mineral resources, and situated along roads and rivers linking the coast with the western interior, many had grown into sizable communities by 1820. In

GEORGIAN FEDERAL LANDSCAPES PRESERVED: A TALBOT COUNTY PORTFOLIO. *Talbot County, on Maryland's Eastern Shore, possesses a wealth of exceptionally well-preserved cultural landscapes dating to the late colonial and early federal periods. The plantations shown here (see Figures 30-32) are among the many photographed by pioneering camera man H. Robbin Hollyday during the 1930s. A substantial amount of Hollyday's photographic archive is preserved by the Talbot County Historical Society, in the town of Easton, Maryland.*



Figure 30: Forest Landing Plantation, ca. 1930. (Photograph courtesy of the Talbot County Historical Society)



Figure 31: Wye House, ca. 1930 (Photograph courtesy of the Talbot County Historical Society)



Figure 32: Presqu'isle, ca. 1930. (Photograph courtesy of the Talbot County Historical Society)

addition, fishing, shipbuilding, and trading ports along the coast grew into mercantile towns and cities. The orderly grids of many of these towns contrasted with the irregular boundaries of farmlands.

Tidewater geography was a major advantage for the region, too, as it favored the growth of commerce. Islands and estuaries provided ready access to fishing grounds and shellfish beds. Although they were shallow, most Coastal Plain waterways were calm, sheltered from storms, and easily navigated. Ports and plantation landings were built along navigable stretches of rivers up to the fall line. Perhaps not surprisingly, one of the first public programs undertaken by the new national government was the construction of a lighthouse system. The first of these was Virginia's *Cape Henry Lighthouse*, a ninety-foot-high, stone shaft constructed at the mouth of Chesapeake Bay in 1792 (see Figures 33 and 34). The light provided by the oil lamps lit at the top of this and similar structures both improved safety and provided a swift signaling network giving warning of approaching storms or enemies.

The new government also devoted public monies to canal, road, and turnpike construction. This improved access to undeveloped lands throughout the region, and helped transform most of the remaining tidewater forests into agricultural fields. Farther inland, ferries, bridges, roads, and slack water routes around the fall lines blocking major river, such as the *James River Canal* and the *Patowmack Canal*, opened more Piedmont forest to the woodsman's axe. Large scale deforestation accompanied new settlements in Pennsylvania's lower Susquehanna Valley and the Maryland and Virginian Piedmont.

Timber throughout the region was cut by axe and metal saws. It was then processed in water-powered sawmills at mill seats alongside dammed falls and rapids (see Figure 35). Sawn, cut, and milled lumber was used to fence farms, fabricate tools and conveyances, and build, furnish, and heat homes. Because of this high demand for lumber and the absence of a program to replenish sup-



Figure 33: Lighting the Way: Cape Henry Lighthouses, ca. 1905. The 1792 lighthouse is on the right.

(Photograph from the Detroit Publishing Company courtesy of the Library of Congress)

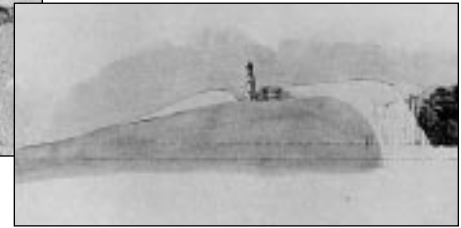


Figure 34: A 1798 Latrobe sketch of the Cape Henry Lighthouse, Virginia.

(Sketch courtesy of the Maryland Historical Society)

plies of valuable trees, young pines and a profusion of marsh grass, crabgrass, wiregrass, and bluegrasses took over when mature oaks, hickories, and other highly marketable trees were cut. The demands of the local population and a growing export market for lumber increased the pace of timber cutting throughout the region.

Axes and saws were not the only engines of change operating in Chesapeake forests. Individually requiring from twenty to thirty acres of browsing land per year, free foraging cattle, horses, and hogs fed voraciously on mast, grasses, woody plants, young hardwood saplings, and unfenced crops. Overgrazing was clearly a major problem in many areas of the region by 1820.

In addition, the destruction of forest canopies when trees were cut down exposed ground surfaces to the sun, warming shallow waters, increasing



Cape Henry Lighthouse, Virginia



James River Canal and Patowmack Canal, Virginia

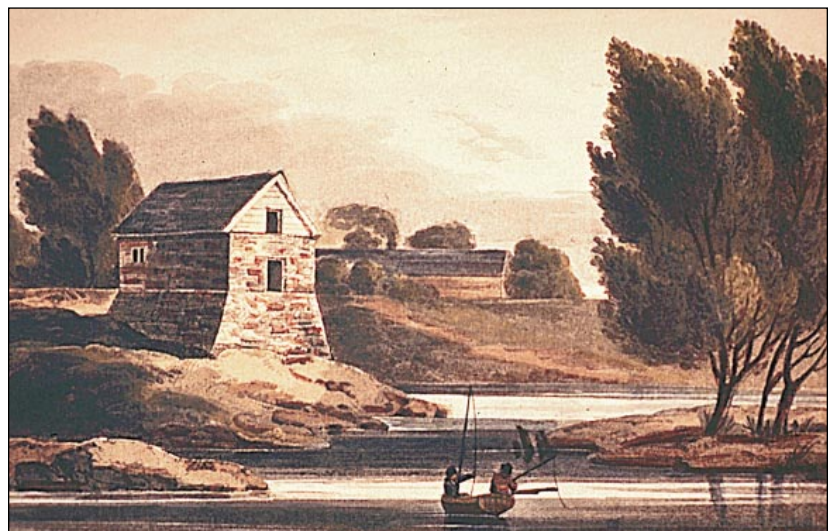


Figure 35: Upper Marlboro Mill, Maryland, 1827.

(Painting courtesy of the Calvert Marine Museum)

PORTFOLIO: BENJAMIN LATROBE'S CHESAPEAKE. Benjamin H. Latrobe was the young nation's first academically trained architect. Today, he is best remembered for his innovative civil engineering achievements and as the designer of many of the most handsome high-style federal and classical revival buildings and structures erected in the mid-Atlantic region. His commitment to high-style, however, did not prevent him from accurately depicting the region's landscape as he traveled through it executing commissions. The sketches published here (see Figures 36-38), and others preserved in the collections of the Maryland Historical Society, represent a rare record of more humble landscapes rarely depicted by other architects of the era.



Figure 36: Piedmont Farm Landscape: George Stoner's farm, near Conestoga, 1801. (Sketch courtesy of the Maryland Historical Society)



Figure 37: Bay Environment: The busy seaport of Norfolk, Virginia. (Sketch courtesy of the Maryland Historical Society)



Figure 38: Coastal Plain Landscape: Rockett's Landing on the James River near the head of tidewater, 1796. (Sketch courtesy of the Maryland Historical Society)

evaporation, and creating drier conditions. The erosion of soils from forest floors and planting fields into regional rivers increased the amount of sediment flowing into Bay waters. Sediment darkened waters and changed the chemical composition of many rivers and streams, affecting fish and other animals. Sediment also covered the eggs of spawning fish, amphibians, and reptiles, reducing populations in several areas. Mill dams began blocking the spawning runs of migrating fish in upland streams, and log jams—caused when timber fell into streams or broke from log rafts that rivermen floated to downstream mar-

kets—occasionally blocked upstream reaches of free flowing rivers.

Land animals were affected by the intrusive presence of people as well. Increased hunting reduced animal populations that were already stressed from habitat changes brought on by intensifying development. Several species disappeared during this period. Hunters significantly reduced populations of white-tailed deer and virtually caused the extinction of black bears and beavers in the region, as tanners and furriers struggled to meet high market demands for skins and pelts. To address this problem,

states began prohibiting commercial hunting of these and other threatened animal populations. But seemingly unthreatened species, such as the canvasback ducks that were plentiful at the Susquehanna Flats, were still avidly hunted. Because they were rarely hunted and were considered economically unimportant, opportunistic species such as opossums, gray squirrels, raccoons, and Norway rats prospered.

THE CULTURAL LANDSCAPE OF THE EARLY REPUBLIC

□ PEOPLING PLACES

The early years of the Republic saw demographic upheavals throughout the region. Fighting during the Revolution and the War of 1812 forced many people from their homes. Many Loyalists, free blacks, and escaped slaves left the region following the Revolution. After word of the Treaty of Ghent ending the War of 1812 reached the region in early 1815, a second wave of African Americans left. Many moved to Nova Scotia at the invitation of British authorities opposed to slavery and eager to weaken the rival American economy. Thousands of other Chesapeake Bay people joined the westward movement into Kentucky and Ohio Valley lands. Hundreds more were killed by periodic outbreaks of contagion, such as the yellow fever epidemic that ravaged the region between 1793 and 1794. Yellow fever came to the region via mosquitoes that arrived on a ship carrying French refugees fleeing revolution in Haiti.

Yet despite these setbacks, the region's population grew from 700,000 in 1775 to more than 1.3 million by 1820. Family sizes were large in both rural and urban areas. Growing numbers of rural family members, unable to acquire lands of their own near home and unwilling to emigrate, congregated in Chesapeake Bay towns and cities. Commercial seaport towns such as *Annapolis*, *Baltimore*, *Norfolk*, and *Chestertown* prospered as never before, with the latter soon becom-

ing the largest wheat and tobacco shipping port on Maryland's Eastern Shore. River communities such as *Alexandria*, *Petersburg*, and *Richmond* attracted increasing numbers of French citizens, West Indians, and other immigrants fleeing revolution and war in Europe.

Free and enslaved African Americans made up a large percentage of the population of the Chesapeake Bay region's cities. *Baltimore* was home to the second largest population of free blacks in the new nation (New Orleans had the largest), and more free blacks lived in Maryland than in any other state. Vigorous African American communities of oystermen, sailors, skilled tradespeople, and farmers grew along the Eastern Shore. Farther south in Virginia, black people comprised the largest percentage of the state's total population.

In contrast, Native American populations, mostly limited to tiny rural enclaves in unwanted swamp lands and pine barrens and beset by poverty and disease, continued to decline. Trespassers cutting timber and poaching game on their land went unpunished. Maryland sold off all of the remaining Indian lands under its supervision on the Eastern Shore, putting money obtained in sales of *Choptank Reservation* land towards its state's share of \$72,000 raised for the construction of public buildings in the new capital in Washington in 1790. Fewer than five hundred Native American people probably remained in the region by 1820.

□ CREATION OF SOCIAL INSTITUTIONS

Although the family remained at the center of social life in the region, the setting for family events shifted increasingly from the home to public places. Few new social institutions were publicly funded, however. *The Institute for the Insane*, built in Williamsburg in 1773, was the only permanent, publicly funded hospital of any type in the region during this period. Many field hospitals and infirmaries opened in the region to care for casualties during the Revolution and the War of 1812. Mostly set up in church



Alexandria, Petersburg, and Richmond, Virginia



Baltimore, Maryland



Choptank Indian Reservation, Maryland





The Institute for the Insane, Virginia



*Annapolis, Baltimore, and Chestertown, Maryland
Norfolk, Virginia*


**Anatomical Hall,
Maryland**


**Library Company
of Baltimore, Maryland**


**College of William and
Mary and the University
of Virginia, Virginia**


**Gallery of Fine Arts,
Maryland**

buildings, schoolhouses, and other standing structures, these facilities were hastily improvised and soon closed after peace was restored.

Public primary and secondary education languished around Chesapeake Bay. Unwilling to support public schools, regional legislatures tolerated illiteracy rates averaging 20 percent among the white population of the region throughout the period. And education was banned for slaves and actively suppressed for free blacks. Upper class families tended to hire private tutors to educate younger children. In Maryland, some private academies opened with state assistance by 1820. A classical curriculum was offered on the formally designed and carefully landscaped campus of the *College of William and Mary* and, after 1816, on the equally manicured Piedmont grounds of the *University of Virginia* in Charlottesville. Young people of lesser means sought training in skilled occupations through apprenticeships.

Churches, inns, stores, and courthouses remained centers of public social life during this period. Cities, towns, and villages soon grew around these buildings. Expanding commerce necessitated more travel and increased demands for goods and services. Growing enthusiasm for veterans' organizations such as the Order of the Cincinnati and secret societies such as the Masonic Order stimulated construction of new meeting halls. And new church construction was fostered by the temporary disestablishment of the Anglican church, widely associated with the tyranny of the Crown during the Revolution, and the growth of other Protestant denominations. On the Eastern Shore, Richard Allen, Absalom Jones, and other black ministers played a major role in forming African American congregations.

□ EXPRESSING CULTURAL VALUES

Although the new nation continued to look to Great Britain as its primary model for cultural values, Americans were increasingly influenced by the works of

French philosophers and German scientists. But not all Chesapeake people openly embraced scientific development. In 1800, for example, a mob scandalized by anatomy lectures demolished Baltimore's newly erected *Anatomical Hall*. Undeterred, instructors continued the lectures at the County Alms House.

English remained the nation's language in speech and print. Newspapers such as Annapolis's *Maryland Gazette* and Baltimore's *Maryland Journal* played major roles in setting style and forming opinion in the region. In addition to schools and universities, other centers of learning, such as the *Library Company of Baltimore* (organized in 1795), opened.

The arts flourished in the Chesapeake area during this period. Baltimore became a center of high-style painting, silverwork, and furniture manufacture. In 1814, Rembrandt Peale established the region's first museum, the *Gallery of Fine Arts* in Baltimore, to showcase sixty-four of his paintings portraying eminent



Figure 39: Formal Georgian Gardenscape Restored: Kenmore Colonial Revival Garden, 1924, Landscape Architect Charles Gillette. (Photograph courtesy of the Garden Club of Virginia)

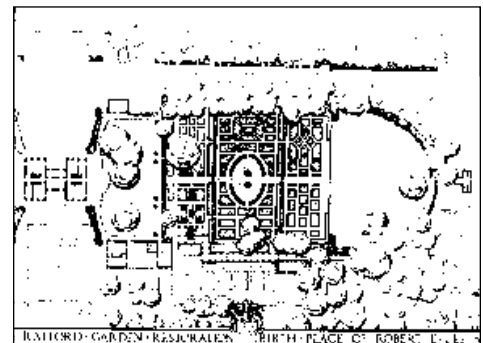


Figure 40: Stratford Hall Colonial Revival Garden Plan, 1932, Landscape Architect Morley J. Williams. (Landscape plan courtesy of the Garden Club of Virginia)

men of the Revolution. Few people could afford training in European academies and salons, and the resources were also lacking to sustain a school of the arts in the region. Undaunted, people of every class and caste, intent on expressing themselves, crafted untutored works of art and beauty that today we call folk, primitive, or naive art.

The Georgian and Federal architectural styles popular during the period closely followed British fashion. Formally landscaped gardens, naturalistic English gardens, and street plans also followed European models (see Figures 39-40). Agrarian life was idealized by such thinkers as Thomas Jefferson as the most natural state, even as the new urban centers began expanding into the countryside.

Although the leading intellectuals of the new nation championed philosophies that emphasized the natural rights of man, liberty and equality continued to be denied to African American slaves. Federal law prohibited the importation of new slaves in 1808, but the institution of slavery persisted in Maryland, Delaware, and Virginia.

□ SHAPING THE POLITICAL LANDSCAPE

State governments began replacing colonial provincial administrations soon after the Revolutionary War broke out in 1775. Chesapeake politicians played important roles in the new nation's government. The author of the Declaration of Independence, Thomas Jefferson, and many of its most notable signers came from the region. A Marylander named John Hanson became the first "President of the United States in Congress Assembled" in 1781. Prominent residents served as representatives to the Continental Congress during the war, and to the Constitutional Convention that convened in Philadelphia in 1787. One of these, an outspoken Virginian opponent of slavery named George Mason, penned the Bill of Rights. Four of the first six presidents, George Washington, Thomas Jefferson, James Madison, and James Monroe, also came from the region.

New political parties arose as states in the Chesapeake Bay region held constitutional conventions in assembly halls in *Williamsburg*, *Annapolis*, and nearby Philadelphia. Municipal and county politicians throughout the region rushed to build government buildings of their own. Imposing Federal style assembly halls, courthouses, jails, and other administrative structures, patterned after state buildings such as the *Virginia State Capitol* (begun in 1785), soon rose in many Chesapeake Bay county seats and municipal centers.

The new federal government, established by the Constitutional Convention and supported by a much-increased tax base, soon began a series of public construction programs. A network of all-weather turnpikes funded by government agencies and private companies began to more effectively connect the region with the rest of the country. The first of these linked the town of *Lancaster* with the City of Philadelphia. Completed in 1800, it was carefully graded, paved with cobbles and crushed stone, and carried traffic over the Conestoga and other rivers crossing its route on stone arch bridges. Stone edifices were also erected, including the already mentioned *Cape Henry Lighthouse*, Baltimore's *Fort McHenry* (begun in 1794), and Virginia's *Fort Monroe* (begun in 1819).

Most significantly, a new capital city rose on lands donated by Virginia and Maryland at the fall line of the Potomac River. Based on an elaborate plan developed by the architect Pierre L'Enfant (see Figure 41), and surveyed by African



Williamsburg, Virginia
Annapolis, Maryland



Virginia State Capitol, Richmond



Lancaster, Pennsylvania



Cape Henry Lighthouse, Virginia
Fort McHenry, Maryland
Fort Monroe, Virginia



Figure 41:
Vision of an Urban Landscape:
Pierre Charles L'Enfant's 1791 plan for the city of Washington.
(Plan courtesy of the National Capital Planning Commission)

ALEXANDRIA HISTORIC DISTRICT. Located on the Virginia side of the Potomac River near its uppermost limit of navigation, Alexandria was first established in 1749 as a market town to serve the needs of Fairfax County corn and wheat farmers. Alexandria grew quickly following construction of docks capable of handling ocean-going vessels on lands reclaimed from the town's marshy riverfront after the Revolution. Formally designated as a Port of Entry—a place administered by customs officials where foreign ships could land, unload, and take on cargoes—the town became one of the new nation's ten most important ports. Skilled artisans and tradesmen of all sorts rented rooms, apartments, and business space in the many brick and frame rowhouses and free-standing buildings that soon lined Alexandria's streets. Many African Americans, both enslaved and free, made their homes in riverfront districts known as "the Bottoms" and "Hayti."

Alexandria became part of the newly created District of Columbia in 1789 (it would be returned to Virginia by the Act of Retrocession in 1846). Although Alexandria prospered as the capital's port, it was gradually surpassed in importance by Baltimore by the 1820s. The coming of the railroad and a sharp rise in the demand for slave labor by cotton farmers farther south stimulated the growth of Alexandria into a major slave trading center by mid-century.

Captured by Federal troops at the beginning of the Civil War, the city made it through the conflict largely unscathed. Today, Alexandria boasts a large and well-preserved assemblage of buildings dating to the early national period. Set in an urban landscape largely unchanged for two centuries, Alexandria's buildings and streets continue to convey the ambiance of an early nineteenth-century Chesapeake port town.



Figure 42: River Landscape: Alexandria, Virginia from the Maryland shore, May, 1861. Many of the landscape elements depicted in this vista were in place by the first decades of the nineteenth century. (Sketch by Alfred Waud courtesy of the Library of Congress)



Figure 43: A Piedmont Townscape Preserved: Waterford, Virginia from the air, 1989.

(Aerial photograph courtesy of Land Ethics, Inc.)

American mathematician Benjamin Bannecker, the city was christened the District of Columbia. Renamed Washington after the first president's death in 1799, the new city grew slowly at first. But after its public buildings were burned by a British army in 1814, the city was quickly rebuilt and expanded.

□ DEVELOPING THE CHESAPEAKE ECONOMY

Agriculture and commerce continued to dominate the regional economy during this period. Languishing during wartime, maritime commerce grew as merchants struggled to expand trade networks and develop new markets. Expanded harbor, wharf, and warehouse facilities rose up in Chesapeake Bay ports such as *Baltimore* and *Norfolk*. Maneuverable flat-bottomed sailing ships and barges capable

of navigating shallow winding waters carried cargoes through Coastal Plain waterways. Farther inland, commodities continued to be hauled in wagons drawn by horses and oxen.

Both soil exhaustion and increasing local demand for fresh farm produce convinced many tidewater farmers to switch from cultivating tobacco intensively to producing a wider variety of agricultural products. *Richmond*, *Alexandria*, and other market towns near the heads of navigation of the region's rivers provided places where farmers could market their produce and purchase merchandise shipped in from elsewhere. Farther inland, the upland Piedmont economy centered on small scale farming, dairying, quarrying, and manufacturing in small rural villages like *Waterford* and other crossroads communities (see Figure 43). Water-powered factories and workshops along regional



Figure 44: Millscape: Quarle's Mill, North Anna River, Virginia, May, 1865. (Alexander Gardner photograph courtesy of the Library of Congress)

ivers and streams transformed locally farmed crops, milled wood, and smelted metal into tools, implements, housewares, furniture, textiles, and other products (see Figure 44).

Periodically cut off from European markets, the new nation struggled to attain economic self sufficiency. No central agency regulated commerce in the new nation. Instead, local corporations and municipalities issued currency of their own and funded industry, commerce, and internal improvements. The Bank of the Maryland was established in 1790, for example, and a Baltimore branch of the Bank of the United States was opened three years later. Beset by difficulties, entrepreneurs and managers intent on developing the regional economy struggled against shortages caused by war, production fluctuations, and the vagaries of the decentralized fiscal system.

□ EXPANDING SCIENCE AND TECHNOLOGY

Most of the region's factories and workshops during this era were powered by water. Low head mills, built to allow tide waters to pass over their water wheels on the Coastal Plain, harnessed the power of the ocean. Farther inland, Piedmont watermills harnessed the power of fast flowing, highland streams, using it to grind grain, cut wood, process textiles, and work iron into marketable tools. Inventors in the region made significant advances in waterpower technology to increase production speed and efficiency

Shipbuilders in *Baltimore* used timber cut and worked in nearby sawmills to build the ever swifter schooners needed to compete successfully in the fast growing coastal and transatlantic trade. Artisans in Chesapeake Bay workshops used precisely calibrated machine tools made and powered with water energy to painstakingly craft accurate navigational instruments and other implements essential to maritime commerce.



Baltimore, Maryland

Developments in transportation technology established the groundwork for significant advances to come. One of the first iron-chain suspension bridges built in America was completed across the Potomac at *Georgetown* by 1810 (see Figure 45). Stone masons and engineers installed modern lock and water control systems in the earlier mentioned James River and Patowmack canals. Opening in 1790, the seven-mile-long *James River Canal* bypassing the rapids blocking the river at Richmond was the nation's first successful artificial waterway. Shortly thereafter, another company completed the *Patowmack Canal* allowing passage around the falls of the Potomac River.



Georgetown and Washington, D.C.

James River Canal and Patowmack Canal, Virginia

Advances were also made in agrarian technology. Thomas Jefferson invented a light and strong moldboard plow that was capable of breaking up hard, densely packed soils. In 1784, Virginian John Binns found that mixture of locally



Figure 45: New Passages across the Landscape: The chain bridge over the Potomac River near Georgetown, as it appeared between 1810 and 1840. (Sketch courtesy of the Library of Congress)

mined gypsum into exhausted field soils increased their fertility. Determined to find a way to restore fertility to utterly exhausted soils that failed to regain productivity after application of gypsum or animal manures, fellow Virginian Edmund Ruffin began a series of experiments with marl to discover an abundant, cheap, effective, and locally available additive.

The Baltimore area became a center of early industrial innovation. Baltimore entrepreneurs inaugurated the first commercial steamboat service on Chesapeake Bay in 1813. Four years later, Rembrandt Peale helped organize the nation's first public utility, the *Baltimore Gas Lighting Company*. Baltimore mechanical engineer Oliver Evans played a major role in developing a more precise form of mechanized mass production, capable of producing finely crafted interchangeable parts, known as the American System. His treatises on automated manufacturing methods and processes attracted a wide readership. Winning widespread recognition by automating flour mill production, he went on to invent a high pressure steam engine that would later be used to power ships and railroads.



□ TRANSFORMING THE ENVIRONMENT

The population and distribution of plants and animals changed significantly during this period. Pioneers, traveling on the

ever expanding network of new roads and turnpikes threading the region, transformed forests into fields. Opportunistic, invasive species such as white pine and red cedar proliferated as stands of old growth timber fell to woodsmen's axes. And damage caused by forest fires worsened as settlers failed to follow the ancient Native American practices of clearing underbrush and dead falls, thus leaving plenty of material to keep fires burning.

Beaver, white-tailed deer, black bear, wild turkey, and songbird populations declined as farmers destroyed their habitats and hunters thinned their numbers. The number of domestic animals—including horses, pigs, cattle, sheep, and chickens—rose as native species diminished. Animals and plants brought from far-away places visited by European voyagers were deliberately and accidentally introduced into the region.

Other changes caused problems as well. As mentioned, erosion caused by deforestation and plow agriculture increased the amount of sediment flowing into the region's rivers and streams. Rivers, harbors, and bays grew polluted from runoff from roads and sanitary wastes produced by people and horses crowding into expanding urban centers. The new urban landscapes were often bleak places, unkempt and treeless. Wood and charcoal soot poured from chimneys and smokestacks, beginning to foul the

LANDSCAPES REAL AND IDEAL: GEORGETOWN IN THE DISTRICT OF COLUMBIA



Figure 46: Georgetown Ideal: A pastoral vision of Georgetown, 1855. (E. Sachse and Company Lithograph courtesy of the Library of Congress)



Figure 47: Georgetown Real: A gritty view of Georgetown and its Aqueduct Bridge at the end of the Civil War, 1865. Note the almost total absence of trees, something often seen in documentary photographs taken during the period.

(William Morris Smith photograph courtesy of the Library of Congress)



Figure 48: A Military Landscape: Fort McHenry, 1998.

(Photograph courtesy of the National Park Service)

air in and around iron furnaces, factories, and residential districts.

□ CHANGING ROLE OF THE CHESAPEAKE IN THE WORLD COMMUNITY

War and independence thrust the region more deeply and directly into world affairs than at any time previously in its history. Campaigns waged in the region during the Revolution and the War of 1812 directly embroiled the Chesapeake Bay region in worldwide conflicts. The British shelling of *Fort McHenry* in Baltimore Harbor on September 13-14, 1814 (see Figure 48) was the last time ships of a foreign navy fired on Chesapeake soil.

Foreign trade stimulated the growth of deepwater harbor towns such as *Baltimore* and *Norfolk* and of river cities such as *Chestertown* and *Richmond*. Shipyards constructed oceangoing vessels that linked the region to ports everywhere in the world. Commodities and immigrants flowing into Chesapeake Bay cities, towns and ports began changing every aspect of life throughout the region. As the nation's capital, Washington soon became the nucleus of a small but growing diplomatic community that was both worldly and international.

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Fort McHenry, Maryland



**Baltimore and Chestertown, Maryland
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Carville V. Earle, *The Evolution of a Tidewater Settlement System* (1975).

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Charles A. Miller, *Jefferson and Nature* (1988).

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Barbara J. Fields, *Slavery and Freedom on the Middle Ground* (1985).

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Chapter Seven

Sectional Strife,

1820 to 1880



Antebellum Period 1820 to 1861				Civil War 1861 to 1865		Reconstruction and Industrial Expansion 1865 to 1880		
1820-29	1832	1840	1850	1861	1865	1866	1867	1876
Canal, railroad and coal development	Fertilizer improves plantation agriculture	Pennsylvania grows tobacco	Region population exceeds 1.8 million	Virginia secedes from the Union	Surrender at Appomattox; slavery abolished	Gallaudet College founded	Howard University founded	Johns Hopkins University founded

AN ECOLOGY OF PEOPLE AND PLACE

□ PEOPLE

The mid-nineteenth century brought unprecedented transformations to all aspects of life in the region (see Map 9). Coal, steel, and steam fueled industrial expansion, binding the Chesapeake region more firmly with the rest of the nation and the world. Scientific advances and religious revivals challenged people's views. New crops were introduced, and old plants were farmed in new ways.

Sectional differences divided Northern and Southern parts of the nation and the region during this period. In the Chesapeake Bay region, North-South tensions eclipsed earlier differences between the Coastal Plain and Piedmont. Made more efficient by technological advances, slavery became vital to the economies of Southern states. These same technological advances allowed Northerners, strengthened by industrial growth, to ideologically and materially challenge Southern attempts to extend and expand the slave system. The struggle over slavery and states' rights was fueled by more than differing economic systems. In a broader sense, it became a contest over contending concepts of race, class, work, and ethnicity that divided

SIGNIFICANT EVENTS

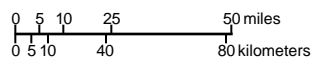
- 1820's—canal, railroad, and coal industrial development revolutionizes technology
- 1826—Maryland assembly extends suffrage to Jewish men
- 1827—Charles Carroll of Carrollton, Maryland organizes the Baltimore and Ohio Railroad; first passenger and freight railway in United States
- 1828—work begins on Baltimore and Ohio Railroad and the Chesapeake and Ohio Canal
- 1829—Chesapeake and Delaware Canal opens
- 1830—Peter Cooper's steam engine, the Tom Thumb, makes first trip from Baltimore to Ellicott's Mills
- 1831—Maryland State Colonization Society established to relocate freed slaves
- 1831—Nat Turner leads unsuccessful slave revolt in Southampton County, Virginia
- 1832—Edmund Ruffin's publication of influential scientific report regarding use of marl as fertilizer increases efficiency of plantation agriculture
- 1832—worldwide cholera epidemic strikes region
- 1837—Chesapeake and Ohio Canal completed
- 1837—Great Panic of 1837 throws nation's economy into depression
- 1839—nation's first iron-hulled ship, the DeRosset, built in Baltimore
- 1840—Pennsylvania farmers begin growing cigar wrapper tobacco
- 1841—Tredegar Iron Works opens in Richmond
- 1844—nation's first telegraph line erected between Baltimore and Washington
- 1844—anti-immigrant Know-Nothing party formed
- 1845—United States Naval Academy opens in Annapolis
- 1848—Irish, German, and Polish immigrants begin arriving in large numbers
- 1850—regional population exceeds 1.8 million
- 1853 to 1863—Washington Aqueduct constructed
- 1855—Republican party formed
- 1858—first steam-powered fire engine placed into service in Baltimore
- 1859—Abolitionist John Brown leads unsuccessful raid on Harper's Ferry to spark slave revolt
- 1861—Virginia secedes from Union and joins Confederacy
- 1861 to 1865—Civil War fought between Union and Confederacy
- 1862—northwestern Virginia counties secede to form new federal state of West Virginia
- 1862—Battle of Antietam fought in Maryland's Great Valley; bloodiest single day of Civil War
- 1863—pivotal Battle of Gettysburg fought
- 1865—Robert E. Lee surrenders Army of Northern Virginia to General Grant at Appomattox Courthouse; other Confederate surrenders end the Civil War
- 1865—Thirteenth Amendment to Constitution abolishes slavery
- 1865 to 1877—Era of Reconstruction
- 1866—Gallaudet College, first institution of higher learning for deaf, opens in Washington
- 1867—Howard University, nation's first African American college, opens in Washington
- 1868—Hampton Normal and Agricultural Institute opened in Hampton, Virginia
- 1873—Economic Crash
- 1876—Johns Hopkins University opens in Baltimore
- 1877—striking railroad workers violently suppressed by Maryland militia

Map 9: Sectional Strife, 1820 to 1880



LEGEND

	National Historic Landmark		Railroad
	Civil War Battlefields		Canal
	City or Town		Bay
	National Natural Landmark		Plain
	Natural or Cultural Feature		Piedmont



KEY LOCALES

NATIONAL HISTORIC LANDMARKS

District of Columbia Landmarks

American Peace Society [1860s]
 Anderson House [mid-19th century]
 Army Medical Museum and Library [1867]
 Ashburton House [ca. 1836]
 Blair-Lee House [1827]
 Blanche K. Bruce House [1865]
 Carnegie Endowment for International Peace [1860]
 City Hall [1820-1849]
 Franklin School [1862-1875]
 Gallaudet College [1866]
 General Post Office [1839-1866]
 Georgetown Historic District [18th-19th centuries]
 Charlotte Forten Grimke House [1880]
 Healy Hall [1877-1879]
 General Oliver Otis Howard House [1869]
 Lafayette Square Historic District [18th-20th centuries]
 Old Naval Observatory [1844]
 Old Patent Office [1840]
 Renwick Gallery [1860]
 Zalmon Richards House [mid-19th century]
 Saint Elizabeth's Hospital [1852]
 Saint Luke's Episcopal Church [1879]
 Smithsonian Institution Building [1855]
 State, War, and Navy Building (Old Executive Office Building) [1871-1888]
 Oscar W. Underwood House [19th century]
 United States Capitol [1793-1865]
 United States Department of the Treasury [1836-1862]

United States Soldiers Home [1851]
 Washington Aqueduct [1853-1863]
 Washington Navy Yard [1800-1910]

Maryland

Chestertown Historic District [18th-19th centuries], Kent County
 Ellicott City Station [1831], Howard County
 Monocacy Battlefield [1864], Frederick County
 Old Lock Pump House, Chesapeake and Delaware Canal [1837], Cecil County
 Riversdale [early 19th century], Prince George's County
 Sion Hill [19th-20th centuries], Harford County
 Thomas Point Shoal Light Station [1875], Ann Arundel County
 United States Naval Academy [1845], Annapolis
 Washington Aqueduct [1853-1863], Montgomery County

Baltimore City Landmarks

Baltimore and Ohio Transportation Museum and Mount Clare Station [1830]
 Carrolltown Viaduct [1829]
 College of Medicine of Maryland [19th-20th centuries]
 Constellation (Sloop of War) [1854]
 Minor Basilica of the Assumption of the Blessed Virgin Mary [1806-1863]
 Mount Vernon Place Historic District [19th century]
 Phoenix Shot Tower [1828]
 Edgar Allen Poe House [1833-1835]
 Sheppard and Enoch Pratt Hospital and Gate House [1862-1891]

Thomas Viaduct, Baltimore and Ohio Railroad [1835]

Pennsylvania

Bomberger's Distillery [1753, 1840], Lebanon County
 Fulton Opera House [1852], Lancaster County
 Union Canal Tunnel [1825-1827], Lebanon County
 Wheatland, James Buchanan House [1828], Lancaster County

Virginia

Alexandria Historic District [18th-19th centuries], Alexandria City
 Ball's Bluff Battlefield and National Cemetery [1861 and 1865], Loudoun County
 Camden [17th-19th centuries], Caroline County
 Drydock No. 1 [1827-1834], Portsmouth City
 The Exchange [1841], Petersburg City
 Five Forks Battlefield [1865], Dinwiddie County
 Fort Monroe [1819-1834], Hampton City
 Franklin and Armfield Office [1828-1836], Alexandria City
 Green Springs Historic District [18th-19th centuries], Louisa County
 Hampton Institute [1868], Hampton City
 Marlbourne, Edmund Ruffin Plantation [1843], Hanover County
 General William "Billy" Mitchell House [1826, 1925], Loudon and Fauquier counties
 Oak Hill, James Monroe House [1820-1823], Loudoun County
 Patowmack Canal Historic District [1786-1830], Fairfax County

Sayler's Creek Battlefield [1865], Amelia and Prince Edward counties

John Tyler House [1780, 1842], Charles City County

University of Virginia Historic District [19th-20th centuries], Charlottesville City

University of Virginia Rotunda [1822-1826, 1898], Charlottesville City

Waterford Historic District [18th-19th centuries], Loudon County

Richmond City Landmarks

Egyptian Building [1845]
 Ellen Glasgow House [1841]
 Jackson Ward Historic District [19th-20th centuries]
 James Monroe Tomb [1859]
 Tredegar Iron Works [1841]
 White House of the Confederacy, Dr. John Brockenbrough House [1818, 1861-1865]

**PORTFOLIO: VIEWS OF
THE EARLY INDUSTRIAL
CHESAPEAKE
TRANSPORTATION
LANDSCAPE.**



**Figure 50
(above):
Building the
Chesapeake
and Ohio
Canal.**

(Illustration
courtesy of the
National Park
Service)

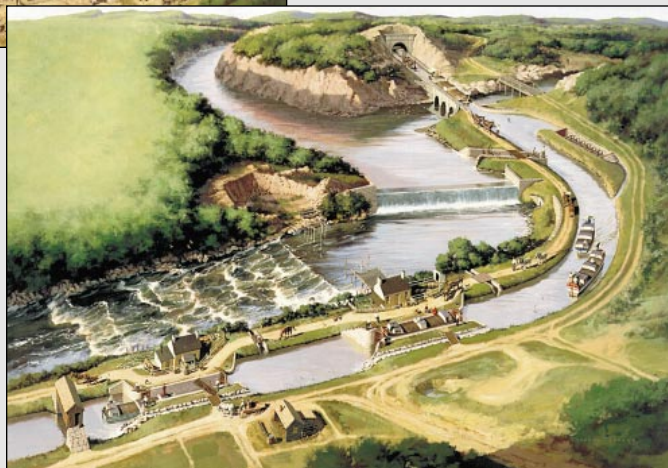
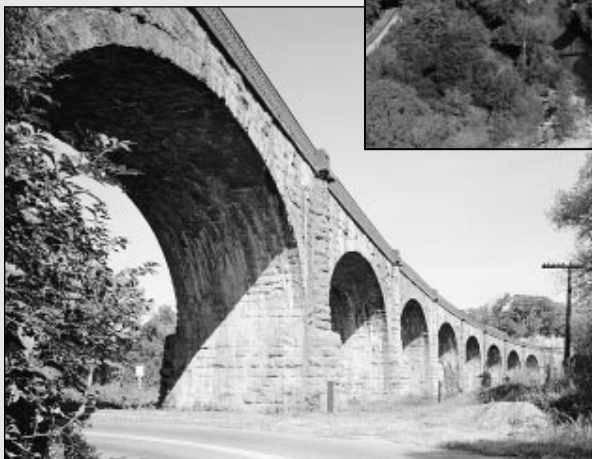


Figure 51: The completed Chesapeake and Ohio Canal Water System. (Illustration courtesy of the National Park Service)

**Figure 52 (right): Present-day
Aerial View of Carrollton
Viaduct, Built by the Baltimore
and Ohio Railroad Over
Gwynn's Falls Near Carroll
Park, Baltimore.** (Photograph
courtesy of the National Park Service)



**Figure 53 (left):
Present-day Ground
Level View of the
Baltimore and Ohio
Railroad's Thomas
Viaduct, Looking
North, Spanning the
Patapsco River at
Elkridge, Maryland.**
(Photograph courtesy of the
National Park Service)



Figure 49: Dismal Swamp Canal.
(From *The Transformation of Virginia, 1740-1790* by Rhys Isaac; used by permission of the University of North Carolina Press ©1982)

people both across and within sectional lines. First emerging during colonial times, it became a constitutional crisis over the issue of rights—both of states and of individuals—that increased in rancor and intensity until it erupted into civil war and on into reconstruction.

The Chesapeake region stood astride the invisible line that split the nation into North and South at the beginning of this era. Yet differences between the sections never became either total or completely clear cut. The nation's Northern and Southern sections spoke the same language, followed the same forms of worship, relied on the same technologies, and looked back on similar cultural heritages and histories. To an outsider, their differences must have seemed more like variations of style than differences that could only be resolved by violence.

These complex, subtle differences were reflected in the lack of definite boundaries between the sections. Although slavery only existed south of the *Mason-Dixon line*—the boundary line separating Pennsylvania and Maryland—neither this line nor the Potomac River boundary between Maryland and Virginia put a stop to relations between the states. The industrial life dominating the banks of Baltimore Bay and the fall line towns along the lower Susquehanna and Potomac Rivers began developing in the region's more southerly parts, such as Richmond, Petersburg, and Norfolk. And tobacco, traditionally associated with the South, became a major cash crop along the lower Susquehanna in York and Lancaster counties, Pennsylvania. So when civil war finally came, the region did not simply split along state boundaries. For example, in 1862, counties in northwestern Virginia seceded from Virginia and joined the Union, becoming the new state of West Virginia. And though many who lived in Maryland's southernmost counties fought



Figure 54: Way Station on the Landscape of Servitude: Photograph of the offices and slave pen (the low wall to the right of the office building) of Price, Birch and Company, slave merchants, in Alexandria, Virginia. (Alexander Gardner photograph courtesy of the National Archives)

for the Confederate cause, slave state Maryland stayed in the Union throughout the war.

Of course tension existed between those wishing to secede from the Union and those in favor of staying put. This tension affected every aspect of life in the Chesapeake. Interestingly, an explosion of federal, state, and privately funded construction was creating new turnpike, canal, and railroad networks linking the nation's regions closer together than ever before. *The Dismal Swamp Canal* linking Chesapeake Bay with North Carolina's Albemarle Sound, the *Chesapeake and Ohio Canal* stretching along the Maryland side of the Potomac River from Georgetown to Cumberland, the *Baltimore and Ohio Railroad*, and other transportation systems critical to the nation's development were first built during the early decades of this period.

But these improvements also strengthened sectional solidarity. Trains capable of carrying produce and minerals to market, for example, brought wealth to free labor employers in the Union and increased the profitability of Southern plantations, mines, and furnaces, all of which used slave labor. Prosperity encouraged people to anticipate peaceful resolutions of sectional differences. Free labor advocates hoped that the successes of industrial development would show Southerners that slavery was not economically efficient and should be abandoned. Slave owners, for their part, used profits

reaped in the fields to purchase goods and open manufacturing enterprises of their own. Prohibited from importing slaves from overseas, slave markets such as Alexandria, Virginia's *Price, Birch and Company*, prospered by auctioning slaves from plantations in the region to buyers from newly opened cotton lands farther south in Alabama, Mississippi, and Louisiana (see Figure 54).

New immigrants also had to choose sides. Many Irish, German, and other immigrants—fleeing famine and unrest in Europe—landed in Chesapeake Bay ports such as Baltimore and Norfolk during the 1840s and 1850s. Their first challenge was to assimilate into an American society increasingly hostile to them. These feelings crystallized in the formation of the anti-immigrant Know-Nothing party in 1844. Despite such opposition, immigrants managed to settle quietly throughout the region, where most eventually adopted the sectional sympathies of their new neighbors or communities.

The ships bringing new immigrants made up only a small part of the Bay's quickly growing passenger and cargo traffic. Improvements in ship design increased the speed and range of wooden-hulled Baltimore clippers, schooners, and other sailing vessels (see Figure 55). Boats began using steam driven paddle wheels, first in addition to sails, and then instead of them. Metal ship hulls and screw propellers, linked to steam boilers by strong metal drive shafts, came into use more and more during the middle decades of the period. Wooden wharves, docks, and warehouses along Chesapeake Bay waterfronts expanded to handle growing coastal and international trade.



Figure 55: The Clipper Saint David, ca. 1900-1906.

(Photograph courtesy of the Library of Congress)



**Price, Birch and Company,
Virginia**



**Dismal Swamp Canal,
Virginia
Chesapeake and Ohio Canal
and Baltimore and Ohio
Railroad, Maryland**

Products from throughout the region were combined to fuel industrial development. Coal from upper Potomac and Susquehanna Valley mines fueled railroad engines; the trains carried cargo to new factories in and around Baltimore, Washington, and Richmond. These same trains brought iron ore to coal-fired furnaces, which smelted the ore into iron and steel. In turn, these metals were used to manufacture rails, bridges, engines, machines, and finished goods. Ambitious capitalist entrepreneurs struggled to meet the transportation needs of rapidly expanding markets as demand for goods produced in Chesapeake Bay factories rose. Banks funded development, and they prospered or collapsed along with the volatile market economy.

*Harper's Ferry Arsenal,
West Virginia*



*Southampton County,
Virginia*



*Appomattox Court
House, Virginia*



The Chesapeake Bay region was splitting into a free labor market in the north and a slave labor economy farther south. Thus the question of the economic future preoccupied its people. White southerners feared that slave rebellions might grow into a general insurrection. One led by Nat Turner just south of the region in *Southampton County, Virginia*, in 1831 left sixty people dead in four days of violence. Fear widened sectional differences as slave states insisted on their right to avoid restrictions imposed by a growing free-state majority. Feelings



Figure 56: Harper's Ferry, July, 1865.
(Photograph courtesy of the National Archives)

reached a flash point in 1859, after Northern abolitionist John Brown made an abortive attempt to spark a slave uprising with arms seized from the *Harper's Ferry* arsenal in the Virginia Piedmont (see Figure 56).

The drive for sectional independence finally led to the Civil War in 1861. The war pitted Chesapeake Bay region people and states against one another on both sides of the Mason-Dixon line. Pennsylvania remained steadfast for the Union. Pro-slavery border states of Maryland and Delaware stayed loyal to the federal government, despite their many Southern sympathizers in Baltimore city, Saint Mary's County, and other Coastal Plain locales. Virginians followed a different path. The state seceded from the Union and joined the southern Confederacy after South Carolina troops firing on the federal post of Fort Sumter in Charleston Harbor brought on the war. Edmund Ruffin fired the war's first shot. Today, he is remembered more as an ardent fire-breathing advocate of the Confederacy than for his contributions to agriculture.

Violence brought on by the Civil War devastated the Chesapeake Bay region. The part that fell midway between the federal capital in Washington, D.C., and the Confederate capital in Richmond became the war's decisive theater. Men of both armies pillaged farms, damaged railroads, and burned bridges everywhere they marched. Fighting broke out as far north as Carlisle, Pennsylvania, as far east as the outskirts of Baltimore, and as far south as the Piedmont village of *Appomattox Court House* (see Figure 57). And they fought massive, bloody battles



Figure 57: Landscape of Reconciliation and Remembrance: Appomattox Court House, Virginia. (Photograph courtesy of the National Park Service)

LANDSCAPE OF MEMORY:

GETTYSBURG NATIONAL MILITARY

PARK. This 6,000 acre National Park preserves the place where one of the most pivotal battles in American history was fought. On July 1, 1863, units of the Confederate army advancing north into Pennsylvania in an offensive aimed at ending the war, collided with Union troops at the crossroads town of Gettysburg. During the next two days, the 75,000-man Confederate Army of Northern Virginia under the command of Robert E. Lee struggled to break through Union defenses along a line of hills and ridges to the west and north of the town held by the 95,000 men of the Union Army of the Potomac led by George C. Meade. By the time the battle ended on July 3, more than 51,000 soldiers, nearly a third of all the men engaged, were either dead, wounded, captured, or missing. Stopped by the Union army and suffering losses in excess of 20,000 men, the Confederate army retreated back to Virginia.



Figure 58: Postcard View of the National Cemetery at Gettysburg. Where Lincoln delivered the famous “Gettysburg Address,” and where more than 7,000 Union soldiers killed during the battle are interred. (Photograph courtesy of the Dennis Montagna Collection)



Figure 59: The Union Line on Cemetery Ridge, 1989. Where Union troops stopped Pickett’s Charge on the third and last day of the battle. (Photograph courtesy of the National Park Service)



Figure 60: Nineteenth Century Postcard View of Devil’s Den. The scene of heavy fighting during the second day of the battle. (Photograph courtesy of the Dennis Montagna Collection)

This site of singular struggle and sacrifice soon became a national shrine. Lincoln’s Gettysburg Address, delivered some months later at the dedication of the National Cemetery where more than 7,000 of the Union troops (1,668 of them unidentified) killed in the battle were interred, captured the essence and meaning of the war for the Union in the few paragraphs that are still memorized by children throughout the nation. States and veterans erected monuments at Devil’s Den, Little Round Top, Cemetery Ridge, and other places where the fighting was heaviest. Established by Congress as a National Military Park on February 11, 1895, the National Park Service today preserves the locale’s pastoral landscape, the military landscape of the battle itself, and the commemorative landscape subsequently created to memorialize the struggle (see Figures 58-61).



Figure 61: The Crest of Little Round Top, 1992. The monument commemorates the stand of the 20th Maine, who held the Union left flank against repeated Confederate attacks during the second day of the battle. (Photograph courtesy of the National Park Service)



Figure 62: Fort Monroe, Old Point Comfort, Virginia, 1862.
(E. Sachse and Company lithograph courtesy of the Library of Congress)



**Fredericksburg,
Peninsula, Cold Harbor,
Manassas,
Chancellorsville,
Spotsylvania, Richmond,
Petersburg, Fort Monroe,
Williamsburg, Richmond
and Petersburg, Virginia**
**C.S.S. Virginia and
U.S.S. Cumberland**
Gettysburg, Pennsylvania
**Harper's Ferry,
West Virginia**

at Coastal Plain locales such as *Fredericksburg*, the *Peninsula*, and *Cold Harbor*. Farther inland in the Piedmont, armies periodically occupied *Harper's Ferry* and engaged in equally costly struggles at *Manassas*, *Chancellorsville*, *Spotsylvania*, battled decisively at *Gettysburg* in Pennsylvania, and fought in battles around *Richmond* and *Petersburg* in Virginia that finally decided the outcome of the war. Huge chains of forts surrounded Washington, D.C. Many of these forts can still be seen today, as can the great moat-encircled stone stronghold of *Fort Monroe* (see Figure 62) and the lines of earthwork trenches and bastions dug during sieges at *Williamsburg*, *Richmond*, and *Petersburg*. Ships sank while fighting to control the strategically vital Chesapeake waterway. The *C.S.S. Virginia*, the *U.S.S. Cumberland*, and many other ships still lie in muddy graves beneath Bay waters today (see Figure 63).

It took four years of bloody fighting to reunite the nation politically, if not in other ways. The war proved disastrous for the South in many ways. The Northern blockade cut the South off from the rest of the world and gradually strangled production. Short of raw materials, in need of machine tools, and unpaid by fiscally strapped Confederate and state governments unable to pay their bills, Southern commerce declined catastrophically. By 1865, famine threatened people living in many sections of the South.

The situation was much different in the North. Northern losses on the battlefields were horrible. On the home front, however, the war stimulated a new peak of industrial expansion. Lucrative federal government contracts funded new transportation routes, improved harbor facilities, and stoked the furnaces of factories and finance. Even greater industrial growth in the North after the war helped restore many ravaged communities and helped bind the region's states, and the rest of the country, into a firmer federal union.

At first, recovery was slow in Virginia. Small farmers and large landowners struggled to make livings on the land. Public debt to pay for the war consumed a disproportionate share of government dollars. Embezzlement and misappropriation of public school funds crippled educational development. By 1880, railroad expansions, infusions of capital, and new production techniques helped Virginia's industry and agriculture start to recover.

Baltimore and Washington were already major cities before the war, and they grew dramatically afterward. Many people from the countryside moved there, joining the growing ranks of European immigrants seeking work in factories and businesses as much American agriculture shifted west into the prairies and plains. Throughout the region, a mix of nationalities, races, religions, and ethnicities lived beside one another, not always happily. Immigrants struggled to find



Figure 63: C.S.S. Virginia sinks the U.S.S. Cumberland, March 8, 1862.
(Painting courtesy of the Library of Congress)

their places in Chesapeake society, dealing with both the intolerance of native born Americans and difficulties of cutting ties to the old country—and upholding its traditions.

African Americans, recently freed from slavery worked with freeborn blacks, other people of color, and sympathetic whites to secure voting rights, find work, fight discrimination, and establish schools. In 1867, a federal agency known as the Freedman's Bureau opened *Howard University* (named after the Bureau's white commander, General Oliver Otis Howard) in Washington, D.C. to train African American teachers, lawyers, and business leaders. One year later, Virginia's *Hampton Institute* (today's Hampton University) opened. But anti-black prejudice reasserted itself by the mid-1870s, after being suppressed by federal military authority during the era of Reconstruction. White voters enacted Black Codes, laws that severely restricted African American rights. New laws made it almost impossible for them to vote. Black people were barred from public life and forced to conform to strict segregation laws.

For the poor, finding work and a place to live were major challenges. In the countryside, poor people of all races worked fields for portions of the harvest as sharecroppers or rented them as tenant farmers. Black people employed as servants to middle and upper class families were often given quarters in the houses where they worked. African Americans and new immigrants moving to smaller cities often took up lodgings in well kept, established neighborhoods, but those moving to larger cities often had to live in rundown ghettos and accept unskilled work. Though they struggled against discrimination, African Americans and new immigrants established churches, benevolent societies, and educational institutions to improve conditions for their people throughout the region.

□ PLACE

The period's profound changes radically transformed Chesapeake Bay environments. Most of the region's remaining old-growth forests were cut down. Farmers cleared from 40 to 50 percent of the land for planting fields. Wheat began to supplant corn and tobacco as the major cash crop. In the Susquehanna Piedmont in the 1840s, growers began naturalizing a variety of tobacco from Cuba that could tolerate the cold. Rechristened Pennsylvania seedleaf tobacco, it became the favored outer wrapping for American cigars by the 1850s.

Wood remained the region's primary source of heat, light, and building material until the 1860s. Growing cities and rural towns required huge amounts of milled timber for building construction and maintenance. Innumerable cords of firewood were needed for heat as the Little Ice-Age winds made winters bitter cold. Farther inland, charcoal fueled Piedmont furnaces, foundries, and factories. Since it took 20,000 to 30,000 acres of woodland to produce enough charcoal to smelt 1,000 tons of iron, charcoal producers consumed entire forests. Woodlots on land that could not be used for farming provided wood for all of these domestic and industrial purposes.

Landscapes in and around Chesapeake Bay cities were transformed as never before. Complexes of stores and municipal buildings rose in city centers. Residential and industrial districts emerged in outlying areas. Brick, stone, iron, and steel replaced wood as the favored building material in city and town centers. Horses drew carriages, wagons, and streetcars on city roads and rail lines. Great terminals were built to serve the steam railroads linking cities with the countryside. Coal fueled the railroads and began supplanting charcoal as the fuel of choice in city buildings and in factories. Production rose higher than ever in many established factories, such as the arsenal complex in *Harper's Ferry* first built in 1803. New rail construction linking Virginia with the rest of the



*Howard University,
Washington, D.C.*

*Hampton Institute,
Virginia*



Harper's Ferry, Virginia

TREDEGAR IRON WORKS. The Tredegar Iron Works was built in Richmond Virginia between the north bank of James River and the southern berm of the James River and Kanawha Canal in 1841. Worked by highly skilled slave laborers, Tredegar's coal-fired forge and furnace smelted iron that was then cast to produce cannon barrels and ammunition, machined into parts for steam engines, or rolled into sheet metal and steel rails. Continually expanding, the works grew into the nation's third largest ironworks by the time the Civil War broke out in 1861.



Figure 64: Tredegar Iron Works, April, 1865. Photograph by Alexander Gardner. (Alexander Gardner photograph courtesy of the Library of Congress)

Tredegar became the South's largest and most important munitions plant during the war. Served by as many as 2,500 workers, mostly slaves, convicts, paroled Union prisoners, and Confederate soldiers detached from their units, the Tredegar works turned out 1,099 cannon of all calibers, hundreds of tons of shot and shell, and the plate armor mounted on the sides of the Confederate ironclad ram C.S.S. Virginia. Experimental prototypes of the submarine, the torpedo, and the machine gun were also produced at Tredegar during the war.

Blown up by retreating Confederate troops when Richmond fell

to Union forces on April 3, 1865, the Tredegar Works were quickly repaired and placed back into production. The works continued to produce munitions, locomotives, and sheet metal up the end of World War I. Several restored buildings (see Figures 64-65) and the archeological remains of others are today preserved on the twenty-two acre Tredegar tract.



Figure 65: Tredegar Iron Works, 1990. North and east facades of the Spike Factory. (Photograph courtesy of the National Park Service)


Tredegar Iron Works,
Virginia
Washington Aqueduct,
Washington, D.C.

nation stimulated the erection of the *Tredegar Iron Works* in Richmond in 1841. Initially built to produce rails, engines, and rolling stock, the Tredegar works became one of the South's few munitions plants during the Civil War.

Baltimore and Washington city fathers were intent on securing adequate supplies of fresh water. So they created reservoirs by damming nearby Piedmont rivers and streams. The most ambitious of these water supply projects, the *Washington Aqueduct* (constructed between 1853 and 1863), carried Potomac water stored in a dam built just above the river's Great Falls to holding reservoirs in Georgetown and Washington City (see Figures 66-67). Locally obtained brick, stone, wood, and metal were used to construct the pipelines and



Figure 66: Working Water Landscape: The Great Falls of the Potomac, June, 1906. (F. Lamson Scribner photograph courtesy of the Library of Congress)



Figure 67: The Dalecarlia Reservoir in Georgetown, April, 1973. (Environmental Protection Agency photograph courtesy of the National Archives)

aqueducts of this and subsequent water supply systems that carried reservoir water to city water mains. The same materials were also used in new sewers dug under city streets. These sewers pouring wastes and runoff into rivers flowing into Chesapeake Bay.

Expanded agricultural, residential, and industrial development meant more soil erosion. In the interior, tailings of waste rock, cinders, and other residues from mines, quarries, and furnaces—mixed with soils eroded from logged-over lands—flowed into Piedmont rivers and streams. Soils eroded from agricultural fields washed millions of additional tons of topsoil into regional waterways across the Coastal Plain. Untreated sewage and other city wastes—pumped directly into harbor waters by coastal cities—further fouled Bay waters.

The region's plant and animal communities began to show signs of the affects of pollution and sedimentation. Offshore oyster beds, for example, were once so dense that they were regarded as navigational hazards. But they were decimated after better transportation networks opened new markets for fresh, pickled, and spiced oysters in the 1830s. Searching for new supplies in deeper waters, Chesapeake Bay oystermen dredged up the huge quantities of oysters discovered in Tangier Sound in 1840. By 1845, coastal canneries had been built, and oystermen were hauling their catches there. Oysters were steamed in huge kettles, then packed into sealed bottles and cans that could preserve perishable contents. They were then sent in wooden crates by ship and rail throughout the region and the nation.

The oyster industry became big business. Baltimore canneries alone processed 1.6 million bushels (a bushel represents the rough equivalent of eight gallons) in 1857, 4 million bushels in 1865, and 10 million bushels in 1868. Overall, Maryland oystermen took approximately 400 million bushels of oysters from Chesapeake Bay waters between 1836 and 1890. Oystermen ripped up the seabed with metal rakes and dredges, taking all oysters, regardless of age and

**PORTFOLIO: THE
CHESAPEAKE BAY
SHELLFISH INDUSTRY**



Figure 68: Working an Oyster Bed off Rock Point, Maryland, 1936. (Arthur Rothstein photograph courtesy of the Library of Congress)



Figure 70: Oyster House and Shuck Pile, Rock Point, Maryland, 1941. (Reginald Hotchkiss photograph courtesy of the Library of Congress)

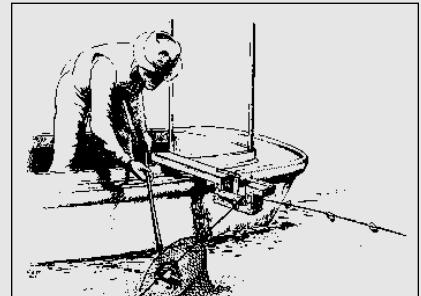
Figure 72: Catching Blue Crabs with a Trotline. (Sketch courtesy of the Virginia Institute of Marine Sciences, the College of William and Mary)



Figure 69: Oyster Tongers off Rock Point, Maryland, 1941. (Reginald Hotchkiss photograph courtesy of the Library of Congress)



Figure 71: Oyster Bed Watch House. Typical of the types of houses used to shelter watchmen looking out for poachers raiding oyster grounds throughout the Chesapeake drainage. (From *Harvesting the Chesapeake: Tools and Traditions*, by Larry S. Chowning, courtesy of Tidewater Publishers ©1990)



condition. But oysters were not in endless supply. Sickened by pollution and devastated by crude harvesting techniques, Chesapeake Bay oyster breeding stocks were severely threatened by 1880.

The Bay's blue crab communities began to be exploited as well, after rail line expansion and the invention of the refrigerator car in the 1870s made it possible to ship blue crabs to cities. Market demand for hard shelled crabs caught by trotlines, long lengths of line baited with chunks of eel and other bait sunk in open Bay waters, emerged soon after (see Figure 72).

Market demand also drastically reduced waterfowl populations. One commercial hunter reported that he had shot 7,000 canvasback ducks during the 1846-1847 hunting season. Market gunners commonly reported daily hauls of more than a hundred canvasbacks. Canvasback ducks were most frequently hunted along the west side of the upper bay, between the mouths of the Susquehanna and Patapsco Rivers. Market hunters frequently used large, cannon-like, smooth bored shotguns, which they mounted on swivels fixed to the rail sidings of shallow draft vessels, such as sneakboats—low boats barely visible above the waves. Volleys of shot fired by a battery of such guns could kill thousands of birds at a time. Sport hunters often used the lifelike wooden decoys carved by Chesapeake Bay craftsmen to lure flights of ducks, geese, and other waterfowl into range. Farther inland, hunters shot huge numbers of passenger pigeons and other migratory birds. Hunters developed a special breed of dog, the Chesapeake Bay Retriever, to be particularly adept at bringing in birds under all weather conditions.

Accurate records of Chesapeake fish harvests were first kept during this period. The Maryland Fish Commission's comprehensive survey, *List of Fish of Maryland*, catalogued 202 different species in Chesapeake Bay in 1876. Only five of these were full time residents; the rest were migrants of one sort or another. The Bay was noted as the northernmost limit for twenty-seven species that were more commonly found farther south. And twelve northern species reached the southern limits of their ranges in the Bay region. Anadromous species spawning in freshwater, such as American shad, alewives, and striped bass, were heavily fished by Chesapeake Bay watermen. Farther inland, sport fishing grew popular.

On land as well, hunting had an ever greater impact on animal populations. Drastic declines occurred in the number of game animals such as white-tailed deer and black bear. In repeated attempts to protect the remaining populations, local governments defined and redefined legal bag limits and limited hunting seasons.

THE CULTURAL LANDSCAPE OF SECTIONAL STRIFE

□ PEOPLING PLACES

Immigration, relocation from rural areas to Chesapeake Bay cities, and the great westward migration changed the region's demography dramatically between 1820 and 1880. Successive waves of European immigrants arrived at ports such as Baltimore, Washington, and Norfolk. Even more came on trains from northern cities such as Boston, New York, and Philadelphia. Many Swedes settled at the northern end of the Eastern Shore in the early 1840s. Germans, Czechs, and Poles—fleeing failed revolutions—came to Baltimore after 1848. And numerous Irish immigrants also arrived at this time, driven from their homes by poverty, repression, and famine.

Many new immigrants fought in both armies during the Civil War. And growing numbers of Italians, Russians, Greeks, Ukrainians, Jews, and Scandinavians came to the region in the decades after the war. They were joined by impoverished Southerners of all races seeking opportunities farther north. Many newcomers settled together in city neighborhoods with names like Little Italy.

Small numbers of Nanticoke, Powhatan, Mattaponi, and other Native Americans continued to live in scattered rural reservations and other enclaves. They were often unable to find spouses in their own communities because the communities had shrunk so much. As a result, many married non-Indians. Children born to these families often moved from their impoverished communities to the region's cities in search of employment in mills, shops, and factories. Many other rural inhabitants did the same. Most of these newcomers were poor and had to live in racially and ethnically segregated neighborhoods. Each of these neighborhoods developed its own places of worship, markets, clubs, and other institutions.

City services, already sparse in this period, were rarely available in neighborhoods occupied by new immigrants or native born African Americans. Blind to social distinctions, diseases such as malaria and yellow fever were spread by mosquitoes thriving in the warm, still waters of the Bay estuary. And ships from foreign ports carried lethal illnesses such as cholera. An epidemic of cholera originating in India in 1826 slowly spread around the world, reaching the Chesapeake by 1832. Together, epidemics and contagious illnesses sickened and killed tens of thousands. Although city authorities did what they could to improve sanitation and provide clean water, their efforts did little to halt the spread of contagious diseases for much of the nineteenth century.

□ CREATION OF SOCIAL INSTITUTIONS

Social life in the region expanded far beyond home and hearth between 1820 and 1880. Churches, taverns, shops, and inns remained centers of social interaction in rural communities. Publicly funded primary schools began opening in communities in Pennsylvania and Maryland in the late 1820s. Virginian communities started their own public school systems in the years after the Civil War. Much of the region's current educational infrastructure was in place by 1880. These schools came to be staffed by teachers who had attended colleges (then known as normal schools) designed to train educators.

Higher education also expanded dramatically. The *United States Naval Academy*, for example, was founded in Annapolis in 1845. Federally funded land grant colleges—intended to stimulate growth in agriculture, industry, and engineering—opened in Maryland and Virginia in the 1860s and 1870s. Several private colleges were also established in and around Washington. One of these, *Gallaudet College*, which opened in 1866, was the nation's first institution of higher learning dedicated to educating deaf people. African American communities also opened schools of their own

when almost all established institutions closed their doors to black students. These included the previously mentioned *Howard University* and *Hampton Institute*.

Other social services were expanded, and new facilities were built throughout the region. These included hospitals such as Baltimore's *Pratt Hospital*, water treatment facilities such as the earlier mentioned *Washington Aqueduct*, and homes for retired soldiers and seamen such as the *United States Soldier's Home*, built in Washington. Many were in rural locales, far from settlements. Others were built in or near city centers and county seats. At first, many of these institutions were housed in structures—wood-framed or masonry, in the Greek Revival style—that were believed to represent and foster democratic values. The *United States Naval Hospital* in Portsmouth is one of the best known examples in the region. Another architectural style, an imposing one known as Egyptian Revival, was used to emphasize the solemn, scientific purpose of Richmond's *Medical College of Virginia*, the first institution of its kind in the South. Wood, brick, and stone masonry hauled from nearby quarries were also used to build both ornate Victorian Gothic Revival buildings, such as the *James Monroe Tomb* in Richmond (built in 1859), and Italianate structures, such as the *Camden Plantation House* in Port Royal, Virginia (see Figure 73).



United States Naval Academy and Pratt Hospital, Maryland

Gallaudet College, Howard University, Washington Aqueduct, and United States Soldier's Home, Washington, D.C.

Hampton Institute, United States Naval Hospital, Medical College of Virginia, James Monroe Tomb, Camden Plantation House, Virginia



Figure 73: Camden Plantation Great House, 1986
(Photograph courtesy of the Virginia Department of Historic Resources)



Figure 74: Soldier's Home, Washington, ca. 1868.
(Lithograph by Charles Magnus courtesy of the Library of Congress)

The huge numbers of Civil War soldiers maimed by incapacitating wounds had made large scale institutional health care necessary, and it also led to much subsequent construction in the region. Crippled or aged soldiers were cared for in veterans' homes (see Figure 74). Orphanages, homes for widows, and poor farms opened to care for other victims of the war. Cities and counties built facilities to care for growing numbers of prison inmates, impoverished citizens, and mental patients. Sanitariums were opened to care for tuberculosis victims, whose numbers began to grow alarmingly towards the end of the period. This increase occurred as crowded urban slums became breeding grounds for the disease. Libraries, museums, and historical societies sponsored by influential families began to open in larger cities and county seats. In the cities, new immigrants began benevolent societies and other support services. Reactionary groups intent on restricting the rights of immigrants and people of color also organized secretly throughout the region during this period.

Foremost among these groups was the Ku Klux Klan. Initially a social club, it quickly grew into a secret army that used terror and violence to intimidate its victims; authorities administering Reconstruction in the South and black people exercising newly won rights. Some traditions hold that the Klan's name originally referred to a legendary Indian demon thought to prey on willful black people. Its founders, a group of lawyers who had

served in the Confederate armies, patterned their organization's name and ceremonies after the Greek three-letter fraternities of their college days. Meeting in Pulaski, Kentucky in 1866, they established a highly ritualized secret fraternal order whose name derived from *kucklos*, a Greek word for circle, and *clan*, a Gaelic word for family. In less than a year, this small club grew into a far-flung secret army. This army waged a covert war on Reconstruction and used tactics employed by vigilantes and militia guards to hunt escaped slaves in Southern states before the Civil War. Disbanding soon after the federal government officially suppressed their organization in 1871, the Ku Klux Klan nevertheless played a major role in the enactment of discriminatory Black Codes in Maryland, Virginia, and other Southern states.

□ EXPRESSING CULTURAL VALUES

Like other areas of the nation, Chesapeake Bay struggled to form a cultural identity between 1820 and 1880. New journals appeared, including Richmond's *Southern Literary Messenger*, providing places for cultural exchange. One of its editors, Edgar Allen Poe (1800-1849), spent much of his life moving between Richmond and Baltimore. Poe explored the darker depths of the romantic sentimentality that dominated the nation's popular culture of the period.

Sentimental minstrel performances also became popular at this time. They showcased banjo music played by white actors who had blackened their faces. Their minstrel shows presented a romantic view of Southern plantation life—a view of that world as it never was. Although the minstrel shows were made to appear as if they were drawn from African American life, their middle class sensibilities, polka-style beat, and homely lyrics were mostly the inventions of Northern songwriters such as Stephen Foster.

Other forms expressed the region's many cultures more accurately. These forms

included starkly simple choral singing (the tune of one such song, “*Amazing Grace*,” is still widely known), camp-meeting revival songs, call-and-response black spirituals, and European-style military marches.

People became more aware during these decades that historic sites could be used to support cultural messages. For example, a group of Know-Nothings calling themselves the American Party tried to build a monument to George Washington in the capital. This was clearly an attempt to use the first president as a symbol to support their anti-immigrant program. The Know-Nothings were not the only group to appreciate George Washington’s symbolic significance. In a bustle of patriotic zeal, the citizens of the South Mountain town of *Boonsboro*, Maryland erected the nation’s first monument to Washington, a stone mound, in one day on July 4, 1827. Rebuilt by the Civilian Conservation Corps in 1936, it is now the centerpiece of a state park. And, in the late 1850s, a national group of women calling themselves the Mount Vernon Ladies’ Association, formed to address the growing North-South tensions tearing at their country. They purchased *Mount Vernon*, Washington’s home on the Potomac, preserving it and making it a monument to America’s common heritage (see Figure 75). Inspired by their example, patriotic citizens began erecting replicas of the building elsewhere in the nation in the decades following the end of the Civil War.

Enthusiasm for classical Greek and Roman culture swept the region and the country in this period. This classical



Figure 75: Aerial View of Mount Vernon: April, 1973. (Photograph by the Environmental Protection Agency courtesy of the National Archives)

revival influenced architecture, the arts, and the names of new towns and cities (such as *Arcadia*, Maryland, and *Palmyra*, Virginia). Classically landscaped parks and cemeteries featuring curvilinear paths, ornamental and commemorative monuments, sculptures, and fountains, mown lawns, and gardens and groves emulating layouts of ancient designed landscapes unearthed during the nineteenth century at Pompeii and other Roman and Greek archeological sites, began to appear in regional cities. This use of Greco-Roman style had symbolic value, as the Greek and Roman empires were founded on democratic ideals that the United States intended to uphold. The movement also emphasized the European origins of American culture, ignoring or denigrating the cultural contributions of Africans and Native Americans. Such an emphasis was strengthened by a so-called scientific view that emerged in this period. Based on evolutionary theory as it was then understood, this view held that peoples considered by white Europeans and Americans to be more primitive—such as Africans and Native Americans—were also biologically and culturally inferior.

Before the Civil War, Quakers, abolitionists, feminists, and other Northern social reformers struggled to put forward more egalitarian cultural agendas in the region. Criticizing social inequality and injustice, reformers supported the abolition of slavery, fought to extend voting rights to all adult citizens, struggled against religious intolerance and anti-immigrant Know-Nothingism, and championed other causes. Although the rhetoric often ran hot, public support was lukewarm at best, as John Brown discovered to his sorrow at Harper’s Ferry in 1859.

The dramatic postwar development in the North appeared to signal victories for the reformers, but it did not radically transform cultural values. Many Southerners in the Chesapeake and elsewhere rejected what was called the radical agenda. Laws supporting this agenda, which called for, among other things, full and immediate representation of African




Arcadia, Maryland
Palmyra, Virginia



Boonsboro, Maryland




Mount Vernon, Virginia


**General Post Office
 and State, War, and
 Navy Buildings (Old
 Executive Building),
 Washington, D.C.**

American voters in federal, state, and local governments, were proposed and enacted by politicians known as the Radical Republicans. And those in power both north and south of the Potomac refused to give women the vote. Most native born Americans, also continued to look with disdain on African Americans, Native Americans, and the latest waves of immigrants from Eastern European and Mediterranean countries.

□ SHAPING THE POLITICAL LANDSCAPE

Chesapeake Bay people struggled to balance state rights with federal authority throughout this period. They agreed that the national government should see to the nation's defense, but they debated whether or not to create national postal, banking, and transportation systems. The question of slavery brought these state versus federal issues to a head when the Civil War erupted in 1861. That upheaval changed the region's entire political landscape, as every level of government mobilized every possible resource to support military operations. The Federal and Confederate governments built fortifications, expanded and modernized navy yards (see Figure 76), raised armies, and established elaborate networks to support the logistics of war. Trains, ships, canal boats, and other essential utilities were pressed into war service. Military priorities determined what products factories and farms produced. And foraging soldiers seized livestock, confiscated food supplies, and burned fence rails for fuel wherever their armies marched.


**Chesapeake and Ohio
 Canal Company,
 Baltimore and Ohio
 Railroad, and
 Chesapeake and
 Delaware Canal,
 Maryland**

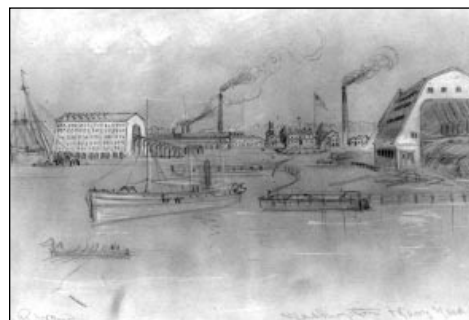


Figure 76: Washington Navy Yard, 1861.
 (Sketch by Alfred R. Waud courtesy of the Library of Congress)

The Federal government funded reconstruction after the war, and it placed defeated Southern states under military law. Wartime forts and camps were maintained to train troops in the North and to house occupation forces in the South. Massive stone administration buildings rose up in Washington. Some, such as the *General Post Office* (completed in 1866), were built in the restrained neo-classical style. Others, such as the *State, War, and Navy Building* (built between 1871 and 1888 and today known as the *Old Executive Building*), were constructed in the ornate French Second Empire style, reflecting the triumph of the Federal government. The impulse to build impressive edifices extended to city and county administrations, which also funded the construction of huge and elaborate administrative buildings, courthouses, halls of records, and prisons.

□ DEVELOPING THE CHESAPEAKE ECONOMY

New coal-driven technologies began to revolutionize the region's economic life in the 1820s and beyond. Maryland entrepreneurs, first excited by discoveries of hard coal seams to their north, found closer deposits in western parts of the state. Often supported by the federal and state governments, they organized corporations to take advantage of new developments such as railroads, steamships, and other coal-powered technologies. Many of these corporations raised their development funds by selling stock and sponsoring lotteries. Larger enterprises were actually allowed to open banks and print their own currency.

Some corporations got both public and private funds. These included the *Chesapeake and Ohio Canal Company* and the *Baltimore and Ohio Railroad*, which extracted and conveyed coal, timber, and other raw materials to new factories, foundries, and furnaces in Coastal Plain cities and Piedmont mill towns. Other improvements, such as the *Chesapeake and Delaware Canal*, forged closer links with coastal ports north and south of the region. Fueled by

coal, growing numbers of corporations began turning local sand, clay, and iron ore into glass, ceramics, bricks, iron, and steel. New houses and structures rose everywhere as a building boom gripped the region following the recovery from the Great Panic of 1837 (see below). Entrepreneurs organized new construction companies to meet demands from new industries and their ever growing numbers of workers. Mills in coastal cities and Piedmont villages—such as Harper’s Ferry, Lancaster, and Petersburg—worked glass, metal, and wood into finished tools, implements, and furnishings. Whatever could not be produced was imported into the region by trading companies operating in Baltimore, Norfolk, and other port cities.

New roads, canals, and rail lines carried goods to cities, towns, and villages throughout the region. Railroads made it possible to develop small Piedmont towns such as Centreville, Virginia (see Figure 77)—towns that lacked access to adequate roads or river routes. Established industries employed once independent artisans to train and supervise workforces of new immigrants and rural countryfolk. These included ship building facilities and factories that mass produced precision goods, such as steam engine parts and rifled muskets. Those who stayed in the countryside raised farm production with new and more efficient plows, harrows, and other tools.

Most farmers stayed largely self sufficient in the first decades of this period. All continued to depend on horses, mules, and oxen to pull their plows and draw their wagons, but steam railroads helped get their growing amounts of produce to markets. Advances in transportation also stimulated development of the Pennsylvania tobacco industry and encouraged the growth of large commercial orchards in Adams County, Pennsylvania, and other Chesapeake Piedmont communities, since tobacco and fruit producers could send their products to far off markets.

Both farms and factories grew dependent on industrial developments. Their



Figure 77: Centreville, Virginia, March, 1862. (Photograph by George N. Barnard and James F. Gibson courtesy of the National Archives)

owners borrowed money from regional banks to meet the growing costs of production and transportation. Private and public banks competed to offer these funds, and their dispute soon spilled over into divisive political conflict on the floors of statehouses throughout the region. As the fortunes of individuals and corporations rose and fell, the economy became more volatile. Periods of prosperity were followed by depressions. These falls were often sparked by fiscal disasters such as the Great Panic of 1837, which was set off when the Bank of Maryland and other financial institutions in and around the region failed.

Economic changes brought on by the Civil War started an era of unprecedented industrial expansion. Northern industries and financial institutions had been enriched by military contracts and took full advantage of the new purchasing power of workers in the booming labor market. But they grew even more prosperous, as the spending power of Northern consumers and western markets grew after the war. For their part, Southerners wishing to end their dependence on Northern manufacturers started up their own industries and financial institutions as they worked to rebuild economies shattered by the war. In tide-water areas, tobacco gave way to a more diverse agricultural economy. Many old plantations were broken up into smaller holdings. These were increasingly farmed by tenant farming renters and sharecroppers who gave up parts of their harvests to more prosperous larger landowners.

Large corporations also made their presence visible in the landscape during this period. Powerful companies built imposing, ornate structures that rivaled federal, state, and local government buildings. Corporate employers dominated life in smaller mining and mill towns, often running community banks, stores, and schools. Corporations needing skilled labor began encouraging educational improvements required to create a more competent, literate workforce. Literacy also fueled development. Printing presses turned out growing numbers of books and newspapers to meet the demands of newly literate consumers.

Toward the end of the period, industrial philanthropists also began funding the construction of libraries and museums in major cities and towns. Corporations purchased huge amounts of locally produced brick, stone, glass, timber, and cast iron to build stately office buildings in city centers and factory warehouse complexes near rail heads, terminals, and harbor wharves. Impressed by these grand structures, people flocked to work in them. Many found contentment within their walls. Others, influenced by the writings of progressive American and European social theorists, dreamed of better wages and working conditions.

But even so, Northern organizers who came to the region to form unions had little success in most Chesapeake

locales. They found a workforce afraid of unemployment; a group of established, powerful families more interested in getting richer than in distributing corporate wealth; and civil authorities who wanted things to stay as they were. Now and then a business crisis threatened to spark a storm in labor relations; one of these was the Economic Crash of 1873. Caused by a catastrophic drop in stock prices on the Vienna and New York markets, this crash set off a five-year period of economic depression. But even so, the discontent and anger of workers in the region's factories and fields mostly stayed hidden—or was forced into hiding—between 1820 and 1880.

But worker unrest flared into violence on the open waters of the Bay when oystermen began fighting state authorities and each other for the shellfish they had to sell to survive. In struggles known as Oyster Wars, oystermen using tongs fought those using the far more destructive dredges, which had been outlawed in Maryland and Virginia. Dredges indiscriminately scraped up vast quantities of oysters regardless of age or condition in large scoops dragged from boats across wide swaths of Bay bottom. These confrontations erupted into gunfire. To end the violence, Maryland created what became known as the *Oyster Navy* in 1868. Patrolling Chesapeake waters in swift, highly maneuverable vessels, the Oyster Navy worked to enforce anti-dredging laws and restore order (see Figure 78). Although the Oyster Navy ended the fighting, it could do little to stop the over-harvesting and pollution that were quickly depleting the Bay's oyster beds.


**Oyster Navy,
Maryland**



Figure 78: Hulk of the Governor Robert M. Lane. Flagship of the Oyster Navy, 1884-1932 laid up in Baltimore Harbor near the Baltimore Museum of Industry, 1997.

(Photograph by Susan B. M. Langley courtesy of the Maryland Historical Trust)

EXPANDING SCIENCE AND TECHNOLOGY

Major developments in science and technology fueled industrial expansion in the Chesapeake Bay region between 1820 and 1880. Native born mechanics and skilled European technicians adapted European innovations in metallurgy, steam technology, and textile manufacturing to fit local needs. Mechanics



Figure 79: Steamboat Potomac on the Patuxent River at Lower Marlboro, Maryland, ca. 1900. (Photograph courtesy of the Calvert Marine)

improved engine efficiency, increased the production capacities of industries, and used new transportation developments to create better vehicles. As noted above, faster and more efficient wooden sailing vessels were developed, and these were replaced eventually by wheel and propeller-driven steamships with metal hulls (see Figure 79). Engineers such as Charles Reeder, inventor of the crosshead engine, improved steam engines for ships dramatically. Locomotives were made larger and more powerful. Safer and more efficient metal railroad cars replaced their wooden predecessors. Lighter, stronger, and more malleable metals also transformed the building trades, enabling architects to design taller, larger, and more ornate structures.

New information moved quickly through the region in technical articles, guidebooks, and other publications. Baltimore became a major information center, as it was strategically located on the banks of the region's roomiest deepwater harbor and at the heart of a web of major transportation networks (see Figure 80). Publications produced by its regional presses were gathered together in libraries, technological institutes, and colleges such as the *Johns Hopkins University*, a research center focusing on postgraduate education. College graduates and self-trained technicians opened or worked in the many laboratories and workshops created in and around the city.

Technological advances also increased agricultural production. By 1832,

Virginian Edmund Ruffin showed how marl (a crumbly dirt rich in calcium carbonate) could provide a cheap, easily obtainable fertilizer for fields that had been depleted by intensive tobacco, corn, and wheat cultivation. Farmers also began using new genetic theories to breed more productive and disease resistant plants and animals. Graduates of land grant colleges introduced other useful techniques, including crop rotation methods and tilling techniques that guarded against erosion. The results—greater farm yields of higher quality—were carried to regional towns and cities along rail lines. And new refrigeration and canning techniques encouraged exports of farm products to other American and foreign markets.



Figure 80: Baltimore City, 1862. Panoramic view from the Mount Vernon Place Historic District looking south beyond the Washington Monument. (Lithograph by E. Sachse and Company courtesy of the Library of Congress)

□ TRANSFORMING THE ENVIRONMENT

The many factors described above – industrialization, urban growth, shifts in agricultural production, and transportation improvements – radically transformed Chesapeake Bay environments in this period. Marching armies of the Civil War did affect the environment negatively, polluting local water supplies, cutting trees, and, on occasion, rerouting waterways with makeshift ditches like the





Figure 81: Dutch Gap Canal, on the James River, Eight Miles from Richmond March, 1865. (Photograph by John Reekie courtesy of the National Archives)

*Dutch Gap Canal,
Virginia
Washington Navy Yard,
Washington, D.C.*

Dutch Gap Canal (see Figure 81), built by Union troops in 1864 to bypass strongly fortified Confederate positions outside Richmond. Such environmental disturbances tended to be temporary and of a highly localized nature. River sediments quickly filled the Dutch Gap ditch, and most other environmental dislocations were corrected by concerned citizens and local communities within a few years of the end of the war. But postwar development posed more serious problems. Eroded soil sediments, human and animal wastes, and industrial wastes polluted Chesapeake Bay waterways as never before. And vast clouds of wood and coal smoke billowed from factory smokestacks and the chimneys of residences and office buildings. This pollution blotted the skies above Chesapeake Bay towns and cities. Intensive use of particular resources caused the clear cutting of old growth forests, the killing of entire species, and the altering of ecosystems. As mentioned, hunting and harvesting even

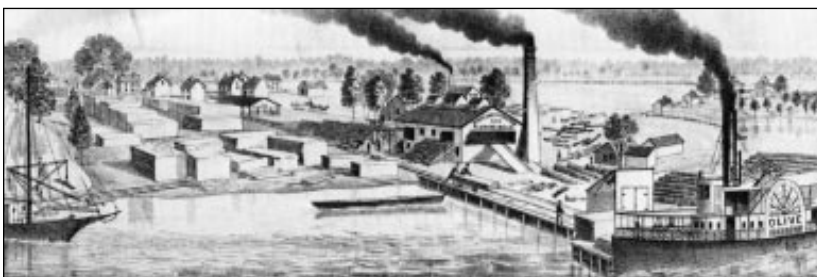


Figure 82: Sixth Street Wharf, 1863, Washington, D.C. (Lithograph by Charles Magnus courtesy of the Library of Congress)

threatened the future of the Bay's duck and oyster populations.

□ CHANGING ROLE OF THE CHESAPEAKE IN THE WORLD COMMUNITY

During this period, wharves, warehouses, and immigrant communities rose along the shores of Norfolk, Alexandria, Baltimore, and other Chesapeake Bay ports (see Figure 82). This growth took the region from an isolated agricultural enclave to a cosmopolitan center of industry and trade. Propellers replaced sails, and schooners, clipper ships, and steam transports brought in imports from Europe and Asia. *The Washington Navy Yard* (see Figure 83) and other Chesapeake Bay shipyards also produced more and more warships that could project American power far from the nation's shores. American determination to turn back potential foreign invaders also motivated the placement of cannon barrels in the walls of stone fortresses on the region's shores.

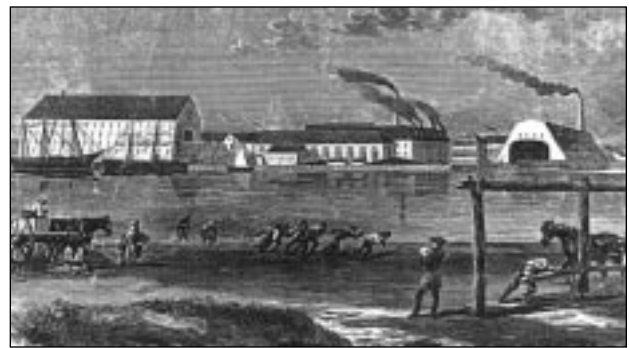


Figure 83: Washington Navy Yard, 1861. Shad fishermen draw in a net in the foreground. (Harper's Weekly sketch courtesy of the Library of Congress)

Washington and Baltimore grew into international cities as new immigrants and foreign diplomatic and trade delegations moved in. More and more immigrants gathered in ethnic neighborhoods with distinctive churches, shops, signage, and eateries offering inexpensive Old World meals to unmarried male newcomers. Farther inland, new immigrants found work in Piedmont mills, mines, and factories.

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Chapter Eight

Urbanization,

1880 to 1930



Industrial Expansion and the Gilded Age 1880 to 1900			Progressive Era 1900 to 1920		The Roaring Twenties 1920 to 1929	
1880's	1888	1900	1900-1910	1914-1918	1920	1929
Skipjack sailboats first produced	America's first electrified trolley line, Richmond	Region population reaches 3 million	Internal combustion engines	World War I	Region population exceeds 4.5 million	Stock Market Crash

AN ECOLOGY OF PEOPLE AND PLACE

□ PEOPLE

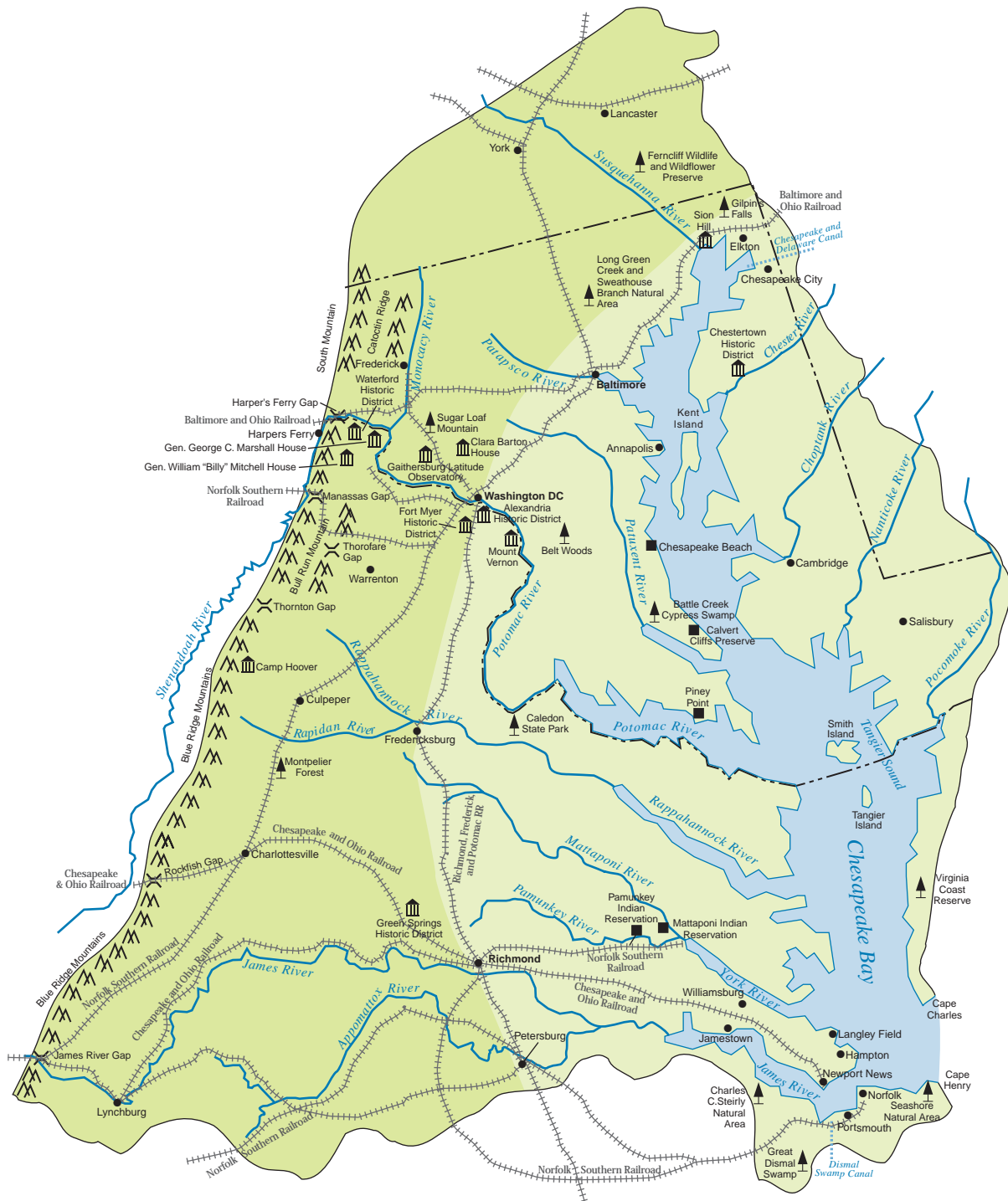
Extraordinary changes swept across the United States and the world between 1880 and 1930 (see Map 10). These changes continued to alter Chesapeake Bay life, from the countryside to the city. The region's population doubled, from 2.5 million in 1880 to 5 million by 1930. Many of these people settled in established rapidly expanding urban centers such as Baltimore, Washington, Richmond, and Norfolk. Washington's numbers grew at an incredible pace, rising from about 75,000 in 1880 to 1.4 million by 1920. Many people also moved to newer urban centers such as Newport News, a sleepy port town that grew quickly after the president of the Chesapeake and Ohio Railroad, Collis P Huntington, chose it as a key terminal and shipyard in the 1890s. In sharp contrast, the rural population either stayed steady or began to drop.

Most people living in the region were native born Americans. Although white Americans outnumbered African Americans by four or five to one, black people were the majority in many rural communities. While 25 million European

SIGNIFICANT EVENTS

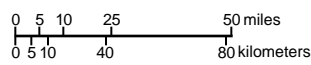
- 1880's—wooden skipjack sailing vessels specially adapted to Chesapeake waters first produced
- 1882—Virginia Assembly approves funding to establish Normal and Collegiate Institute for Negroes and Central Hospital for mentally ill African-Americans in Petersburg
- 1886—adoption of standard gauge links all railroads in region and nation
- 1888—America's first electrified trolley line opens in Richmond
- 1889—nation's first state historic preservation organization, Association for the Preservation of Virginia Antiquities, organized in Richmond
- 1893—Economic Panic of 1893 plunges nation into five-year depression
- 1894—protestors, known as Coxey's Army, march on Washington demanding economic reform
- 1898 to 1899—Spanish-American War fought with Spain
- 1900—region population reaches 3 million
- 1900 to 1910—internal combustion engines power first commercially successful wheeled vehicles and airplanes
- 1904—Great Baltimore Fire destroys city center
- 1914—passenger pigeons become extinct in wild
- 1914 to 1918—World War I embroils European powers
- 1917—America enters World War I on Allied side
- 1918—Allies defeat Central powers
- 1918—worldwide Spanish influenza epidemic strikes region
- 1918—Migratory Bird Treaty Act outlaws killing of whistling swans, establishes hunting seasons, and sets bag limits on international migratory waterfowl
- 1920—regional population exceeds 4.5 million
- 1921—captured German battleship *Ostfriesland* (renamed the San Marco) sunk off Cape Henry in test demonstrating ability of aircraft to sink capital surface ships
- 1926—Robert H. Goddard launches first successful liquid fuel rocket in Maryland
- 1929—New York stock market crash begins Great Depression

Map 10: Urbanization, 1880 to 1930



LEGEND

National Historic Landmark	Canal
National Natural Landmark	Bay
City or Town	Plain
Natural or Cultural Feature	Piedmont
Railroad	



KEY LOCALES

NATIONAL HISTORIC LANDMARKS

District of Columbia

Administration Building, Carnegie Institution of Washington [1910]
 American Federation of Labor Building [1916]
 American National Red Cross Building [1915-1917]
 Arts and Sciences Building, Smithsonian Institution [1881]
 William E. Borah Apartment, Windsor Lodge [ca. 1913]
 Mary Ann Shadd Cary House [1881-1885]
 Constitution Hall [1924-1930]
 Corcoran Gallery and School of Art [1893]
 Elliott Coues House [1880s]
 General Federation of Women's Club Headquarters [1922]
 Georgetown Historic District [18th-19th centuries]
 Samuel Gompers House [1902-1917]
 Charlotte Forten Grimke House [ca. 1880]
 Charles Evans Hughes House [1907]
 Lafayette Square Historic District [18th-20th centuries]
 Library of Congress [1886-1897]
 Andrew Mellon Building [1916]
 Memorial Continental Hall [1902]
 Meridian Hill Park [1900-1925]
 National Training School for Women and Girls [1909]
 National War College [1907]
 Pension Building (National Building Museum) [1885]
 Zalmon Richards House [1882]
 Saint John's Church [1883]

Sewall-Belmont House [1820, 1929]
 State, War, and Navy Building (Old Executive Office Building) [1871-1888]
 Mary Church Terrell House [1907]
 Twelfth Street YMCA Building [1908-1912]
 Oscar W. Underwood House [19th century]
 United States Marine Corps Barracks [1906]
 Volta Bureau [1893]
 Washington Navy Yard [1800-1910]
 David White House [1890s]
 Woodrow Wilson House [1915]
 Carter G. Woodson House [ca. 1890]
 Robert Simpson Woodward House [ca. 1880s-1890s]

Maryland

Clara Barton House [ca. 1890], Montgomery County
 Chestertown Historic District [18th-19th centuries], Kent County
 Gaithersburg Latitude Observatory [1899], Montgomery County
 Nellie Crockett (Deadrise buy-boat) [1926], Kent County
 Sion Hill [19th-20th centuries], Harford County
 United States Naval Academy Guard House [1881], Annapolis
 William B. Tennison (Bug-eye buy-boat) [1899], Calvert County

Baltimore City Landmarks

Baltimore (Tug) [1906]
 Baltimore and Ohio Railroad Roundhouse and Annex, [1884, 1891]
 Chesapeake (Lightship No. 116) [1930]
 College of Medicine of Maryland [19th-20th centuries]

Elmer V. McCollum House [ca. 1920]
 H. L. Mencken House [early 1880s]
 Mount Royal Station and Trainshed [1896]
 Mount Vernon Place Historic District [19th century]
 Ira Remsen House [1880s]
 Henry August Rowland House [1880s]
 Sheppard and Enoch Pratt Hospital and Gate House [1862-1891]
 U.S.C.G.C. Taney (Coast Guard Cutter WHEC-37) [1925]
 William Henry Welch House [1880s]

Talbot County Landmarks

Edna E. Lockwood (Log bug-eye) [1889]
 Hilda M. Willing (Skipjack) [1905]
 Kathryn (Skipjack) [1901]

Virginia

Alexandria Historic District [18th-19th centuries], Alexandria City
 Camp Hoover [1929-1932], Madison County
 Green Springs Historic District [18th-19th centuries], Louisa County
 General George C. Marshall House [1925-1949], Loudon County
 Gari Melchers Home [1916-1932], Stafford County
 General William "Billy" Mitchell House [1826, 1925], Loudon and Fauquier counties
 Portsmouth (Lightship No. 101) [1900-1949], Portsmouth
 Variable Density Tunnel [1921-1940], Hampton
 Waterford Historic District [18th-19th centuries], Loudon County

Arlington County Landmarks

Charles Richard Drew House [1920-1939]
 Fort Myer Historic District [1900s]
 Quarters 1 [1899]

Charlottesville Landmarks

Shack Mountain [1916-1955]
 University of Virginia Rotunda [1822-1826, 1898]
 University of Virginia Historic District [19th-20th centuries]

Richmond City Landmarks

Jackson Ward Historic District [19th-20th centuries]
 Main Street Station and Trainshed [1901]
 Monument Avenue Historic District [1887]
 Old City Hall [1887-1894]
 Maggie Lena Walker House [ca. 1909]



Figure 84: Two-Sail Bateau Skipjack, the E. C. Collier, and the Hooper Strait screwpile-style Light Station in the background.
(Photograph courtesy of the National Park Service and the Library of Congress)


**The Chesapeake
and Ohio Canal,
Maryland**

immigrants came to the United States between 1880 and 1930, only a few tens of thousands settled in the Chesapeake area; the rest stayed farther north. Most of the region's new immigrants moved to big cities, where many African Americans were also moving. Once the United States had entered World War I in 1917, even greater numbers of African Americans and immigrants were drawn to these cities by the prospect of work in the many war industries there.

Important technological innovations fueled this massive rise in population. First, innovators increased the efficiency of earlier technologies based on wind, water, wood, and coal. Invention of an ingenious lubricating system eliminating the need to climb high towers fueled a brief boom in metal windmills during the first quarter of the twentieth century. Gas engines and electric motors replaced wind and other traditional power sources by the 1930s. Powered by steam boilers at the beginning of the period, ships, tractors, and a host of other contraptions and conveyances were propelled by internal combustion engines running on gasoline and diesel fuel at its end.

Steel produced in mills using the new Bessemer process gave shipwrights, bridge builders, and manufacturers a lighter, stronger, and cheaper material. New gas and oil fueled limelight beacons shone from the many lighthouses

built to mark headlands, shallows, rock outcrops, and other navigational hazards along the Bay's busy shipping lanes. Skipjacks—swift, stable, and low draft boats able to navigate the shallow waters of the Bay—were first produced in the early 1880s (see Figure 84); they represented the technological peak for wooden sailing ships in the region. Evidently named both for the vessel's ability to skip above the waves and for its skipper-like command of the water, the word skipjack combines the Dutch word for ship, *schip*, with jack, an old English word for sailor (as in jack tar). Larger, propeller driven warships, powered by steam and made of riveted steel plates, slid down the ways in shipyards in Washington, Baltimore, Norfolk, and Newport News (see Figures 85-86).

Slow, limited in their carrying capacity, and (in the north) forced to close when water froze during the colder months, most canals lost importance during this period. The *Chesapeake and Ohio* and other canals that required gated locks to carry boats across their routes were closed. Finding the relatively level grades



Figure 85: Newport News Shipyard, Virginia, ca. 1905. (Photograph from the Detroit Publishing Company courtesy of the Library of Congress)



Figure 86: The Great Dry Dock, Newport News, Virginia, ca. 1905.
(Photograph from the Detroit Publishing Company courtesy of the Library of Congress)

of canal routes ideal for their trains, railroad owners purchased the assets of failing or bankrupt canal companies and laid track along what had been their tow paths and berm banks.

Not all canals closed during this era, however. Slack water routes like the Chesapeake and Delaware crossing flat low lying stretches of land separating major waterways significantly shortened travel distances, cut travel times, and allowed ships to avoid often dangerous open ocean waters. Work began during the early 1900s to integrate suitable canals into the network of rivers, bays, coves, and other sheltered coastal waters extending from Maine to Texas today known as the Intracoastal Waterway. *The Chesapeake and Delaware Canal* required particularly extensive reconstruction to deepen and widen it sufficiently to allow clear passage for modern ships (see Figure 87). Unable or unwilling to bear the huge costs of renovation, the canal company sold their holdings to the Federal government in 1919. Expending over \$10 million dollars, government engineers lowered and widened it into an open water crossing linking the Chesapeake and Delaware Bays by 1927.

Steam railroads also reached the peak of their development as newly invented automobiles, trucks, and airplanes began to challenge their predominance during the 1910s and 1920s. Turnpikes, roads, and highways began to be paved with concrete and asphalt. Soon paved roads crisscrossed the region, making driving cars much more comfortable. Grass covered landing fields for airplanes appeared on military bases, city lots, filled marshlands, and farm meadows. And in 1926, Robert H. Goddard launched the first successful liquid fuel rocket on a Maryland beach. Unlike solid fuel gunpowder propelled rockets, which had been in use since medieval times, liquid fuel rockets represented a quantum leap in power, possessing the potential to carry payloads over vast distances with supersonic swiftness.

In the cities, electrified trolley lines replaced horse drawn street cars and

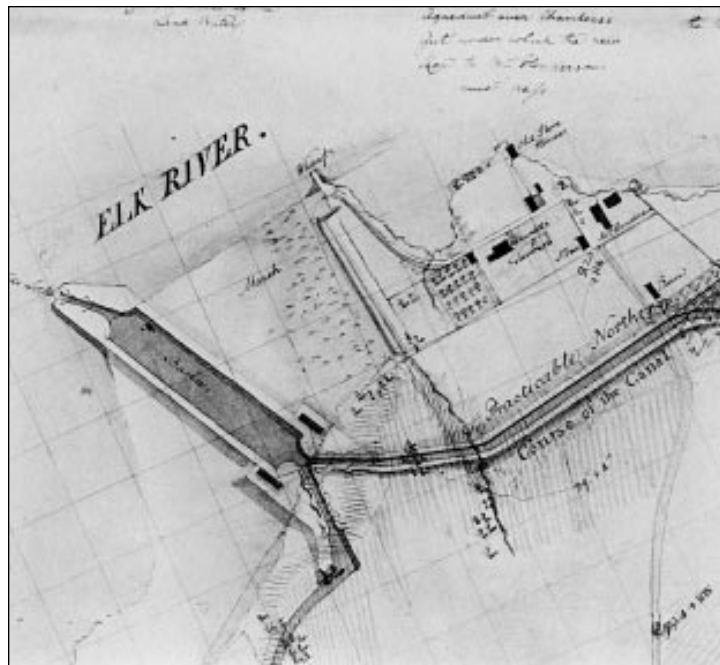


Figure 87: Detail of Chesapeake and Delaware Canal survey map.
(Sketch by Benjamin H. Latrobe courtesy of the Library of Congress)

carriages. The nation's first electrified trolley line began operating on Richmond's streets in 1888. City road ways in the Washington, Baltimore, Richmond, and Norfolk metropolitan areas—formerly shell-covered, filled with bricks, or stone-cobbles—began to be paved to aid riders of the just invented and very popular bicycle. By the turn of the century, these and other routes were graded and widened to accommodate automobiles, buses, and trucks (see Figure 88). Soon after, electrified light rail lines started providing high speed links between Chesapeake Bay cities and towns.



Chesapeake and Delaware Canal, Maryland



Figure 88: Downtown Easton, Maryland, ca. 1920.
(Photograph by H. Robbin Hollyday courtesy of the Talbot County Historical Society)



**Variable Density
Tunnel, Virginia**

Advances in medical knowledge and vigorous public health policies also had major effects between 1880 and 1930. Researchers were able to subdue ancient plagues such as cholera, smallpox, and yellow fever. Health standards improved, and people lived longer. Many public health facilities were built. Sanitariums and rest homes sheltered those suffering from persistent ailments such as tuberculosis and mental illness. Preventoriums were rural institutions built to house city people at high risk of contracting infectious diseases. Public agencies and private organizations established community hospitals and opened clinics in all but the region's most rural parts. Municipalities took on more responsibilities, working to improve sewage systems, build and maintain roads, erect water treatment plants, and dam rivers to create new reservoirs. Advances in naval, aeronautical, and civil engineering were pioneered and put into use in military bases. The *Variable Density Tunnel*, built in 1921 in Virginia's Langley Field, was an experimental facility used to test and develop new aircraft designs. Other advances in ordinance and logistical development occurred in the many installations around Washington, D.C. that were built or expanded to support American involvement in the Spanish-American War (1898-1899) and World War I (1917-1918).

The arts and sciences flourished in the region's many colleges, museums, and conservatories. Chesapeake Bay artists, musicians, journalists, and writers, such as Baltimore's wittily acerbic H. L. Mencken, whose row house today is a National Historic Landmark (see Figure 89), contributed greatly to the nation's cultural life. But no amount of skill, sophistication, or scholarship could end social problems such as race prejudice or halt epidemics such as the deadly worldwide Spanish influenza outbreak that struck the region in 1918, killing thousands in the Chesapeake region.

Electric current came into widespread use as a power source during this era as well. First treated as a curiosity, it soon lit up homes, workplaces, and streets, not

to mention power for phonographs, radios, and movie projectors. It also carried messages through and from the region to the rest of the United States and the world on telephones developed during the 1880s and wireless radios that were first introduced during the following decade. Radio waves, broadcast from high steel towers, brought Chesapeake Bay people into closer contact with the world than ever before. And steel began to change the face of towns and cities as well. As wooden downtown buildings fell to the wrecker's ball or burned in catastrophic fires (like the blaze that devastated Baltimore's business district in 1904), new steel towers rose in their place. The newly invented elevator allowed builders to erect skyscrapers for powerful corporations on pricey downtown real estate. Washington remained the only city in the region to limit the height of its buildings. It did so to uphold a tradition requiring that no building should stand taller than the capitol, a tradition that Thomas Jefferson had started; this was formalized into a law in 1899.

The period between 1880 and 1930 is remembered today as a more self-assured, serene, and hopeful time. We call its earlier decades the Gilded Age, and its later years the Progressive Era and the Roaring Twenties. Yet this period was



Figure 89: H. L. Mencken Row House located at 1524 Hollins Street, Baltimore, Maryland. (Photograph by Ronald L. Andrews courtesy of the Maryland Historical Trust)



Figure 90: Impoverished workers led by Jacob Coxey are escorted from the Capitol.
(Harper's Weekly sketch courtesy of the Library of Congress)

marked by social turmoil, political struggle, and wild economic swings. The boom-bust business cycle that had characterized the American economy from its beginnings continued. The prosperous years of the 1880s railroad boom, for example, were followed by the financial Panic of 1893 and a five-year depression that made many unemployed workers doubt the national ethic that hard work leads to success. In 1894, several hundred impoverished workers known as Coxey's Army (named after Jacob Coxey, a self-taught economist from Massillon, Ohio) came to Washington to protest conditions and press for a federal public works program to create jobs. Instead of being heard, they were forcibly removed (see Figure 90). But attempts to improve conditions continued. Unions organized, workers struck for better pay and working conditions, and the federal government struggled to limit the power of big business trusts and monopolies. Labor unions vied with the powerful political machines that swapped votes for jobs in the region's cities and towns.

Prosperity came to many working in regional shipyards, military installations, and factories that produced arms and munitions for American troops (which fought in the Spanish-American War and World War I during these years). But serious social problems persisted. Among these were city slums, widespread poverty, child labor and worker exploitation, race and gender bias, immigrant assimilation, political corruption, and corporate greed. These issues

spurred organizations aimed at reform, including municipal leagues, the American Federation of Labor, the more radical Industrial Workers of the World, the National American Women's Suffrage Association, the National Association for the Advancement of Colored People, and the agrarian grangers and populists. Although they had different goals, most of these organizations looked to the federal government to pass legislation favoring their causes.

People also formed civic organizations to instill and inspire patriotic sentiments. These groups began preserving sites linked to colonial forebears, and they built the first monuments honoring Civil War soldiers. The nation's first state organization dedicated to historic preservation, the Association for the Preservation of Virginia Antiquities, was organized by a group of socially prominent women and men in Richmond in 1889. Association members helped preserve and interpret historic sites in places such as Williamsburg, Jamestown, and the greater Richmond area. Women in the association also made efforts to honor the Confederacy by linking colonial sites with Civil War events and personalities. They preserved several battlefields, restored war cemeteries, and prevented the demolition of threatened sites such as the *White House of the Confederacy* in Richmond.



White House of the Confederacy, Virginia

The era also saw the founding of many social, cultural, professional, fraternal, and youth organizations. Groups such as the American Medical Association, the American Anthropological Association, the Boy and Girl Scouts, and the American Bar Association sought and received national charters. Each encouraged technical skill and excellence, moral integrity, citizenship, and other values identified with the middle class. The growing ranks of urban, white collar workers in Baltimore, Washington, and other American cities embraced these values. And blue collar industrial laborers saw to it that their sons and daughters received the educations most would need to move up in society.



Figure 91: The Ku Klux Klan Marches Down Pennsylvania Avenue, September 13, 1926.
(Photograph courtesy of the Library of Congress)

More reactionary movements also grew stronger in the early decades of the twentieth century. Anti-immigrant and white supremacist organizations such as the Ku Klux Klan grew increasingly influential. Reinventing itself in 1915 as an organization that was committed to 100 percent Americanism and opposed to blacks, Jews, Catholics, and immigrants, the Ku Klux Klan quickly grew into the nation's largest fraternal organization of the period. Claiming some 4 million members, the Klan displayed its power in

September 13, 1926 in one of the largest marches yet seen in Washington, D.C. (see Figure 91). The organization declined as rapidly as it rose. Rocked by scandals exposing the corruption and hypocrisy of several of its key leaders, its numbers dropped to less than a few hundred thousand members by 1929. Although it again rose to national attention as a reactionary group opposing civil rights during the 1960s, it did not play a significant role in Chesapeake region life during the remainder of the century.

Groups pursuing specific social, political, and economic agendas sometimes made strange alliances that highlight the era's complexities. For example, new immigrants—who competed with African Americans for jobs as unskilled laborers—sometimes found themselves agreeing with racists who were otherwise far from friendly to their interests.

The years between 1880 and 1930 were particularly difficult for African Americans. Although clever marketeers, such as Margaret L. “Maggie” Walker of Richmond’s Jackson Ward, made sizable fortunes, nearly all African Americans suffered from poverty and intense discrimination. Gains were made in the decades just after the war—as when the Virginia assembly established the *Normal and Collegiate Institute for*

*Normal and Collegiate
Institute for Negroes,
Virginia*

JACKSON WARD HISTORIC DISTRICT. *One of several Richmond city districts named for presidents, Jackson Ward was a center of African American life and culture in Virginia from 1871 to 1905. Today, the district covers a thirty-eight block area of free-standing and attached two and three story town houses. Significant figures in African American arts, commerce, and community life, such as John Mitchell, W.W. Browne, Giles B. Jackson, and Margaret L. “Maggie” Walker (see Figure 92), lived in Greek Revival, Italianate, or vernacular homes along the ward’s tree-lined streets. The more elaborate of these homes featured spacious yards bordered by ornamental cast iron fences. Today, well-preserved Doric columns, Italianate ironwork, and Eastlake-style Victorian wooden fretwork continue to adorn many town house porches in the district.*



Figure 92: Maggie L. Walker Streetscape, Jackson Ward, Richmond, Virginia.
(Photograph courtesy of the National Park Service)

Negroes and the *Central Hospital* for mentally ill African Americans—but these were lost when Virginia joined other southern states by passing voting laws that took the vote from African Americans in the final years of the nineteenth century. Other Jim Crow laws formally defined people of mixed ancestry as colored or negroes, strictly segregated the races, and otherwise treated African Americans as second-class citizens.

Hopes for African American equality were suppressed by terror as well as law. The Black Codes required absolute subordination and subservience, and men believed to have violated them were kidnaped, tortured, and hanged by racist vigilantes. Lynchings became distressingly common during the depression years of the mid-1890s, when racist whites vented their frustrations on black neighbors. Hundreds of thousands of African Americans moved north to cities such as Washington, D.C., and Baltimore to escape lynch law and find work and security. Denied all but the most unskilled labor, most were forced to move into neglected tenements in the most rundown parts of town. Municipal agencies and local assistance organizations would not serve them adequately, so they formed banks, churches, and self help associations of their own.

When the nation mobilized for World War I, government authority grew in ways not seen since the Civil War. The federal government nationalized railroads, rationed food and fuel, and worked with states to establish war industry boards requiring industries to give first priority to military production. Old installations were reactivated and new camps and stations constructed throughout the region. Hundreds of warships and merchant vessels were built in shipyards in Washington, Baltimore, and Newport News. Uniforms and other equipment were manufactured in Richmond, Baltimore, and mill towns throughout the region. Thousands of Chesapeake Bay men, both black and white, were drafted. Many of them served in France. Because they were serving in a segregated army, most



Figure 93: Suffragettes March for the Vote on Pennsylvania Avenue, March 3, 1913. (Photograph courtesy of the Library of Congress)

African American troops were relegated to digging trenches, carrying supplies, and other manual labor performed by work battalions. Women, who previously had largely been barred from most factory work, took jobs in industries needing replacements for departing servicemen. Other women sold war bonds, collected scrap metal for the war effort, and served as nurses in camps at home and abroad.

The war effort fueled a prosperity that carried into the 1920s. Products from America's farms and factories found ready markets at home and abroad, and stock speculation heated an already hot market. Some items on the progressive agenda, such as women's suffrage (see Figure 93) and prohibition, were enacted into law. Congress also passed reactionary legislation, such as the 1924 Immigration Act, which drastically slashed immigration quotas and barred further immigration from Asia. Other causes, such as the struggle against racial discrimination, had to wait for later times and legislatures.

During this decade, the people of the United States looked inward and sought entertainment in amusement parks, resorts such as Maryland's *Chesapeake Beach* and *Piney Point*, movie houses, and, for many, speakeasies that catered to those with tastes for alcohol, gambling, and other outlawed vices.



**Central Hospital,
Virginia**



**Chesapeake Beach and
Piney Point, Maryland**

Baseball, football, and other sports became increasingly popular. Nearly every social and business group or institution organized ball clubs. Ball fields sprang up nearly everywhere. Wood and steel stands with commanding views of carefully tended clay base paths and mown grass playing fields became fixtures in community landscapes. Players everywhere competed on sand lots, city streets, school yards, and park lawns. Well funded and highly organized professional and college teams played to crowds of thousands in vast stadiums. Celebrated sports figures, such as Baltimore's favorite son, George Herman "Babe" Ruth, became popular culture icons. Ruth's flamboyant personality and lavish life style came to symbolize the liveliness, prosperity, and excesses of the Roaring Twenties. But the era ended suddenly on October 29, 1929. On a day known as Black Tuesday, an enormous drop in stock prices plunged the Chesapeake region and the rest of the United States and the world into a devastatingly sudden economic decline. This grim time is now remembered as the Great Depression.

□ PLACE

Between 1880 and 1930, unprecedented changes in technology and society allowed people to transform Chesapeake Bay lands, waters, and skies. They altered the region in ways no one had thought possible or even desired. Valuable innovations often affected the environment, sometimes in unexpected ways. For example, after 1886, all railroad companies began using a 4 foot, 8.5 inch-wide standard track gauge, making their lines compatible. This meant that trains could run freely throughout the region. Thus steam engines of the Baltimore and Ohio, Chesapeake and Ohio, and Norfolk Southern lines could more efficiently bring in western livestock, mid-western grain, Pittsburgh steel, Northern manufactures, and Southern mill products. These imports enriched life in Chesapeake Bay cities, towns, and farms.

As desirable as these imports were, the trains carrying them hauled and burned

highly polluting coal. The coal came from mines farther inland along the upper reaches of the Potomac and Susquehanna river valleys. Tailings and other wastes from the mines were flushed into nearby rivers, where they mixed with sediments washed from deforested uplands. Farther down river, these waters were further sullied by soils eroded from farm fields, factory wastes, and, finally municipal sewage. Noxious microbes flourished as fish, shellfish, plants, and other aquatic life sickened and died in the increasingly toxic murky waters of the Bay estuary.

Each new form of energy took its toll. When natural energy sources such as wood and wind were replaced with coal, oil, and gas, non-biodegradable waste products polluted the region. The burning of coal to fuel furnaces, heat boilers, or turn steam turbines may have gotten rid of the problems caused by earlier sources of power— the smoke from wood fires and manure runoff wastes from horses, mules, and other draft animals—but coal also created serious problems. Coal burned in engines, plants, and buildings poured smoke into the region's skies. Highly acidic coal mining wastes were released into Chesapeake drainage rivers. Coal miners and stokers breathed ever growing quantities of lethal coal dust into their lungs, paying their own steep price for progress. Other costs were harder to measure. While we do know that average temperatures worldwide generally have been rising since the 1880s, no direct evidence has yet proved that burning coal and other fossil fuels helped create this trend.

In the late nineteenth century, sport fishermen and government scientists published reports speculating that increased water pollution was threatening the eelgrass in Chesapeake Bay waters. Other reports showed that water chestnut and Eurasian watermilfoil—invasive water plants accidentally introduced into Bay waters by passing ships—began taking space, light, and nutrients away from eelgrasses and other native water plants sometime between 1880 and 1900. More and more aware of how important



Figure 94: Carting Shingles. (From *The Transformation of Virginia, 1740-1790* by Rhys Isaac; used by permission of the University of North Carolina Press ©1982)

submerged aquatic plants are to Bay ecology, the region's scientists and conservationists began to study the life cycles and habitat needs of these and other invasive species at this time.

Forests also suffered from population and industrial expansion. By 1900, less than 30 percent of the Chesapeake Bay watershed's original forests remained. Woodsmen could no longer find standing trees large enough to supply the shingles and shakes widely used for roofs and siding (see Figure 94). Looking for new sources of supply, they began to mine the ancient bald cypress and Atlantic white cedar trunks buried in bogs on the Pocomoke River and elsewhere. Most of the cleared lands in the Coastal Plain and Piedmont valleys were turned to agricultural or livestock uses. People also drained wetlands to create more farmlands and to destroy the breeding grounds of mosquitoes and other insect pests. Such activities also changed the composition of tidewater forests. Farther inland, clear cutting increased erosion and altered the chemical composition of soils by exposing them to sun, wind, and rain. These changes made it harder for young trees to reclaim logged tracts, especially in steep, hilly areas. And foreign tree diseases—chestnut blight and Dutch elm disease—all but exterminated chestnut and elm trees in the region.

Pollution and intensified use also had serious impacts on Chesapeake Bay fish

and shellfish populations in this period. We find evidence of this in Virginia's and Maryland's state game records, first kept in the 1880s. These show that American shad, Atlantic menhaden, alewife herring, American croaker, and other fin-fish supported a large commercial fishery. By 1920, more than 60 million pounds of fish were reported to have been taken from Bay waters. Of this amount, 12 million pounds, then valued at \$850,000, were caught in Maryland. The remaining 48 million pounds, worth \$2.4 million at the time, came from Virginia waters. About 90 percent of the entire catch consisted of alewives, croakers, shad, and American menhaden.

We do not have statistics showing exactly how far fish populations had declined. But the situation concerned fish and wildlife officials enough to cause them to begin opening fish hatcheries by the late 1870s. They were concerned not only by over-fishing, but also by the construction of dams that blocked spawning streams, keeping fish from swimming upriver to lay their eggs and depriving their young of a safe habitat. Hatcheries, artificial oyster beds, cages, and artificial ponds holding large numbers of diamondback terrapins sold to markets became increasingly common by the turn of the century. Bag limits were enacted to limit over-harvesting of economically important species, but poaching grew into a major problem as fishermen ignored these limits. Oystermen could not make a living by working clam banks in the open water, because these banks had been depleted. Guarding their own grounds from small watch houses standing on tall support timbers pounded into tidal mud, many continued to raid each other's beds and nurseries.

Birds were affected by environmental changes as well. In the early 1900s, concerned bird enthusiasts—members of the newly founded Audubon Society—began conducting bird counts on the Bay every Christmas. Their activities, along with those of state fish and game agents, became important tools for estimating bird population sizes, varieties, and distributions. Observations made by

ornithologists helped show how other changes in the environment affected birds. They noted that drought and decreases in eelgrass and other underwater plants threatened populations of canvasback ducks and other waterfowl.

Unrestricted market and sport shooting, too, had devastating effects on some bird populations. Finally, Congress passed the Migratory Bird Treaty Act in 1918. The act outlawed the killing of rare whistling swans, established limited hunting seasons, and set bag limits for waterfowl migrating across international boundaries. But no legislation could protect devastated populations of Carolina parakeets and the once-common passenger pigeon. The last representatives of these species died in zoos during the 1920s, marking their final extinction and alarming concerned people everywhere.

THE CULTURAL LANDSCAPE OF URBANIZATION

□ PEOPLING PLACES

As noted, revolutionary industrial developments and population changes helped people make indelible marks on the region's cultural landscape between 1880 and 1930. Many of these marks are still visible today. Chesapeake Bay cities began to assume their modern appearances as skyscrapers, government buildings, commercial establishments, apartment



Figure 95: Baltimore's Mount Vernon District.
(Photograph courtesy of the Dennis Montagna Collection)

houses, tenements, row houses, and many other structures rose over streets paved with Belgian block cobbles, concrete slabs, and poured asphalt. Initially, self-propelled bicycles competed for space on these streets with horse and mule drawn carts, wagons, and streetcars. Trolleys, trucks, buses, and automobiles dominated the region's roads and byways by the end of the period.

In the region's cities, new immigrants settled into urban ethnic neighborhoods with signs in both English and their native languages. They added onion domes and other familiar architectural touches from their home countries to the many churches, shops, and halls erected in popular styles—first in the ornate Victorian, classical, romantic modes, then in the traditional colonial revival style, and finally in the streamlined art moderne and art deco styles.

Wealthier citizens usually lived on fashionable avenues in or near city centers (see Figure 95). Yet many of the more affluent classes began moving out of city centers to new suburbs constructed in the nearby countryside along trolley and rail lines. Often they moved to escape the clutter and noise of crowded urban life. In the suburbs, they engaged the services of shopkeepers and skilled, white collar workers. Often, these workers returned to rented apartments or rooms in the city after work. Wealthier residents of cities and suburbs hired live-in servants who slept in separate quarters in the main house or in small buildings on house grounds.

Rural county seats became smaller replicas of major cities. Market, mill, and cannery towns also grew larger and more complex. But most smaller towns and villages in more remote areas—places such as the Maryland Coastal Plain fishing village of Crisfield and other locales in the extreme southern, western, and eastern parts of the region—did not change much between 1880 and 1930. Although mechanization made farming more efficient, and improvements such as refrigerator cars hurried perishable foods to market more quickly, rural farms mostly remained

as they were, maintaining earlier dimensions and staying in the same locations.

People continued to live in greater numbers north of the Potomac River. The Eastern Shore and southeastern Virginia continued to be sparsely populated. Mass migrations of rural African Americans and poor whites occurred during and after World War I. Mostly, these people moved to Washington or Baltimore, but many also took up residence in Richmond and Newport News. Their migration sent overall rural populations into a decline that has yet to end.

CREATION OF SOCIAL INSTITUTIONS

The focus of the region's social life shifted even further away from the family domestic sphere to more community centered organizations. This shift was reflected in the many new meeting halls, churches, campgrounds, resorts, and other facilities built between 1880 and 1930. Communities also arranged for the construction of many new courthouses, office buildings, primary and secondary schools, university campuses, and teacher's colleges both in cities and in rural locales. Most of these structures were built using locally available wood, stone, brick, and glass construction materials. Railroads and ships brought in metal structural elements and fixtures. Architectural flourishes were crafted in Chesapeake Bay workshops or imported from elsewhere. Terra cotta tiles, stained glass, cut crystal windows, and intricately sawn timber fretwork were among the many embellishments popular during the period.

Domestic and community buildings, decor, and ground plans were generally tidy and ornate. Their well ordered style celebrated middle class values of comfort and respectability, which were the social ideal at the time for most people in the region. Wealthy women belonging to the Garden Club of Virginia, for example, began sponsoring the restoration of gardens and grounds of historic plantations, homes, churches, and mills during the 1920s. They and like-minded people

thought that such projects both beautified the landscape and provided examples that helped instill immigrants and the poor with so-called American values. By adopting these values, the theory went, impoverished people would rise from poverty and immigrants would completely assimilate into American society. Not surprisingly, then, this middle class design sense also showed up in the hostels, soup kitchens, and settlement houses of relief organizations such as the Salvation Army; in facilities run by the Young Men's and Women's Christian and Hebrew Associations and similar community support groups; in social clubs catering to particular classes, professions, or ethnic groups; and in public institutions such as sanitariums, poor houses, hospitals, and penitentiaries.

EXPRESSING CULTURAL VALUES

The middle class ethos also showed up in the architectural designs of the many buildings erected to house cultural institutions between 1880 and 1930. Stately monuments and imposing stone and brick museums and libraries, often endowed by wealthy philanthropists, shot up in the region's cities and in many of its larger county seats and towns. Big cities such as Baltimore, Washington, and Richmond supported conservatories, opera houses, art institutes, science organizations, zoological parks, and botanical gardens. Schools, colleges, and universities also mushroomed. The more successful of these soon moved from center city office buildings to suburban campuses on the edges of towns. The most elaborate campuses boasted suites of buildings in the same architectural style. These were often located on tastefully winding tree lined roads in park-like settings. As these suburban campuses drew businesses to their areas, many soon got swallowed up in just the sort of urban expansion they had tried to escape.

Popular culture also flourished in these decades. Saloons; dance, music, and vaudeville halls; gyms; ballfields; and

amusement parks went up everywhere. These were mostly housed in brick or wooden-framed structures, with styles ranging from utilitarian sturdiness to gaudily colorful flashiness. Burlesque halls, bordellos, and—during prohibition—speakeasies, catered to tastes that could not be openly acknowledged elsewhere.

Modernist movements emerged in artistic communities in Washington and other cities during the turn of the century. Their creators strove to break with past cultural traditions. They shared a rebellious spirit, wishing to undermine the high culture they associated with elitist class distinctions and Old World snobbery. Modernists tried to create a new, native born cultural vocabulary that all Americans could understand and appreciate. Their sense of design replaced ostentation, literalness, and Victorian clutter with simplicity, abstraction, and streamlined sleekness. Modernist cultural values found expression in art moderne and art deco skyscraper and commercial design; in streamlined locomotives, airplanes, and automobiles; in literature; and in the decorative arts.

Rural areas, by contrast, largely maintained more traditional cultural values. This was especially the case in southeastern Virginia and the Eastern Shore, where many homes continued to be built in traditional local styles, including the central-hall dogtrot layout and the modest bungalow format. Some of the more well-to-do rural families chose to live in standardized, prefabricated homes sold through mail order catalogs by new companies such as Sears and Roebuck. Manufacturing plants shipped these in pieces by rail, delivering them to construction sites. Commercial and public buildings in rural areas also tended to reflect more conventional cultural viewpoints and tastes.

SHAPING THE POLITICAL LANDSCAPE

Political struggles between rich and poor, labor and management, white and black, progressives and reactionaries, and native and foreign born Americans

shaped political aspects of the region's cultural landscape. People gathered in halls, town squares, fields, stadiums, and other public spaces to debate the issues of the day. Lawmakers voted for more and more funds for larger and more ornate halls of government. Courthouses, records halls, and prisons grew in size and grandeur as more and more police officers, lawyers, jurists, and clerks enforced laws enacted by federal, state, and local legislators. Today considered quaint and charming, the fortress-like appearance of many of these structures actually reflects the need at the time to protect law enforcement personnel from lynch mobs and possible attacks of anarchists and other political radicals.

Federal office buildings, courthouses, and other facilities rose in all cities and most county seats as people looked to the central government for solutions to political problems. Imposing castle-like armories surrounded by brick or stone walls were built to store munitions and train troops. They were also intended to serve as fortresses in the event of civil revolt. Wilderness lands and historically significant sites were set aside for national forests, wildlife refuges, parks, and monuments. Created in 1915, the United States Coast Guard maintained Chesapeake Bay lighthouses and policed the region's shipping lanes and fishing grounds. Also, for the first time in the nation's history, the government continued to maintain and build military bases, testing grounds, and munitions depots at a time when no war was in progress. Many of these facilities had been built during World War I, and most were considered necessary to maintain national security in an increasingly dangerous world.

DEVELOPING THE CHESAPEAKE ECONOMY

Industrial mass production came to dominate most of the region's economy during this period. Manufacturing processes were usually centralized in large factory complexes near rail lines, waterways, or sources of raw materials



Figure 96: Aerial View of Ellicott Mills Looking North Toward Ellicott City, Maryland.

(Photograph courtesy of the National Park Service and the Library of Congress)

(see Figure 96). Workers and machinery were often housed in stout brick plant complexes. These were frequently surrounded by fences or walls of brick or stone. Massive smokestacks belched smoke into the air, and raw factory wastes flowed into the nearest rivers and streams.

Working long hours at low wages, factory workers tended to live in row houses, tenements, or small one or two family houses near work (see Figure 97). Super-



Figure 97: Baltimore Row Houses, 1981: The 500 block of South Chapel Street in the Fells Point neighborhood.

(Photograph by Elaine Eff courtesy of the Painted Screen Society of Baltimore, inc.)

visors and managers lived in larger middle class homes, usually on lands affording commanding views of factory complexes. Most factory owners favored high-style mansions on large, landscaped lots, for both their main dwellings and their country homes. Many of their main dwellings were built in more fashionable parts of town or in suburbs—far from the grime and filth pouring from their plants. Others had their great houses built close

to their factories. In northern parts of the region, many officers of corporations owning factories and other companies competed with one another to build ever-taller and more ornate skyscrapers in city business districts.

Banks, brokerages, insurance companies, specialty shops, professional office complexes, and department stores lined downtown boulevards. Vast rail and stockyards occupied expanses of open ground behind city terminals, while forests of ship's masts filled the skies along long lines of piers, shed-covered wharves, and warehouses stretched across urban waterfronts (see Figure 98). Ships and trains brought unprocessed bulk products such as wheat, sugar cane, corn, cattle, and petroleum to concrete and steel mills, refineries, and storage tanks on the outskirts of Chesapeake Bay cities. Short haul rail lines and trucks carried fresh farm produce to nearby cities and towns. Commercial fishermen and oystermen brought their catches to Bay canneries or local marketplaces.

Tourism and the entertainment industries boomed as large numbers of more affluent people looked for enjoyable ways to fill their leisure time. Communities and businesses throughout the region began using outdoor billboards, newspaper ads, and other new advertising techniques to draw cash carrying visitors



Figure 98: Oyster Fleet in Baltimore Harbor, ca. 1885.

(Photograph courtesy of the National Archives)

to local attractions. These included beaches, hotels, health resorts, spas, campgrounds, amusement parks, and recreation grounds.

□ EXPANDING SCIENCE AND TECHNOLOGY

As noted, scientific and technological developments of this period made an imprint that continues to dominate the region's cultural landscape to the present day. In this era, technologies based mostly on muscle power, wood, sail, steam, coal, and iron gave way to a more modern set centered on petrochemicals, steel, and electromagnetic energy. The era also saw a shift from a wide range of locally available natural resources that could be used pretty much as they were to a much narrower range of imported substances that could be modified into a multitude of refined and synthetic products.

Scientists working in research centers such as Baltimore's *Johns Hopkins University* and the campuses of the *University of Maryland* made major advances in medicine, chemistry, and engineering. Scientists at the agricultural extension stations of regional land grant colleges developed new ways of farming that improved yields and conserved soil and water. The first steam powered tractors appeared, along with new, more durable, and increasingly efficient types of metal corn cribs, barbed wire and chain link fences, and other agricultural innovations. Samuel Langley and other scientists in the region's many army camps and naval facilities made major contributions to aeronautical, nautical, and military engineering.

Regional artisans and mechanics also continued to refine their crafts and skills. Fishermen and shipwrights used the new materials and manufacturing techniques to improve vessel design and develop new types of tackle and gear. The growing popularity of sport fishing created markets that allowed Chesapeake Bay carvers to bring wooden decoy art to new heights. And because cheap, mass produced furnishings were easy avail-

able, more people came to appreciate the value of finely handcrafted items. Those who could afford them sought out handmade decorative merchandise, increasing demand and raising production levels.

□ TRANSFORMING THE ENVIRONMENT

The new technologies emerging in this era gave people the ability to transform the region's environment in ways not thought possible by their ancestors. New machines and energy sources allowed people to move and manipulate unheard of volumes of goods and materials. Pumps and dredges drained wetlands to destroy habitats of mosquitoes and other disease carrying pests. Swamps and marshes also turned into municipal waste dumps or were filled to create new land for development. Even the earth gave way as men blasted rock with dynamite and moved it with steam shovels, bulldozers, barges, and trucks.

Monumental buildings supported by steel frames and clad in stone and brick masonry were constructed in dense urban cores along avenues whose dimensions had not been changed since city founders had first laid out their original street plans. These included city halls, office buildings, churches, rail terminals, train sheds, and department stores. Powerful Washington politician Mayor Alexander Shepard, motivated voters to approve expenditures aimed at clearing up some of the congestion clogging the city. He wanted to turn Washington into a place that reflected both the nation's power and the high cost of its real estate. Shepard narrowed and paved the city's wide boulevards, planted ornamental shade trees, cleared shanties and makeshift market stalls, and ordered railroads to meet city specified grade levels at street crossings. The city was also beautified by new elegantly landscaped parks, cemeteries, hospital grounds, and college campuses. Many of these were designed by such prominent designers as Calvert Vaux and Frederick Law Olmsted, Jr.



Other efforts to streamline urban development in the region soon followed. Congress passed the Highway Act of 1893, providing funds to begin linking cities and suburbs throughout the region with landscaped parkways. And Washington's central mall, park system, and monuments—along with the Beaux Arts architectural style of many of the edifices built in the early twentieth century—can be traced to the recommendations of the 1902 MacMillan Commission. Made up of a blue ribbon board that included Olmsted, architects Charles McKim and Daniel Burnham, and sculptor Augustus Saint-Gaudens, the commission's findings soon became a model adopted by other American cities, including Richmond and Baltimore.

A vast network of new roads, interurban rail lines, and, later, flying fields linked Chesapeake Bay cities with the countryside. Planned suburban developments, such as *Roland Park*, began to appear along the margins of developed urban areas (see Figure 99). Roland Park is a large-lot wooded residential preserve built by the Olmsted firm on the outskirts of Baltimore between 1891 and 1910. An elegant, upper middle class community of homes built in several popular styles, Roland Park gradually changed from a freestanding suburban community to a residential city neighborhood as Baltimore expanded around it in the 1920s.

In rural areas, farmers using new reapers, tractors, fertilizers, and insecticides changed their products. Many turned from large scale cultivation of tobacco, wheat, or corn to production of the more perishable fruits, vegetables, poultry, and dairy products demanded by urban and suburban consumers. Automobiles and trucks dominated the region's hinterland. Farmers drove produce to markets, fairs, and railheads; suburbanites navigated from home to work or school; and city folk took drives in the country. Continually improved, many of these roads have since become U.S. Routes and State Highways.



Figure 99: Shopping Center in suburban Roland Park, designed by the Olmsted firm between 1891 and 1910.
(Photograph courtesy of the Library of Congress)

□ CHANGING ROLE OF THE CHESAPEAKE IN THE WORLD COMMUNITY

Urban growth, technological change, and national involvement in world affairs created demands for imports and faster communications. In meeting these demands, the Chesapeake Bay region grew more firmly linked with the world community. As in earlier periods, wharves, warehouses, and the many hulks of maritime vessels that sank or settled to the bottom of Chesapeake Bay between 1880 and 1930 testify to its active maritime trade. This trade stimulated the development of deepwater harbors at Baltimore, Norfolk, and Newport News. Surviving skipjacks recall the Prohibition years at the end of this period, when ships smuggled contraband alcohol through those ports. Ever denser concentrations of army camps, naval facilities, and munitions plants in and around Washington, D.C. bear witness to the United States's growing ability to project power beyond its borders in foreign conflicts, such as the Spanish-American War and World War I. These military sites include the *Washington Navy Yard*, the *United States Marine Corps Barracks*, and Alexandria's *Torpedo Factory*. The hulk of the battleship *Ostfriesland*, surrendered by Germany following the



Roland Park, Maryland



**Washington Navy Yard,
Washington, D.C.**

**United States Marine
Corps Barracks and
Torpedo Factory,
Virginia**

end of World War I and renamed the *San Marco*, further testifies to the rise of America as a global power. Resting at the bottom off Cape Henry, she was sunk by army bombers on July 21, 1922 under the command of air war pioneer Colonel William "Billy" Mitchell in a demonstration that conclusively showed that capital ships could be sunk by bombs dropped by airplanes.

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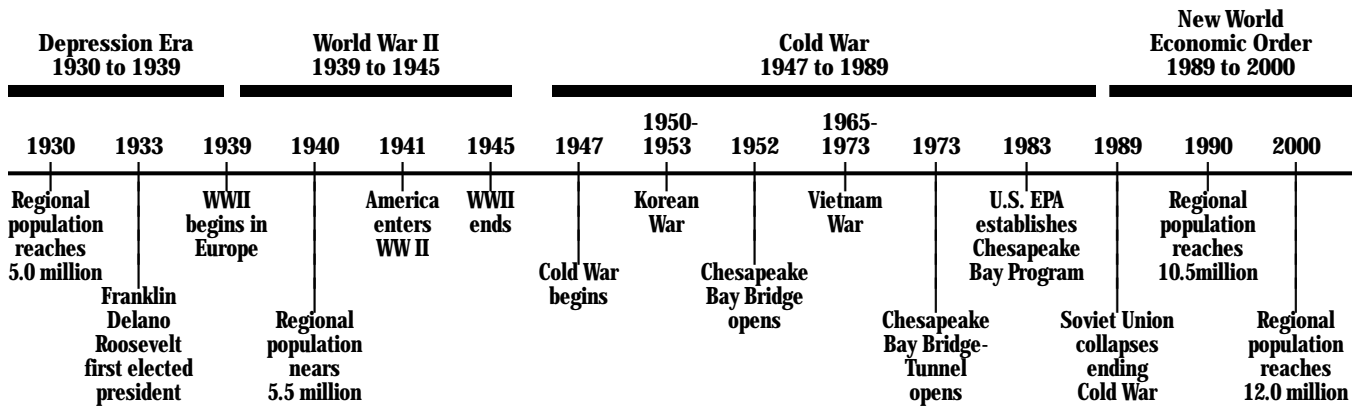
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Chapter Nine

Chesapeake Metropolis,

1930 to 2000



AN ECOLOGY OF PEOPLE AND PLACE

□ PEOPLE

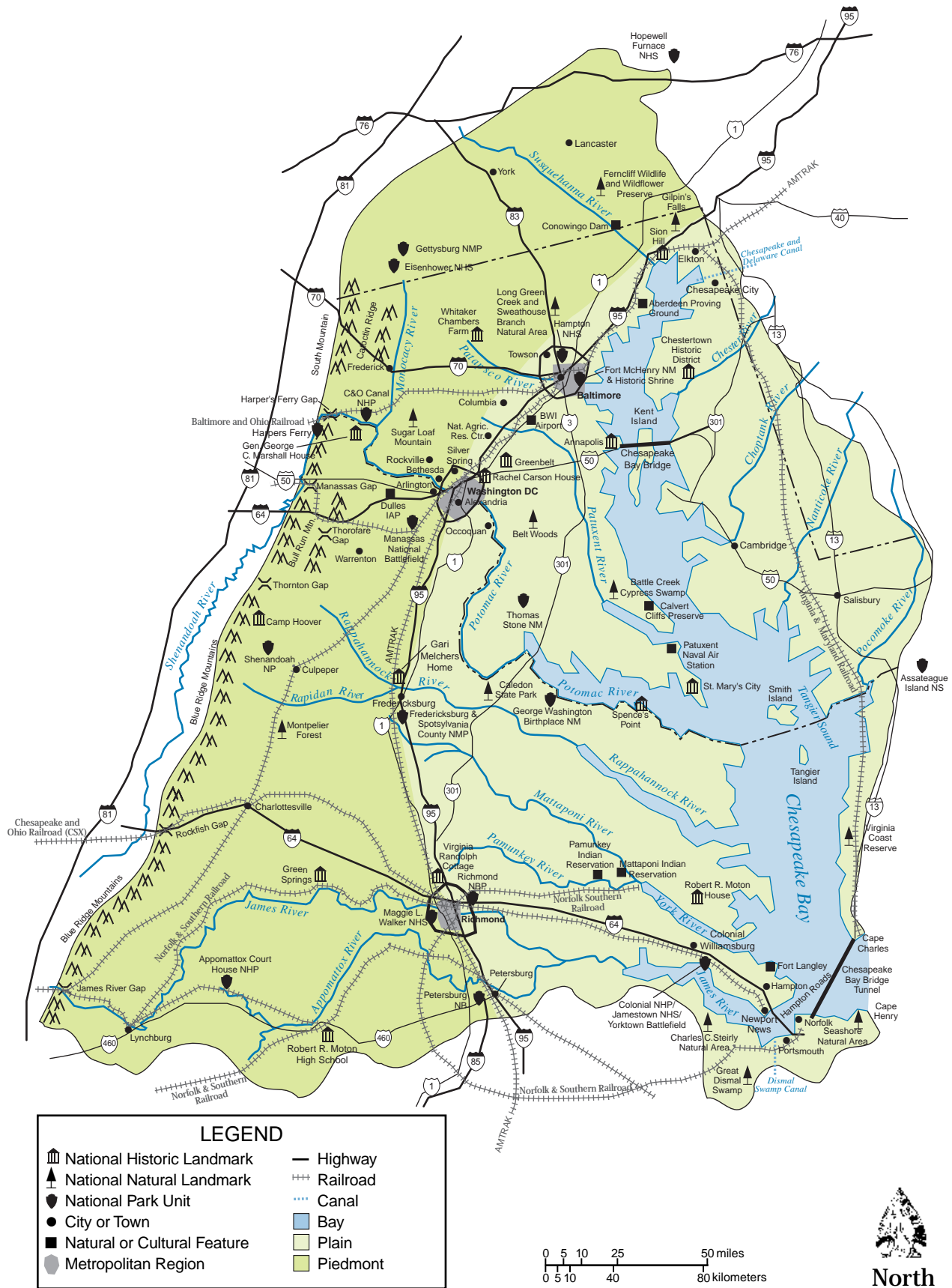
The 5 million inhabitants of the Chesapeake Bay region faced a terrible paradox in 1930 (see Map 11). On the surface, nothing seemed to have changed. Although population pressure had clearly left a mark on the region, fish still teemed in Bay waters, and farm fields still swelled with produce ready for market. The impressive technological advances that many believed would assure unending progress and prosperity had not disappeared. Yet for a second time in less than forty years, financial dealings and market forces beyond the average person's understanding had plunged Chesapeake Bay and the rest of the nation into a devastating economic downturn. This downturn is still known today as the Great Depression.

This depression was even worse than the one in 1893. Foreign markets collapsed as the American crash triggered a worldwide panic. Money and credit suddenly became hard to get. Factories, shops, and businesses closed, unable to raise

SIGNIFICANT EVENTS

- 1930—regional population reaches 5 million
- 1932—Federal troops disperse bonus marchers in Washington
- 1933—Franklin Delano Roosevelt elected to first term as president
- 1935—Social Security Act passed by Congress
- 1939—World War II begins in Europe
- 1940—regional population nears 5.5 million
- 1941—America enters World War II on Allied side
- 1942—Pentagon opens in Arlington, Virginia
- 1945—Harry S. Truman becomes president following Roosevelt's death
- 1945—World War II ends
- 1947—Cold War begins as Executive Order 9835 authorizes loyalty checks
- 1948 to 1950—Alger Hiss spy case
- 1950—postwar migration combined with baby boom increase regional population to 7 million
- 1950 to 1953—Korean War fought between U. S.–led United Nations troops and Communist North Korean and Chinese forces
- 1952—Chesapeake Bay Bridge opens
- 1956—Federal Interstate Highway Act passed by Congress
- 1958—National Defense Education Act passed by Congress
- 1964—Economic Opportunity Act passed by Congress
- 1965 to 1973—American military involvement in Vietnam
- 1966—Historic Preservation Act passed by Congress
- 1968—riots in Washington, Baltimore, and other Chesapeake cities
- 1970—Amtrak established
- 1972—Hurricane Agnes devastates region
- 1973—Chesapeake Bay Bridge-Tunnel opens
- 1973—OPEC oil embargo creates fuel shortages throughout region
- 1983—Environmental Protection Agency establishes Chesapeake Bay Program
- 1989—Cold War ends as Soviet Union collapses
- 1990—regional population reaches 10.5 million
- 2000—regional population reaches 12 million

Map 11: Chesapeake Metropolis, 1930 to 2000



KEY LOCALES

NATIONAL HISTORIC LANDMARKS

District of Columbia

Constitution Hall [1924-1930]
Francis Perkins House [1937-1940]
Sequoia (Presidential yacht) [1931-1977]
Supreme Court Building [1935]

Maryland

Rachel Carson House [1956-1964], Prince George's County
Whittaker Chambers Farm [1948], Carroll County
Greenbelt Historic District [1935-1946], Prince George's County
Sion Hill [19th-20th centuries], Harford County
Spacecraft Magnetic Test Facility [1966], Prince George's County

Baltimore City Landmarks

Chesapeake (Lightship No. 116) [1930]
College of Medicine of Maryland [19th-20th centuries]
Elmer V. McCollum House [ca. 1920]
U.S.S. Torsk [1944]

Pennsylvania

Dwight D. Eisenhower Farmstead [1950s], Adams County

Virginia

Camp Hoover [1929-1932], Madison County
Gerald R. Ford, Jr. House [1955], Alexandria City
Jackson Ward Historic District [19th-20th centuries], Richmond
General George C. Marshall House [1925-1949], Loudon County

Gari Melchers Home [1916-1932], Stafford County
Robert R. Moton High School [1950-1974], Prince Edward County
Robert R. Moton House [1935], Gloucester County

Portsmouth (Lightship No. 101) [1900-1949], Portsmouth

Virginia Randolph Cottage [1937], Henrico County

Savannah (Nuclear ship) [1958], Newport News

Spence's Point, John R. Dos Passos Farm [1806, 1940s], Westmoreland County

Arlington County Landmarks

Charles Richard Drew House [1920-1939]
Fort Myer Historic District [1900s]
The Pentagon [1942]

Charlottesville Landmarks

Shack Mountain [1916-1955]
University of Virginia Historic District [19th-20th centuries]

Hampton City Landmarks

EightFoot High-Speed Tunnel [1936-1956]
Full Scale Tunnel [1931], Hampton
Hampton Institute [1868-present]
Lunar Landing Research Facility [1965-1972]
Rendezvous Docking Simulator [1963-1972]
Variable Density Tunnel [1921-1940]

capital or meet payrolls (see Figure 100). Workers were fired and lost life savings as some banks failed and others foreclosed on heavily mortgaged homes, farms, and equipment.

The Depression hit hard everywhere in the Chesapeake Bay region. Tens of thousands of unemployed workers faced poverty in the cities and towns. Poor people in city tenements confronted the twin specters of homelessness and hunger. In the countryside, farmers and fishermen, making barely enough to live, struggled to hold on to their fields, boats, and implements. President Herbert Hoover's pleas for executives to hire back workers and increase production were ignored by corporations unable to sell products on depressed world markets.

As they did to Coxey's Army in 1894, federal troops scattered and burned a sprawling camp of 20,000 destitute veterans in 1932 (see Figure 101). These veterans had marched on Washington to get an advance on bonus money promised for their war service.



Figure 100: The Standard Oil Fleet in Mothballs during the Great Depression.

(Photograph courtesy of the Calvert Marine Museum Collection)



Figure 101: Bonus March Shacks Afire, Anacostia Flat, Washington, 1932.

(Photograph courtesy of the National Archives)

Later that year, Chesapeake Bay voters showed that they had lost faith in government assurances that prosperity was just around the corner. They helped vote a new Democratic administration into office. Franklin Delano Roosevelt, the newly elected president, started federally funded New Deal public works projects and direct relief programs to lower unemployment, stimulate recovery, and help the neediest citizens.

Workers employed by such new agencies as the Public Works Administration and the Civilian Conservation Corps began constructing or repairing highways, bridges, dams, and parklands throughout the Bay region and the nation. High

tension lines soon carried electric current to rural towns and farms. This current was generated in new Piedmont hydroelectric complexes and Coastal Plain coal-fired plants. Steam locomotives hauled the soft bituminous coal burned in these plants from mines in Maryland, West Virginia, and Kentucky on improved rail networks.

During the late 1930s, world tensions worsened. The pace of production in regional factories and shipyards increased as the federal government hurried to arm the nation in response. The government began erecting large planned communities, such as *Greenbelt*, Maryland, to house low-income workers



Greenbelt, Maryland

GREENBELT HISTORIC DISTRICT. *Greenbelt, Maryland was the first of three “Greenbelt” towns built by the Federal Resettlement Administration around the outskirts of Washington, D.C. between 1935 and 1938 to house low and middle income inner city working families impoverished by the Great Depression. Built astride the Baltimore-Washington corridor near U.S. Route 1 in Prince George’s County, Maryland, Greenbelt was a carefully planned and largely self-contained suburban community. Greenbelt was originally planned to accommodate 1,000 families. The Farm Security Administration expanded the community to house several thousand defense workers between 1941 and 1942.*

Greenbelt was constructed in accordance with “Garden City” lines. The Garden City movement emphasized the benefits of nature and community. Believing that contact with nature in highly ordered formal landscaped settings ennobled and enriched the human spirit—a belief long held by designers of gardens and parklands for the rich and well-to-do—Greenbelt planners made such benefits available to people of more modest means from the region’s cities. The town itself was harmoniously laid out in a rural setting on a gently sloping crescent-shaped plateau open to cooling breezes and offering broad vistas of the surrounding farms and fields. Town buildings were constructed in a well-tended rustic setting of wooded parklands, winding trails, and a twenty-seven acre artificial lake.

The structural organization of the place was intended to foster a strong sense of community. Rows of functionally designed modernistic frame and concrete-block housing units were clustered together in “super-blocks” (see Figure 102). Each unit had access to a garden plot and a service area. Underpasses connected super-block residences to a town common consisting of shops, police and fire-fighting facilities, a garage and gas station, and a community center that also housed an elementary school. A swimming pool, other recreational facilities, and allotment gardens tended by community residents were located behind the common. Free movement and open access was encouraged in every way. Fences were prohibited (hedges marked property lines), and footpaths linked all units in the complex.



Figure 102: Aerial View, Greenbelt, Maryland.
(Photograph courtesy of the National Park Service)

employed in new suburban production plants. Yet hard times were not over for all citizens. New Deal policies helped relieve the worst effects of economic stagnation, but they did not end the Great Depression. Lingering unemployment and worker unrest fueled fears of left wing communist and right wing fascist revolution. Unwilling to depend on the promises of politicians and corporate managers, more and more workers in and around manufacturing centers in Lancaster, York, Baltimore, and Washington joined industrial unions. With the strength of the unions behind them, they could strike for jobs, higher wages, and better working conditions. But in more southerly parts of the region, workers did not join unions in large numbers, because they felt threatened by job loss and discouraged by the violence that authorities used to suppress strikes in areas believed to be more liberal, such as Pennsylvania's steel country and the Great Lakes industrial belt.

The outbreak of World War II in Europe in 1939 changed life in the United States dramatically. Although the nation remained neutral, President Roosevelt pledged to convert America into an arsenal of democracy. Programs such as Lend-Lease, which exchanged American weapons for access to British bases in the Western Hemisphere, strongly pushed military production. Higher wages, along with the draft deferments granted to workers in essential industries after the passage of the Selective Service Act in 1940, attracted men and women to war plants throughout the region.

Wartime mobilization in the United States followed the Japanese attack on Pearl Harbor on December 7, 1941 (see Figure 103). As far as the economy was concerned, this finally achieved what strikes and New Deal policies had failed to do. Although essential resources such as meat and gasoline were strictly rationed, economic conditions generally improved during the war years. Unemployment gradually disappeared when vast numbers of workers found jobs in industries that were changing to meet the military requirements of gov-



Figure 103: Interned German Liners Moored off Point Patience, Maryland Await Disposition, ca. 1940.

(Photograph courtesy of the Calvert Marine Museum collection)

ernment contracts. Regional population swelled as hundreds of thousands of workers moved to Baltimore and other Chesapeake Bay locales to work in war plants manufacturing huge amounts of arms and munitions.

Massive steel aircraft carriers, fast cruisers, and hundreds of smaller ships of all sizes and descriptions came out of shipyards in Newport News, Norfolk, Annapolis, Washington, and Baltimore. Textile mills along the fall line in places like Richmond and Petersburg wove fabric for uniforms and tents, and Virginia's Coastal Plain paper mills produced vast quantities of paper for the millions of documents and forms required to run the war effort.

Mobilization opened new opportunities for African Americans and women. A new generation of African Americans from rural areas moved to Chesapeake Bay cities and towns to work in war industries. And throughout the nation, huge numbers of women joined the workforce as millions of men were inducted into the armed forces. Thousands of women also volunteered to serve in newly organized support units such as the Women's Army Corps. Existing military bases were expanded and new ones were erected throughout the region. Hundreds of thousands of service men and women from all over the country trained in regional camps, airfields, and naval stations. Massive new administrative complexes and housing projects were constructed in and around Washington. The largest of the administration centers was the central military headquarters known as the *Pentagon*. It



Pentagon, Virginia

contained enough offices to accommodate 35,000 military and civilian employees. Officially opening its doors in Arlington, Virginia, in 1942, it is still the largest office building in the world (see Figure 104).



Figure 104: Aerial View of the Pentagon, Arlington, Virginia, 1973.

(Photograph courtesy of the U.S. Environmental Protection Agency and the National Archives)

Norfolk and Baltimore became major ports of departure for American forces bound for Europe and the Pacific. Many of the millions of men and women sent overseas during the fighting also reentered the nation through these ports after the war ended in 1945. Hundreds of thousands of American soldiers, sailors, and airmen had been killed and many more wounded, but the United States was the only major combatant whose homeland had not been devastated during the war. America held a world monopoly on nuclear weapons and had a newly developed military-industrial complex operating at peak capacity. In other words, the nation had grown into a superpower.

As it had done at the end of earlier wars, the government quickly ended rationing, and women workers again were replaced by returning servicemen. But the dawn of the nuclear age and the Soviet Union's development as a rival superpower compelled the government to break with the past in other ways. Although it had been forced to ally with the Communist nation during the war, the United States now feared the prospect of Soviet expansion abroad and Communist subversion at home. A new American administration, led by Harry S. Truman (the vice-president who became president after Roosevelt died in office

on April 12, 1945), worked with Congress to keep a careful watch on Soviet activity and to spend generous amounts on defense. Federal agencies grew in size and number, opening headquarters in and around Washington. The various bureaus struggled to manage growing military funding and to oversee the new highway, airport, flood control, and other public works projects demanded by citizens, who were tired of wartime scarcities and had money to spend.

Federal employees worked in a government system that only a few years before had been openly allied with the Soviet Union. Because some employees might still be sympathetic to that country, there was concern about the possibility of a communist conspiracy. President Truman issued Executive Order 9835 in 1947, authorizing loyalty checks and establishing local loyalty review boards. Under the new policies, hundreds of government workers suspected of subversive leanings were fired from their jobs.

To expose those who were suspected and to unite the nation in a crusade against Communism, the government held public hearings and show trials. The most famous of these began in 1948, when a former Communist Party member, Whittaker Chambers, appeared before the House Un-American Activities Committee to accuse Alger Hiss, a former State Department official and presidential advisor, of being a Soviet agent. The evidence included some sensitive papers supposedly hidden at *Whittaker Chambers Farm*, which is now a National Historic Landmark. The Hiss case riveted the nation's attention on Washington as East-West tensions finally flared into what came to be called the Cold War. In 1948, Soviet forces blockaded Berlin in an attempt to force withdrawal of American, British, and French occupation troops. One year later, the Soviet Union exploded its first nuclear bomb. The Soviet nuclear threat and the Communist expansion in Eastern Europe, China, and the Korean peninsula created a great deal of fear in the United States. In Washington, politicians like Wisconsin senator Joseph R.


Whittaker Chambers
Farm, Maryland

McCarthy whipped those fears into anti-communist hysteria.

Newspapers, newsreels, radio, and, increasingly, television, carried news of these and other developments into homes throughout the Chesapeake region and the rest of the nation. Those who wanted to send a public message to the government took advantage of Washington's position as the symbolic and communications center of the nation. The *Capitol Mall*, *Lafayette Park*, and other open spaces in the capital became backdrops for mass marches supporting or protesting various causes or policies.

With advances in mass media and air travel and new construction of intra-coastal waterways and interstate super-highways, the United States was developing more of a national culture, and the growing Chesapeake Bay population was a part of that. Wartime research and Cold War defense budgets fueled advances in electronics, synthetics, and jet and rocket propulsion, which in turn boosted production and created new industries in the region and across the country. Post-war economic expansion also benefitted from the absence of significant competition from other nations, as well as from the easy availability of cheap imports and the eagerness of recovering, war-devastated foreign markets for American aid and exports.

The Chesapeake Bay regional population, which rose to nearly 5.5 million on the eve of American involvement in World War II, continued to grow in the postwar years. Some of the increase came through workers drawn to Chesapeake Bay war industries, who stayed in the area as the regional economy shifted to peacetime production. Vigorous public health programs administered vaccines, gradually eliminating ancient scourges such as polio, typhus, and diphtheria, which significantly lowered child mortality rates and increased overall health. The postwar baby boom also contributed to population growth. A new generation of young, upwardly mobile veterans married and began rais-



Figure 105: Aerial View of the Dwight David Eisenhower National Historic Site, Gettysburg, Pennsylvania, retirement home of the Commander-in-Chief of Allied Forces in Europe during World War II and a significant Cold War American President. (Photograph courtesy of the National Park Service)

ing families. They were supported by G.I. Bill education benefits, medical services, and low-interest loans for homes, businesses, and farms. These families moved into homes of their own in rural districts, rented apartments in city neighborhoods, and flooded into new suburban developments in places like *Bethesda*, *Towson*, and *Silver Spring*.

Single story, ranch-style tract houses—mass produced and easily affordable by veterans taking advantage of government programs providing mortgages at low interest rates—were built on small lots in closed, landscaped developments. These clusters of homes began to transform landscapes around Chesapeake Bay cities and towns. Shopping centers containing stores, diners, restaurants, movie theaters, and other services began to appear along nearby roads, in commercial districts known as strips. Large, enclosed shopping malls surrounded by huge parking lots first appeared in the region during the late 1960s.

Suburban, white collar workers first rode to city jobs in interurban light-rail cars, commuter trains, and buses. But they took to their cars as affordable automobiles, financed by low cost loans, poured off Detroit's production lines. Existing airfields, such as Washington's *National Airport*, were expanded, and such enormous new facilities as Maryland's *Baltimore and Washington International Airport* and Virginia's *Dulles Airport*



Capitol Mall and Lafayette Park, Washington, D.C.



Bethesda, Towson, and Silver Spring, Maryland



National Airport, Washington, D.C.

Baltimore and Washington International Airport, Maryland

Dulles Airport, Virginia

COLONIAL NATIONAL HISTORICAL PARK.

Established by Congress in 1930, this historical park, located on the Virginia Peninsula between the James and York Rivers, preserves buildings, structures, landscapes, and archeological sites associated with some of the major events in American history. A twenty-three-mile long scenic parkway built and maintained by the National Park Service (see Figure 106) passes from Jamestown, the site of the first successful English colony in America, past Williamsburg, Virginia's colonial capital, to Yorktown, the place where Cornwallis surrendered his army to Washington and Rochambeau following the final climactic battle of the Revolution on October 19, 1781.

Today, the National Park Service and the Association for the Preservation of Virginia Antiquities each own portions of the original Jamestown settlement. Williamsburg is owned and operated by the private non-profit Colonial Williamsburg Foundation established during the 1920s. The National Park Service administers the Yorktown battlefield. Colonial National Historical Park also encompasses four detached areas. Green Spring Plantation preserves the home of Virginia provincial governor William Berkeley. The Cape Henry Memorial marks the first landfall of the Jamestown colonists. Swann's Point preserves an unspoiled stretch of land near Jamestown. And Tindalls Point contains earthworks thrown up during the Civil War.



Figure 106: Colonial Parkway Vista at the Jamestown Island Isthmus, Virginia, 1996.

(Photograph by LANDSCAPES courtesy of the National Park Service)

were constructed. Because people chose to use roads and airlines more and more often, passenger rail lines throughout the nation began to fail in the 1950s and 1960s.

In the cities, electrified trolley lines were replaced by buses powered by electricity, gasoline, and diesel. Lighter, cheaper, and more efficient diesel engines also replaced steam locomotives by 1960. Mostly, freight lines that served more northerly stretches of the Chesapeake Bay region shrank as competition from the trucking industry grew and demand for expensive hard anthracite coal collapsed. These included the Baltimore and Ohio, the Reading, the Erie, and the Pennsylvania railroads. Corporate mergers, diversification, and growing demand for the cheaper soft coal from West Virginia and Kentucky which was burned in Coastal Plain generating plants helped keep alive lines such as the Norfolk Southern and the Chesapeake and Ohio (now a subsidiary of a huge conglomerate, the CSX Corporation).

The growing numbers of cars and trucks traveled on existing, improved, or newly constructed highways. Some, like Colonial Parkway, were meticulously landscaped scenic routes passing through historic and nature preserves. Others, such as U.S. Routes, and later, limited-access freeways, were transportation arteries. These roads dramatically transformed the regional landscape. First built during the 1930s, U.S. Routes were the nation's first modern highway system. Most featured two or three lanes of all-weather, concrete-paved roadways. Each ran on heavily graded roadbeds that cut through hills and other elevations and that crossed steel-frame and reinforced concrete bridges and causeways spanning rivers, swamps, and valleys. Access to these roads generally was open, and signs and traffic lights controlled intersections and regulated pedestrian and automobile traffic.

Commerce and industry developed along stretches of U.S. Routes in and

near cities and towns. New types of roadside establishments appeared, including diners, fast food stands, and motels. Owners used flamboyant, eye catching architectural signs and displays to draw in passing motorists. Many of these were made of newly available and extremely flexible materials such as aluminum and plastic. Entirely new forms of buildings appeared as business owners turned the very shapes of their establishments into advertisements. Buildings in the shapes of hamburgers, hot dogs, and ice cream sodas began to sprout up on the sides of regional roads.

After the Federal-Aid Highway Act of 1956 was passed, even larger Interstate highways—limiting access to controlled interchanges and permitting high speed travel unhampered by stop lights—were constructed. Unlike earlier roads, Interstates were entirely self-enclosed, park-like landscapes cutting wide paths through cities and countryside. The absence of traffic lights and the wide, concrete and asphalt surfaced roadways, level grades, and gradual, gentle curves speeded traffic. Drivers could enter and leave the roads only at ramped or cloverleaf shaped interchanges (see Figure 107). Gas stations, motels, restaurants, and, later, shopping centers and malls showed up more and more at these interchanges.

Road construction sparked several major engineering achievements in the region. The wide waters of the Bay itself were first bridged when the *Chesapeake Bay Bridge* was completed in 1952 (see

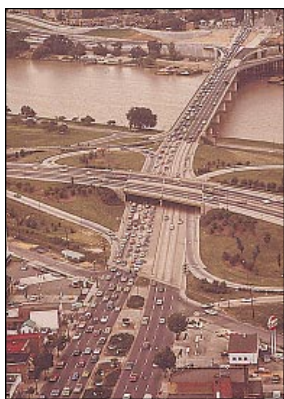


Figure 107: *Traffic at the Junction of Interstate 295 and the Anacostia Bridge, Washington, 1973.*

(Photograph courtesy of the U.S. Environmental Protection Agency and the National Archives)



Figure 108: *Chesapeake Bay Bridges, June, 1973.* (Photograph courtesy of the U.S. Environmental Protection Agency and the National Archives)

Figure 108). It carries U.S. Route 50 across the narrows dividing Maryland's Eastern and Western Shores above Annapolis. In 1973, an even more impressive achievement was scored when the 17.6-mile *Chesapeake Bay Bridge-Tunnel* linked the Eastern Shore with the mainland at Virginia Beach. These and other bridges and tunnels replaced ferries and significantly reduced travel times. Corporations and factories began moving from cities—which were increasingly choked by truck traffic and commuter gridlock—to spacious suburban campuses and business parks close to workers' homes. Urban business districts began to decay as growing numbers of enterprises moved to suburban shopping centers, supermarkets, and malls. These were conveniently located near major thoroughfares and surrounded by ample parking lots.

During the 1960s, Chesapeake Bay cities became sites of mass marches as civil rights demonstrations and Vietnam War protests swept the nation. Washington in particular again became a symbolic focus of American political protest (see Figure 109). Fine arts and popular culture still flourished in Chesapeake Bay cities, but urban sewage, roadway, and other infrastructure systems crumbled and services declined as taxpaying homeowners and businesses moved out. Soon, only poor people who could not afford to move remained in the region's dilapidated inner-city neighborhoods. New waves of Puerto Rican, Cuban, and West Indian immigrants joined poor people already living in the new urban



Chesapeake Bay Bridge-Tunnel, Virginia



Chesapeake Bay Bridge, Maryland

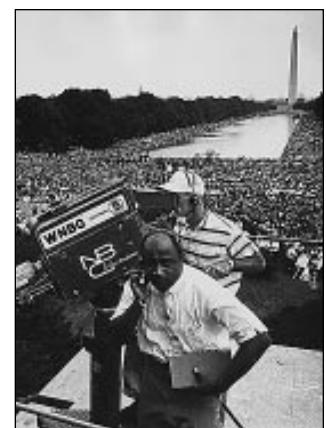


Figure 109: *Civil Rights March on Washington, August 28, 1963.* (Photograph courtesy of the U.S. Information Agency and the National Archives)

ghettoes. Unemployment, illiteracy, alcoholism, drug addiction, and an enduring sense of hopeless despair grew. Alarmed by the seemingly simultaneous emergence of so many serious problems, some social scientists of the time began fearing that this combination was creating a persistent and self-perpetuating culture of poverty.

Washington, D.C., presented the clearest example of the chasm separating rich and poor in America's cities. The city boasted the highest per capita income levels in the nation. At its center lay the glittering stone edifices and monuments of the capital of the world's foremost superpower. Yet more than 40 percent of the city's population lived below the poverty line in 1962, when Michael Harrington's influential book, *The Other America*, exposed the fact that 40 million Americans suffered from the effects of hunger, joblessness, and substandard housing, education, and medical care. Washington's mostly African American poor lived in vast squalid, rundown, and rat-infested ghettoes just beyond the gleaming city center (see Figure 110).

Like many other city governments in the region and the nation, Washington officials tried to address the problems of urban decay by demolishing entire districts of rundown housing in urban renewal projects. Federal Great Society assistance programs, such as federal welfare, Medicaid, and food stamps, failed to eliminate poverty. Anger in poor communities grew as people of minority groups carried an unequal share of the fighting in what many considered a colonialist war in Vietnam. Then the


**National Rail Passenger
System (Amtrak)**



Figure 110: Slum Alley Behind the Capitol, 1935 (Photograph by Carl Mydans courtesy of the Library of Congress)

assassination of Martin Luther King, Jr. sparked riots during the summer of 1968. Rising up in frustration, inner city residents in Washington, Baltimore, and other American cities burned homes and businesses in their own neighborhoods.

Richard M. Nixon's election as president that year failed to end the Vietnam War. The nation was already demoralized by urban turmoil and challenged by counterculture criticism of traditional values. It reeled when American forces left Vietnam after an inconclusive cease-fire agreement was signed in 1973. One year later, Nixon became the first president in American history to resign from office in disgrace. Then the first OPEC oil embargo, in 1973-1974, caused an oil shortage that signaled the end of the era of cheap energy. Chesapeake Bay and the rest of the nation began to experience growing inflation, and economic recession followed.

Decline in the quality of American-made goods and rising demand for cheaper and better designed and engineered Japanese and West German products meant that Americans bought more imported goods than they sold as exports. This dramatically increased American trade deficits. In 1970, several major ailing railroads turned their passenger service over to the federally administered *National Rail Passenger System*, commonly known as Amtrak. After drastically cutting service, Amtrak devoted most of its resources in the region to developing the moneymaking northeastern corridor route, which links cities between Washington and Boston.

Throughout the nation, corporations shut down plants and closed offices as profits declined. Inflation and soaring interest rates devastated productivity and lowered consumption. The situation became much worse when OPEC ministers cut oil production and raised prices more than 300 percent in 1979. Long lines of cars blocked traffic as cars queued up for suddenly scarce and expensive fuel. People throughout the region began to talk seriously about solar power and other energy alternatives to

end dependence on prohibitively expensive and increasingly unreliable foreign oil supplies. The public was already worried about the dangers of nuclear technology, and the 1979 *Three Mile Island* reactor accident just north of the Chesapeake Bay heartland ended hopes that cheap atomic power would be the answer to the energy crisis. Diplomatic setbacks, such as the 444-day Iran hostage crisis, and widely unpopular political acts, such as President Jimmy Carter's 1977 decision to sign the treaty returning the Panama Canal to Panamanian sovereignty, further eroded people's confidence in their nation's future.

Chesapeake Bay voters helped elect Ronald Reagan president in 1980. They were responding to his pledges to restore American pride and revive the nation's depressed economy by abolishing restrictive government regulations, reducing taxes, ending deficit spending, and encouraging investment. Ironically, like Franklin Roosevelt before him, Reagan used federal funds to spend the nation out of recession. He began by repudiating the policy of détente, begun by Nixon, that maintained an uneasy coexistence with the Soviet Union. Committing the nation to victory in the Cold War, Reagan started an aggressive program of spending to rebuild the nation's military establishment. Orders for a modernized navy of 600 ships restored activity in Chesapeake Bay shipyards. Newly manufactured interceptors and bombers crowded onto the flight lines of *Andrews Air Force Base* and other facilities in and around Washington. Laboratories in Maryland and Virginia received billions of research dollars to develop the Strategic Defense Initiative. This space-based anti-missile system, popularly known as Star Wars, was to be capable of shielding the nation from ballistic missile attack.

Dramatic developments in electronic automated technologies during the 1980s further spurred productivity in the region. The collapse of the Soviet Union, which had been bankrupted by the Cold War arms race, opened formerly closed international markets and encouraged

increased production of goods for domestic and foreign markets. The pace of recovery quickened as a result. Overall regional population also rose dramatically, increasing from 9 million to more than 12 million people between 1970 and 2000.

Revived by the national economic recovery, Chesapeake Bay corporations worked with city governments and community activists to redevelop rundown downtown districts and restore poverty blighted neighborhoods. Baltimore's *Inner Harbor* development encouraged construction of new high-rise office buildings, lured tourists to new attractions such as the *National Aquarium*, and attracted young families to restored town houses in newly gentrified neighborhoods. In Washington, renovated landmarks, such as *Union Station*, and massive new construction revived the city center. Similar developments in other Chesapeake cities reflect the remarkable economic recovery that has stimulated growth throughout the region at the close of the twentieth century.

□ PLACE

The dramatic changes outlined above have left a seemingly permanent mark on Chesapeake Bay lands, waters, and skies. The overall number of people living in the Chesapeake Bay region more than doubled in this period, from 5 million at its beginning to more than 12 million at its end. Much of this growth, and the development accompanying it, has happened in the major suburban complexes surrounding Baltimore and Washington, in the smaller Richmond and Hampton Roads metropolitan areas, and around freestanding towns such as Lancaster and York, Pennsylvania.

Although Washington continues to limit the height of its buildings, skyscrapers today rise into the skies above most other Chesapeake Bay downtown districts. Glass clad towers also cluster together in suburban office parks and around Dulles, Baltimore-Washington International, and other regional airports and transportation centers. Long ribbons of highway link suburban residential developments,



***Three Mile Island,
Pennsylvania***



***Inner Harbor and
National Aquarium,
Maryland***

***Union Station,
Washington, D.C.***



***Andrews Air Force
Base, Maryland***



commercial strips, and industrial parks that sprawl across former wetlands and farm fields. Intensive development, spurred by population growth and changing real estate values, has changed as much as 70 percent of the total land area in regional metropolitan centers. Overall, agricultural, residential, and industrial development has affected more than 40 percent of all lands in the region.

The environmental effects of this development have been dramatic. Wetlands, which had long been thought of as breeding grounds for disease and as waste lands best used as garbage dumps and landfill sites, have been particularly hard hit. The 1.2 million acres of wetlands remaining in the region today represent only a fraction of former acreage.

Chesapeake Bay continues to be one of the nation's busiest and most economically important maritime corridors. A workforce of 17,000 men and women working on Bay waters annually catch and process one-quarter of all oysters and one-half of all clams consumed in America. The yearly haul of 95 million pounds of blue crabs is the largest such harvest in the world. Bay waters support an active sport fishery and provide recreation to millions of bathers and boaters. Bridges and boats allow penetration of formerly remote parts of the Bay, which has sparked tensions between fishing and tourism interests.

More than 10,000 oceangoing vessels carry 100 million tons of cargo every year to port facilities at Baltimore, Hampton Roads, and smaller harbors. Sheltered anchorages at the mouth of the region's rivers require constant dredging, which is shown by the number of former Bay ports that no longer exist. The Bay's already shallow waters also require periodic dredging to keep shipping lanes open. Although channel clearing has high costs in money and environmental impact, to many people the Bay's economic importance as a major trade corridor justifies the expenses. Waterborne commerce accounts for one-fifth of all jobs in Maryland and 15 percent of the state's gross national product. Farther

south, the *Newport News Shipyard* is Virginia's largest employer.

The first half century of metropolitan development created pollution, overexploitation, and environmental degradation that had effects still felt today. Between 1930 and 1980, easterly winds carried airborne pollutants that billowed from chimneys of coal-fired generating plants, steel mills, and other smokestack industries in the nation's heartland. These pollutants spread an uncontrolled pall of acid rain over the region's lands and waters. During this same period, unregulated industries from as far north as central New York and as far west as West Virginia poured untold quantities of heavy metals, petrochemicals, hydrocarbons, mining wastes, and other non-biodegradable pollutants into streams flowing into Chesapeake Bay. So much anthracite coal waste was dumped into the Susquehanna River at Scranton, for example, that it has become economically feasible to dredge coal from sediments trapped within the still waters impounded by the *Conowingo Dam* (see Figure 111) and other barriers thrown across the lower river to store water and generate hydro-electric energy.

Eroded soils and vast amounts of nitrogen, phosphorus, and synthetic chemicals used in pesticides and fertilizers washed from farm fields. Individual homes and entire municipalities pumped human waste, detergent phosphates, and other sewage into regional rivers. Passing ships discharged oil and other wastes into open Bay waters, introducing foreign diseases and pests along with the pollution and posing a constant



Figure 111: Conowingo Dam Across the Susquehanna, ca. 1920-1950. (Photograph by Theodor Horydezak courtesy of the Library of Congress)

threat of catastrophic spills and leaks. Toxic chemicals, such as DDT and other pesticides, also inadvertently killed off bald eagles in the region and devastated other species. Some newly introduced species, such as nutria, brought into the region to provide a new source of fur and flesh, grew to such large populations that they threatened established animal communities. Over-hunting and industrialized commercial harvesting threatened the survival of Bay shellfish, fin-fish, and wildfowl.



Figure 112: Shore Erosion at Governor's Land on the Chickahominy River, Virginia, 1990. (Photograph courtesy of the National Park Service)

Environmental conditions in the Chesapeake Bay region had deteriorated alarmingly by 1970. Vast areas seemed covered by pavement and unsightly development. The region's old-growth forests were gone—replaced by human habitations, highways, farm fields, or pines planted for quick harvest. Washing away exposed topsoil, erosion also ate at the region's shorelines (see Figure 112). Industrial pollution fogged the air and polluted waterways (see Figure 113). Smog choked city skies and acid rain threatened to turn formerly thriving regional lakes into lifeless lagoons. Water pollution was so bad in major regional waterways that the Susquehanna, Potomac, and James Rivers seemed little more than open sewers. Numbers of shad dropped dramatically after construction of dams across the lower Susquehanna blocked their spawning runs. Bay wildlife lost essential habitat as increasing amounts of wetlands were drained and buried under dumped garbage, dredge spoil, and other landfill.

The open waters of the Bay also showed unmistakable signs of environmental

degradation. Over-harvesting threatened most economically important fish, shellfish, and wildfowl. Oyster and softshell clam production plummeted when newly introduced diseases ravaged shellfish communities. Red tides, algae and plankton blooms, and noxious chemicals poisoned the Bay as murky waters, clogged with sediment, blocked life-giving sunlight. Recovering from devastation caused by newly introduced foreign plant diseases during the early 1930s, eel-grasses and other water plants providing



Figure 113: A Hazy Day at the Bethlehem Steel Plant, Sparrow's Point, Maryland, 1973. (Photograph by the U.S. Environmental Protection Agency courtesy of the National Archives)

food and shelter to numerous species were increasingly crowded out by sudden expansions of hydrilla and Eurasian watermilfoil. Abrupt increases in the salt levels of Bay waters, for example, allowed watermilfoil to expand explosively, covering almost 50,000 acres of Bay bottom in 1960 and twice as much acreage one year later. Although local environmental conditions hostile to their growth caused watermilfoil plants to die off within a year of their appearance, their sudden and catastrophic expansion left an enduring mark on Bay water plant life. A survey conducted in 1978, for example, found that only 40,000 acres of Bay bottom was covered by submerged aquatic vegetation of any type. This is only a tiny percentage of the total amount of acreage covered by aquatic plants in earlier times—specialists think that vast meadows of underwater grasses and other submerged aquatic vegetation may have covered as much as 600,000 acres of Bay bottom at the time colonists first set foot on Chesapeake shores.

Water plants starved for light in cloudy Bay waters. Periodic catastrophes, such as Hurricane Agnes, which hit the region in 1972, also washed away entire communities of submerged aquatic vegetation. Destruction of oxygen producing plants combined with the oxygen robbing process of decomposition to create a condition known as anoxia, a lowering of the volume of dissolved oxygen in the water. Because oxygen is needed to support aquatic life, the lack of it increased the loss of plants and animals.

Commercial catches of striped bass dropped from 15 million to 2 million pounds per year in a single decade. Knowing that 90 percent of striped bass on the east coast spawned, matured, and fed in the Bay, the alarmed Maryland authorities banned all fishing of striped bass in state waters. Virginia also moved to limit catches of threatened species.

Concerned about both the long-term degradation of the regional environment and the sudden and enormous devastation caused by Hurricane Agnes, many Chesapeake Bay residents welcomed passage of the Federal Clean Water Act in 1972. The act established uniform water quality standards, placed limits on types and amounts of pollutants poured into rivers, and required construction of new sewage lines and water treatment plants (see Figure 114). One year later, Senator Charles Mathias of Maryland began supporting studies to assess the impacts of industry, municipal governments, agriculture, development, and rising population on the Chesapeake Bay environment.

The findings from these and other studies led the United States Environmental Protection Agency to establish the *Chesapeake Bay Program* in 1983. This innovative partnership coordinated the efforts of government agencies, preservationists, and concerned citizens in the 64,000-square-mile Chesapeake Bay basin. The program provides technical assistance, research support, and a forum for airing issues relating to the maintenance and restoration of the region's environment. Program partners have pledged to work together to reduce industrial pollution, increase acreage covered by wetlands and submerged aquatic grasses, restore plant and animal communities, and help farms and municipalities reduce the amount of nutrients flowing into Bay waters by 40 percent by the year 2000.

Several major successes have been scored since 1983. Bald eagle populations rebounded significantly between 1989 and 2000. Releases of chemicals from factories, sewage systems, and farm fields decreased more than 55 percent during the same period. Careful management of fertilizers, insecticides, and sewage is producing significant declines in harmful mineral and nutrient concentrations in Bay sediments and waters. And acreage covered by submerged aquatic grasses has increased more than 60 percent since 1984.

Federal, state, and municipal laws and ordinances currently give varying levels of protection to threatened cultural and natural resources in the region. The region currently has seventy State Parks and Forests, fifty State Game Lands and Wildlife Management Areas, forty-two National Parks, sixteen military installations, ten National Wildlife Refuges, and two Department of Agriculture facilities—the *George Washington National Forest*, in Virginia, and the *National Agricultural Research Center*, in Maryland. Web sites listing these facilities and providing other information about any of them may be found in the *Sources* section of this volume. The personnel at these sites work vigorously to enforce protective regulations on more than 1



**Figure 114: Water Filtration Plant,
Occoquan, Virginia, 1973.**

(Photograph by the U.S. Environmental Protection Agency
courtesy of the National Archives)

million acres of public land in the Chesapeake heartland. Public utilities and private organizations are increasingly forming partnerships with agencies at all levels of government to restore the environment.

Although these and many other improvements provide good reasons to be optimistic about the restoration of the environment, much remains to be done. High nutrient levels in Bay waters, which are believed to be responsible for turning a usually harmless microscopic dinoflagellate named *pfisteria* into a highly toxic killer of fish in 1997, must be reduced. Increases in development rates lead to corresponding decreases in forest acreage and waterfowl habitat, showing how humans can transform the environment. Because of this impact, people must care for their environment as they work to build strong futures for themselves, their families, and their communities.

EMERGENCE OF A METROPOLITAN CULTURAL LANDSCAPE

□ PEOPLING PLACES

Population rise and redistribution have had dramatic impacts on the regional cultural landscape during this period. As people were drawn to the region's cities in search of employment during the Depression, the growing population prompted more expansion of concentrated downtown administrative and business districts. Growth required the construction of expanded public transportation systems and the massive development of city services and utilities. Although the economic slump hampered development, existing shopping and entertainment districts were enlarged. Private apartment blocks, town houses, and residences also were constructed or renovated. Urban power and water authorities, struggling to meet the needs of growing populations, constructed dams, reservoirs, and generating plants in rural parts of southeastern

Virginia's Coastal Plain and the Maryland and Pennsylvania Piedmont.

Wartime development stimulated growth in the Washington metropolitan area and in other urban centers where war industries were located. Although Washington continued to grow dramatically after the war, urban development elsewhere in the region began to slow during the 1950s and 1960s. Population profiles in city centers began to change as businesses and jobs moved out to the suburbs. City populations became poorer. Development in cities increasingly shifted from construction of new business buildings to erection of publicly funded housing projects and other programs providing affordable housing to low income families.

The focus of private development shifted to the rural areas surrounding regional cities as rising regional populations relocated to new suburbs. Many older rural villages became suburban enclaves. Entirely new communities also rose up everywhere in the region. Buying up available farmlands and filled wetlands, developers dropped clusters of mass-produced residences onto landscaped tracts. Schools, gas stations, fire houses, diners, drive-in movies, and quickly constructed shopping centers surrounded by paved parking lots soon appeared nearby. Local governments, unwilling to limit additions to their tax rolls, did little to regulate suburban sprawl, and at first it proceeded haphazardly.

Alarmed by the sprawling, unsightly landscape resulting from unplanned development, communities quickly began to put zoning regulations in place. Ordinances soon set limits on housing lot sizes, determined where businesses could be operated, mandated that structures be set back certain distances from roadways, and required adequate parking.

New mini cities of steel-framed, glass-clad high-rises sprouted up at the cores of new suburban concentrations in places such as *Arlington, Columbia, Bethesda, and Silver Spring* during the 1970s. Larger and more imposing skyscrapers appeared in rehabilitated water-



*Arlington, Virginia
Columbia, Bethesda, and
Silver Spring, Maryland*

front downtown districts such as Baltimore's Inner Harbor as the economy began recovering during the 1980s. Drawn by the region's healthier economy, new generations of Asian, African, and Latin American immigrants established new communities in old residential districts in Chesapeake Bay cities and towns by the 1990s. Signs in their native languages that marked churches, gathering places, and business establishments added new diversity to the region's cultural landscape.

□ **CREATION OF SOCIAL INSTITUTIONS**

Massive social change and mobility marked the years of this period. As more people acquired cars, many established neighborhood communities were transformed and new ones created. Increased prosperity in the years after the Great Depression brought an era of social mobility unlike any before. Substantial numbers of working class people, employed in regional industries and supported by programs such as the G.I. Bill, saw their children enter the ranks of the middle class. Increased educational opportunity and longer periods of education allowed people to train for new, highly skilled jobs. They also delayed some workers' entry into the workforce, which prevented flooding of the labor market. As women fought for equal rights and equal pay and groups who had suffered racial or ethnic bias fought against laws enforcing statutory segregation and racial discrimination, new opportunities opened for them.

Changing patterns of work and employment transformed family dynamics everywhere. The cost of living rose as living standards improved, and households soon required incomes from all adult residents. Divorce rates rose as economic opportunities and changing values made it seem more plausible for some people to live alone. Residence sizes reflected this trend, generally becoming smaller as smaller nuclear, one-parent, and single households replaced earlier multi-generational families.

The movement of hundreds of thousands of migrants from other parts of the country and the world to a new region where most were strangers increased reliance on services provided by churches, philanthropic societies, social clubs, and other community institutions. Many old institutions closed or relocated. New and old ethnic, religious, and cultural associations renovated or erected new community centers, meeting halls, recreational facilities, hospitals, rest homes, and cemeteries throughout the region. Inspired by the civil rights movement and its Indian equivalent, then known as Red Power, Native American people throughout the region began reasserting their cultural identities.

Government played a greater part in social life during this period. Passage of the Social Security Act in 1935 created the nation's first social welfare system. Taxes paid by employers and withheld from employee wages helped fund a plan that provided unemployment compensation, aid for the infirm and for dependent mothers and children, pensions, and payment to survivors' families. Because it gave benefits to workers, the Social Security system did not help a new generation of poor people who were unable to find work during the prosperous postwar decades.

In 1964, President Lyndon Baines Johnson moved to address this new form of poverty by sponsoring passage of the Economic Opportunity Act, which extended medical services and financial relief to the needy. Passed at a time when the nation found itself drifting toward war in Vietnam, this centerpiece of Johnson's ambitious Great Society program helped millions of people. But it did not end poverty. Congress was unwilling to raise taxes to the level needed to simultaneously fight the war on poverty, the Cold War, and the fighting in Vietnam. So it failed to raise the funds needed to establish long-term programs that might have wiped out need in American society.

But public monies did underwrite a massive school building program throughout the 1960s. Colleges offering baccalaureate degrees and universities supporting

graduate study programs were enlarged and expanded. Two-year community and junior colleges were built in many counties. New commuter campuses emerged in Chesapeake Bay cities. And public and private funds also supported construction of new meeting halls, conference centers, and other community social facilities.

New community self-help programs were created to address social problems when the federal government moved to limit its involvement in social welfare programs during the 1980s. Workfare began to replace welfare as the federal government turned over control of relief programs to the states. Federal intervention in social life further diminished as agencies increasingly worked to create partnerships, such as the Chesapeake Bay Program, to coordinate the voluntary efforts of state governments, municipalities, service organizations, private corporations, and individuals.

□ EXPRESSING CULTURAL VALUES

The Chesapeake Bay region became a center of American cultural expression in the decades following 1930. Although New York and Hollywood had become centers of American style, Washington's monuments, meeting halls, and mall had become stages on which policymakers, trend-setters, and demonstrators set much of the cultural tone of the nation. This tone has shifted continually, from the self-righteousness of the Progressive Era, the hardheaded practicality of the Depression and war years, the self-assuredness of the Cold War, the turbulent changes of the 1960s, and the rise of identity politics pressing agendas of particular ethnic groups, religious viewpoints, and gender orientations, to the present struggle to find a place in the emerging world economic order.

Chesapeake region newspapers carried the latest news, as well as the views and opinions of influential writers such as Art Buchwald. The Watergate scandal and the popular film, *All the President's Men* (1976) helped propel the *Washington*


Post into national prominence. Washington also became the scene of countless novels and the backdrop of hundreds of filmed dramas, thrillers, mysteries, and comedies.

Motion pictures have also helped Baltimore emerge as a unique icon of popular imagination. Director Barry Levinson brought a wistfully nostalgic vision of the city to life in films such as *Diner* (1977) and *Avalon* (1990). More recently, Levinson has helped illuminate a grittier side of Baltimore life in the critically acclaimed television drama *Homicide* (1992-1999). On the less mainstream side, film maker John Waters has created an image of Baltimore as a weirdly sweet (and occasionally shockingly strange) working class paradise in films such as *Pink Flamingos* (1972), *Hairspray* (1987), and *Pecker* (1998).

Popular culture also flourished in more rural areas of the region. Radio and the rising recording industry helped country music grow in popularity. Carved wooden decoys grew from everyday tools into a highly marketable art form. Collectors and curators from Baltimore, Washington, and other urban centers increasingly scoured the region's hinterlands in search of antique or homemade furniture, furnishings, paintings, and other folk arts. *The Waltons*, a popular television show that aired from 1972 to 1981 brought Virginia screenwriter Earl Hamner Jr.'s vision of an idealized close-knit rural family to American audiences at a time when political and cultural conflict threatened to tear apart the nation's social fabric. Popular culture also was expressed in sports stadiums; on playing fields; through folk art, furniture facades, and painted screens on the front stoops of urban neighborhoods (see Figure 115); and in urban mural painting.



Figure 115: Baltimore Folk Art: Painted screen depicting the nearby Lazaretto Lighthouse on the door of an Elliott Street row house in Baltimore's Canton neighborhood, 1990. (Photograph by Elaine Eff courtesy of the Painted Screen Society of Baltimore, Inc.)



***Colonial Williamsburg,
Jamestown, and
Yorktown, Virginia
Chesapeake and Ohio
Canal, Maryland
Gettysburg, Pennsylvania***

Museums, conservatories, theaters, auditoriums, and schools supported the fine arts in the region's cities and universities. Regional architects, writers, and artists created structures, objects, and landscapes reflecting a range of cultural tastes. Styles have ranged from the streamlined lines of the art deco and art moderne styles of the 1930s, through the realism of the war years, the abstract expressionism of the postwar decades, and the futuristic simplicity of the modernists during the 1960s and 1970s, to the mix of old and new favored by the post-modernist movement of the 1980s and 1990s.

A yearning for simpler times and values has been reflected in the colonial revival and historic preservation movements. During the 1930s, financier John D. Rockefeller poured millions of dollars into the restoration of *Colonial Williamsburg*. Places significant in American history, such as *Jamestown*, *Yorktown*, *Gettysburg*, and the *Chesapeake and Ohio Canal*, became national parks. The Historic Sites Act of 1935 established the National Historic Landmark program. Since that time, more than 100 sites of national significance in the region have been designated as landmarks through the program. Passage of the Historic Preservation Act of 1966 established State Historic Preservation Offices in every state and created the National Register of Historic Places to recognize sites of local and state significance. To date, more than 1,000 places in the region have been listed in the National Register.

□ SHAPING THE POLITICAL LANDSCAPE

A growing centralization of authority was required to regulate the vastly increasing, unprecedentedly mobile, consumption-oriented, and rapidly changing populations. Stone masons working in regional quarries cut marble, granite, and sandstone to adorn the facades of the increasing number of classical revival office complexes and gleaming monuments that rose at the center of Washington during the 1930s. Elsewhere

in the region, federal public works projects funded road, dam, and park construction. Federal office buildings housing employees administering these and other programs rose in centrally located county seats.

During World War II, armies of framers, roofers, carpenters, plumbers, brick masons, and sheet metal workers built a huge number of barracks, warehouses, administrative complexes, and other structures in military bases and depots throughout the region. Constructed with inexpensive materials from standardized plans, most of these buildings were built for a specific purpose and were slated for demolition following the end of hostilities. Most, however, were maintained as growing tensions with the Soviet Union compelled the government to keep its bases open after 1945. The government increasingly used defense needs as justification for new public works and development projects. New limited-access superhighways funded through the 1956 Interstate Highway Act, for example, were made part of what came to be called the National System of Interstate and Defense Highways. United States Army Corps of Engineers contractors undertook numerous flood control and waterfront stabilization projects to protect American production centers and safeguard strategic resources.

Even education came to be regarded as a weapon in the Cold War. Citing the need for larger numbers of technicians and scientists to produce and operate sophisticated weapons systems, Congress passed the National Defense Education Act in 1958. Low interest student loans, research grants, and other funding provided by the act soon led to great growth in college campus construction. Established campuses were expanded, and new ones opened everywhere in the region.

Many new or larger colleges occupied military bases that had been turned over to state and local governments for reuse. Barracks and other structures were converted into classrooms, dormitories, and administration buildings. In state capitals, county seats, and other administrative

centers, new assembly halls, court-houses, office buildings, fire houses, and recreational facilities rose as city populations began spilling into growing suburbs throughout the region. Federal money funneled to local communities to fight wars on poverty, crime, and drugs built new health centers, police stations, prisons, and other facilities.

□ DEVELOPING THE CHESAPEAKE ECONOMY

Unprecedented demographic, social, cultural, and political transformations led to revolutionary changes in the economy of the region. Despite depression and periodic economic downturns, producers and wholesalers brought ever larger amounts of goods to growing markets in and beyond the region by using more efficient and productive extraction, processing, manufacturing, and distribution systems. New rail, surface, water, and air transportation systems could carry larger cargoes to markets faster and more efficiently (see Figure 116). That made possible the import and export of greater amounts of durable goods. New preservation and storage techniques allowed greater stockpiling and wider distribution of perishable produce. Greater quantities of goods crowded onto shelves of growing numbers of specialty shops and ever larger and more complex department stores. Imposing glass and steel office buildings rose in urban and suburban centers as corporations and financial institutions grew in size and influence.



Figure 116: Union Station Looking South Toward the Capitol, the Potomac, and the National Airport, 1973.
(Photograph by the U.S. Environmental Protection Agency courtesy of the National Archives)



Figure 117: Aerial View of Saint Mary's City.
(Photograph courtesy of the Saint Mary's City Commission)

Postwar prosperity, the shift from an economy based on producing goods to one increasingly focused on providing services, the rise of the automobile, and the growth of affordable air travel greatly expanded the economic value of tourism in the region. The natural charms of the *Blue Ridge*, *Catoctin Mountain*, and other scenic locales attracted visitors in ever-growing numbers. Colonial Williamsburg and other historic restorations became national attractions. Well preserved historic locales, such as Maryland's *Saint Mary's City* (see Figure 117) and the Virginia towns of *Fredericksburg* and *Waterford* also benefited from heritage tourism. Hunting and sport fishing grew in economic importance. Outfitters throughout the region supplied rods, reels, and other gear to sport fishermen going after trout, pickerel, and other game fish. During hunting season, hunters sought out deer, duck, and turkey on public lands and private game preserves. Those who could afford it hired boats and pilots at local ports to fish for striped bass in the Bay or marlin, yellowtail, and other game fish in the warm offshore gulf stream currents coursing several miles out from the Atlantic's shores.

□ EXPANDING SCIENCE AND TECHNOLOGY

The political economy of the period provided support for extraordinary scientific and technological expansion. Financed



Blue Ridge Mountains, Virginia

Catoctin Mountain, Maryland



**Saint Mary's City, Maryland
Fredericksburg and Waterford, Virginia**

**LANDSCAPE TOWARD THE FUTURE:
THE LUNAR LANDING RESEARCH FACILITY.**

Located at the Langley Research Center, Hampton, Virginia, and completed in 1965 at a cost of \$3.5 million, this facility was constructed by NASA as a training simulator to prepare Apollo astronauts to deal with problems associated with lunar landing maneuvers. The facility's main structure is a 400-foot-long and 230-foot-wide steel A-frame erected on a sandy, pockmarked base resembling the lunar landscape. Astronauts trained in a full-scale lunar excursion module artfully slung on cables suspended from a hydraulically powered crane mounted on a steel overhead traveling bridge. By skillfully shifting the module's center of gravity, a crane operator could cancel out up to five-sixth's of the earth's gravity; about the same force astronauts would encounter on the Moon. Suspended in a similar way from slings and cables slung from a trolley running on overhead tracks, individual astronauts could also experience the effects of lunar gravity during simulated lunar test walks on the facility's base.

Neil Armstrong and Edwin Aldrin logged many hours of training time at the facility while preparing for their successful landing on the Moon on July 19, 1969.



Figure 118: Landscape Toward the Future: The Lunar Landing Research Facility, Langley Research Center, Hampton Virginia. (Photograph courtesy of the National Aeronautics and Space Administration)

by government funds, encouraged by industries hungry for innovation, and stimulated by developments elsewhere, Chesapeake Bay region scientists and technicians made contributions that left a lasting impact on the regional cultural landscape. Scientists working in universities, military laboratories, and federal research facilities in and around the Baltimore-Washington corridor made breakthrough discoveries in physics, chemistry, and electronics. These and other discoveries permitted development of radical new technological advances such as the transistor, jet and rocket reaction propulsion engines, nuclear power generation, and plastics, rayon, dacron, nylon, and other synthetics. At facilities such as the *Aberdeen Proving Ground* and *Patuxent Naval Air Station* in Maryland, and Virginia technological centers such as *Langley Research Center* and the *Atomic Energy Commission's Continuous Electronic Beam Accelerator Facility* in Newport News, technicians continue to perfect technologies that apply the results of pure scientific research. The National Emergency Medical System is an example

of the kind of practical application of basic research first developed in the region.

TRANSFORMING THE ENVIRONMENT

A population committed to the idea of progress and development was able to transform Chesapeake Bay environments in ways their ancestors would not have thought possible. Because wood has become less economically important and agricultural production has decreased, the total number of acres covered by forest has increased. But most other environmental indicators in the region have clearly shown signs of significant degradation since 1930. Most analysts agree that pollution, overexploitation, and development have been the primary causes of this disturbing trend. Poisons and sediment flowing into the Chesapeake from the Susquehanna River, for example, have all but wiped out submerged aquatic vegetation in northern parts of the Bay and have seriously reduced it farther south. Overharvesting and habitat destruction have


**Aberdeen Proving
Ground and Patuxent
Naval Air Station,
Maryland**
**Langley Research Center
and Atomic Energy
Commission's
Continuous Electronic
Beam Accelerator
Facility, Virginia**

significantly reduced annual hauls of oysters, clams, and fin-fish. Pesticides and indiscriminate over-hunting have threatened the survival of hawks, owls, eagles, waterfowl, and other birds. Numbers of fur-bearing otters, beavers, and minks have shrunk catastrophically, and only small numbers of bears, bobcats, and other wildlife survive in remote portions of the *Great Dismal Swamp* and isolated sections of the upland Piedmont.

Vast expanses of land in and around regional cities and suburbs have been buried beneath landfill or covered with pavement. Enormous tracts of low lying fertile bottomlands have been covered by waters rising behind dams built by power utilities and water companies throughout southeastern Virginia and the Maryland Piedmont. Toxic waste dumps poison the land near many old industrial sites, and layers of heavy metals, chemicals, and nutrient runoff still leach into Bay waters from buried sediments. At the same time, higher cancer rates than ever before recorded have been reported throughout the region.

Since the 1970s, greater awareness of the impact of these environmental transformations has sparked efforts to reverse their effects. Today, strict federal and state environmental laws require that the impact on the environment be considered in all projects funded or regulated by federal agencies. Other laws require cities to lower smog-producing ozone and hydrocarbon emissions and mandate treatment of water prior to its discharge into waterways lands. And public-private partnerships such as the Chesapeake Bay Program coordinate efforts to lessen further the impact of non-biodegradable pollutants, restore damaged habitats, reintroduce bald eagles and other species that have been wiped out, and promote development in harmony with the region's environment.

□ CHANGING ROLE OF THE CHESAPEAKE IN THE WORLD COMMUNITY

Visible evidence of America's changing role in the world community has

become a key part of the region's cultural landscape. Washington's role as the cosmopolitan capital of the world's strongest superpower is shown in its buildings and in its monuments that commemorate great events and honor influential people. The capital district's differences between rich and poor are reminders of similar contrasts between developed and undeveloped nations.

Army, Navy, Marine, and Air Force bases throughout the region support forces required to project military power throughout the world. The wreck of the German submarine *U-1105* (see Figure 119), a war prize sunk in 1949 off Piney Point, Maryland during tests to determine the effectiveness of new explosives, mutely attests both to America's rise to world power in World War II and the nation's anxiety over maintaining its position in the Cold War that followed.

The Bay's importance as a major maritime trade center is shown by its well marked and maintained shipping lanes, its massive port facilities, and surviving examples of water craft constructed in the region, such as the *World War II liberty ship John Brown*—first built in Baltimore and now preserved as a historic site commemorating the contributions of the nation's merchant mariners in its home port. Jet aircraft flying in and out of Baltimore-Washington, Dulles, and other international airports bring the region within a few hours' flying time of the rest of the world. Throughout the region, microwave dishes mounted atop steel towers and mobile vans link the region into a global satellite communica-



Great Dismal Swamp, Virginia



World War II liberty ship John Brown

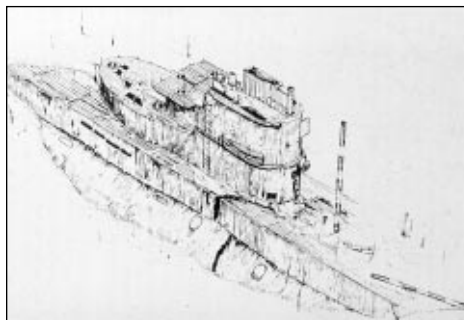


Figure 119: Landscape of Memory: The wreck of the U-1105.

(Sketch courtesy of the Saint Clements Island-Potomac River Museum and Maryland Historical Trust)

tion network, putting people into instant contact with one another everywhere on the planet. Larger radio telescopes maintained at civilian and military research centers reach ever farther into deep space, searching for new discoveries that promise undreamed-of reconsiderations of the nation's, and the world's, position in the universe.

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APPENDIX ONE

Chesapeake Region Timeline

MAJOR DEVELOPMENTS

CHAPTER ONE

- Precambrian era, 3.5 to 1 billion years ago
- Paleozoic era, 600 to 230 million years ago
- Mesozoic era, 230 to 65 million years ago
- Cenozoic era, 65 million years ago to the present

CHAPTER TWO

- Pre-Clovis possibilities, 18,000 to 11,500 years ago
- Paleoindian period, 11,500 to 9,900 years ago
- Early Paleoindian phase, 11,500 to 10,400 years ago
- Middle Paleoindian phase, 10,800 to 10,200 years ago
- Late Paleoindian phase, 10,400 to 9,900 years ago

CHAPTER THREE

- Archaic period, 10,000 to 3,000 years ago
- Early Archaic phase, 10,000 to 7,000 years ago
- Middle Archaic phase, 8,200 to 5,000 years ago
- Late Archaic/Transitional phase, 5,000 to 3,000 years ago
- Woodland period, 3,300 to 500 years ago
- Early Woodland phase, 3,300 to 2,000 years ago
- Middle Woodland phase, 2,300 to 1,000 years ago

CHAPTER FOUR

- Late Woodland phase begins, 1,100 to 500 years ago
- Initial European contacts, A.D. 1492 to 1607

CHAPTER FIVE

- Colonial period, 1607 to 1775

CHAPTER SIX

- The Revolutionary War and the Early National period, 1775 to 1789
- Federal period, 1789 to 1820

CHAPTER SEVEN

- Antebellum period, 1820 to 1861
- The Civil War, 1861 to 1865
- Reconstruction and Industrial Expansion, 1865 to 1880

CHAPTER EIGHT

- Industrial Expansion and the Gilded Age, 1880-1900
- The Progressive era, 1900 to 1920
- The Roaring Twenties, 1920 to 1929

CHAPTER NINE

- The Depression era, 1930 to 1939
- World War II, 1939 to 1945
- Cold War, 1945 to 1989
- New World Economic Order, 1989 to 2000

SIGNIFICANT EVENTS

CHAPTER ONE

- One-celled organisms evolve during Precambrian times, 3.5 to 1 billion years ago.
- The Grenville Orogeny mountain-building episode, 1.3 to 1 billion years ago.
- The Iapetus Ocean covers the region, 1 billion to 500 million years ago.
- The Pangaeian super continent forms, 500 million years ago.
- Plants, insects, mollusks, fishes, and amphibians emerge during the Paleozoic era, 600 to 230 million years ago.
- The Appalachian Orogeny mountain-building episode, 350 to 250 million years ago.
- Dinosaurs, birds, and the first mammals appear during the Mesozoic era, 230 to 65 million years ago.
- North America goes with Laurasia when Pangaea splits up 200 million years ago.
- Lying on the shores of Laurasia, parts of the region are periodically flooded by Atlantic Ocean waters between 200 million and 12,000 years ago.
- Mammals begin to emerge as dominant land animals, 65 million years ago.
- North America begins to split off from Laurasia 50 million years ago.
- The most recent series of Pleistocene Ice-Ages begin 2 million years ago.
- The most recent glacial ice-sheets begin to retreat 18,000 years ago.

CHAPTER TWO

- Possible pre-Clovis occupation of the region beginning around 18,000 years ago.
- Paleoindian people using Clovis points first come to the Chesapeake by 11,500 years ago.

- Clovis points are replaced by a variety of smaller stemmed and notched projectile points, 10,400 years ago.
- Pleistocene megafauna such as American mammoth and giant beaver become extinct as the most recent Ice-Age ends 10,000 years ago.
- Modern mixed hardwood forests begin to dominate the environment of most areas of the region by 9,900 years ago. Rising temperatures melting glacial ice raise sea level worldwide—rising waters begin to form the outline of the modern Chesapeake Bay by 9,900 years ago.

CHAPTER THREE

- The modern day Bay shoreline and environment emerges between 6,000 and 3,000 years ago.
- People begin encouraging the growth of desirable plants by 5,000 years ago.
- Appearance of pottery in the region begins the container revolution, 3,000 years ago.
- Distinctive copper, clay shell, and stone artifacts associated with the Ohio Valley Adena cultural tradition appear in regional archeological sites, 2,500 to 1,900 years ago.
- Squash, beans, and tobacco are first cultivated in the region between 1,500 and 1,000 years ago.

CHAPTER FOUR

- Corn, squash, beans, and tobacco become important cultivated crops in the region by 1,000 years ago. The bow and arrow is introduced into the region.
- People begin building settled towns in the region. Potomac Creek culture ancestors of the Piscataways move into the lower Potomac valley sometime around A.D. 1300.
- Europeans first land on the shores of the Caribbean in 1492 and Canada in 1497.

CHAPTER FIVE

- Giovanni da Verrazano pens the earliest written record of contact in the region in 1524.
- Susquehannock immigrants from the upper Susquehanna River supplant Shenks Ferry culture people in the lower Pennsylvania Piedmont between 1550 and 1575.
- Early Spanish and English colonization attempts fail between 1571 and 1585.

APPENDIX ONE

- The Powhatan chiefdom develops along the James River Coastal Plain by 1600.
 - The first successful English colony, Virginia, is established at Jamestown, 1607.
 - Demand for Virginian tobacco grows in Europe after 1612.
 - Enslaved Africans are first brought to the region in 1619.
 - Maryland is founded at Saint Mary's City, 1634.
 - Virginian trader William Claiborne is forcibly ejected from Maryland, 1638.
 - Puritan Parliamentarians and the Crown fight the English Civil War, 1642 to 1649. Charles I is executed and England is declared a Commonwealth, 1649.
 - Protestant Parliamentarians led by Richard Ingles seize and plunder Maryland in 1645 during the English Civil War.
 - Maryland's 1649 Act of Toleration protects Catholic, Protestant, and Quaker worship. The Act is repealed in 1654.
 - War and disease reduce the regional Indian population to 2,400, one-tenth of its pre-contact size, by 1650. Colonial population rises from zero to 13,000 during the same years.
 - Charles II restores royal prerogatives throughout his realm, 1665.
 - Susquehannocks are dispersed and Jamestown is burned during Bacon's Rebellion, 1675 to 1676.
 - The 1677 Treaty of Middle Plantation (now Williamsburg), reduces Virginia's Native American population to tributary status.
 - William Penn is granted the charter for Pennsylvania, 1681.
 - The authority of the Commonwealth's parliamentary system is affirmed after James II is deposed during the Glorious Revolution, 1688.
 - Georgian architecture first becomes the model for high-style housing in the region between the 1690s and the 1720s.
 - The College of William and Mary is founded in Williamsburg, 1693.
 - Maryland moves its capital to Annapolis, 1695.
 - Virginia's capital is moved from Jamestown to Williamsburg, 1699.
 - African Americans make up half the region's workforce and forty percent of its population by 1700.
 - The Act of Union joins Scotland with England, Wales, and Ireland into the United Kingdom of Great Britain, 1707.
 - The first theater in America opens in Williamsburg, 1717.
 - Baltimore, Maryland is founded, 1729.
 - Lancaster, Pennsylvania is established, 1730.
 - The Great Awakening religious revival sweeps the region between 1738 and 1745.
 - Richmond, Virginia is founded, 1742.
 - Petersburg, Virginia is founded in 1748. Alexandria, Virginia is established during the following year.
 - Colonial population rises to 380,000 in 1750. African Americans make up more than one third of this population. A cooler and wetter climatic regime, known as the Little Ice-Age, begins around this time.
 - Charlottesville, Virginia is founded, 1762.
 - The first tax levies, collectively known as the Intolerable Acts, arouse discontent throughout the region, 1764.
 - Survey is completed on the Mason-Dixon Line between Maryland and Pennsylvania, 1767.
 - Total population in the region reaches 700,000 by 1775.
- ### CHAPTER SIX
- Revolutionary War, 1775 to 1783.
 - The United States declares Independence, 1776.
 - Cornwallis surrenders his army to General George Washington and the Comte de Rochambeau at Yorktown, Virginia, effectively ending the fighting in North America, October 19, 1781.
 - The Constitution is ratified, 1789.
 - The Bank of Maryland is established, 1790.
 - Maryland and Virginia provide land and funds for the new national capital, 1791.
 - The nation's capital is moved to the newly established District of Columbia (later Washington, D.C.), 1792. The Cape Henry Lighthouse is built the same year.
 - Construction begins on the United States Capitol, 1793.
 - Yellow fever ravages the region between 1793 and 1794.
 - Regional population reaches 1 million, 1800. The nation's first major highway, the Philadelphia-Lancaster turnpike, is completed the same year.
 - Work begins on the Chesapeake and Delaware Canal, 1804.
 - The federal government abolishes importation of slaves, 1808.
 - War of 1812 renews hostilities with Great Britain between 1812 and 1814.
 - The first commercial steamboat on Chesapeake Bay waters begins service, 1813.
 - British troops burn Washington and besiege Baltimore, 1814.
 - The University of Virginia is established, 1816.
 - The nation's first gas utility, the Baltimore Gas Lighting Company, is chartered in 1817.
 - Construction begins on Fort Monroe, Virginia, 1819.
- ### CHAPTER SEVEN
- Canal, railroad, and coal industrial development revolutionizes technology during the 1820s.
 - The Maryland assembly extends suffrage to Jewish men, 1826.
 - Charles Carroll of Carrollton, Maryland organizes the Baltimore and Ohio Railroad, the first passenger and freight railway in the United States, in 1827.
 - Work begins on the Baltimore and Ohio Railroad and the Chesapeake and Ohio Canal, 1828.
 - The Chesapeake and Delaware Canal opens, 1829.
 - Peter Cooper's steam engine, the Tom Thumb, makes its first trip from Baltimore to Ellicott's Mills, 1830.
 - The Maryland State Colonization Society to relocate freed slaves is formed, 1831. The same year, Nat Turner leads an unsuccessful slave revolt in southern Virginia.
 - Edmund Ruffin's publication of an influential scientific report on the use of marl as a fertilizer increases efficiency of plantation agriculture, 1832. The worldwide cholera epidemic strikes the region the same year.
 - The Chesapeake and Ohio Canal is completed, 1837. The Great Panic of 1837 throws the nation's economy into depression.
 - The nation's first iron-hulled ship, the DeRosset built in Baltimore, is registered, 1839.

APPENDIX ONE

- Pennsylvania farmers begin growing cigar-wrapper tobacco, 1840.
- The Tredegar Iron Works opens in Richmond, 1841.
- The nation's first telegraph line is erected between Baltimore and Washington, 1844. The anti-immigrant Know-Nothing party is formed the same year.
- The United States Naval Academy opens in Annapolis, 1845.
- Irish, German, and Polish immigrants begin to arrive in large numbers in 1848.
- Regional population exceeds 1.8 million, 1850.
- The Washington Aqueduct is constructed between 1853 and 1863.
- The Republican party is formed, 1855.
- The first steam-powered fire engine is placed into service in Baltimore, 1858.
- Abolitionist John Brown leads an unsuccessful raid on Harper's Ferry to spark a slave rising, 1859.
- Civil War is fought between the Union and the Confederacy between 1861 and 1865.
- Virginia secedes from the Union and joins the Confederacy, 1861.
- Northwestern counties of Virginia secede from the state to form the new federal state of West Virginia, 1862.
- The Battle of Antietam is fought just west of the region in Maryland's Great Valley on September 17, 1862. It is the bloodiest single day of the war.
- The pivotal Battle of Gettysburg is fought, July 1-3, 1863.
- Robert E. Lee surrenders the Army of Northern Virginia to U.S. Grant at Appomattox Courthouse on April 9, 1865; other Confederate surrenders soon end the Civil War. The Thirteenth Amendment abolishes slavery.
- Era of Reconstruction, 1865 to 1877.
- Gallaudet College, the nation's first institution of higher learning for the deaf, opens in Washington, 1866.
- Howard University, the nation's first African American college, opens in Washington, 1867.
- The Hampton Normal and Agricultural Institute is opened in Hampton, Virginia, 1868.
- The Economic Crash of 1873.
- The Johns Hopkins University opens in Baltimore, 1876.
- Striking railroad workers are violently suppressed by Maryland militia, 1877.

CHAPTER EIGHT

- Wooden skipjack sailing vessels specially adapted to Chesapeake waters are first produced during the early 1880s.
- The Virginia assembly votes to allocate funds to establish the Normal and Collegiate Institute for Negroes and the Central Hospital for mentally ill African-Americans in Petersburg, 1882.
- Adoption of the standard gauge links all railroads in the region and the nation, 1886.
- America's first electrified trolley line opens in Richmond, 1888.
- The nation's first state historic preservation organization, the Association for the Preservation of Virginia Antiquities, is organized in Richmond, 1889.
- The Economic Panic of 1893 plunges the nation into a 5-year depression.
- A group of protestors demanding economic reform marches on Washington in 1894. Known as Coxey's Army, they are forcibly driven from the capital.
- Spanish-American War, fought with Spain between 1898 and 1899.
- Region population reaches 3 million 1900.
- Internal combustion engines power the first commercially successful wheeled vehicles and airplanes between 1900 and 1910.
- The Great Baltimore Fire destroys the city center, 1904.
- Passenger pigeons become extinct in the wild, 1914.
- World War I embroils the European powers between 1914 and 1918.
- America enters World War I on the side of the Allies in 1917.
- The Allies defeat the Central powers in 1918. The worldwide Spanish influenza epidemic strikes the region later that year. The Migratory Bird Treaty Act of 1918 outlaws the killing of whistling swans, establishes hunting seasons, and sets bag limits on waterfowl migrating across international boundaries.
- Regional population exceeds 4.5 million, 1920.
- The German battleship Ostfriesland (renamed the San Marco) is sunk off Cape Henry in a test demonstrating the ability of aircraft to sink capital surface ships, 1921.
- Robert H. Goddard launches the first successful liquid fuel rocket in Maryland, 1926.
- The stock market crash begins the Great Depression, 1929.

CHAPTER NINE

- Regional population reaches 5 million, 1930.
- Federal troops disperse the bonus marchers in Washington, 1932.
- Franklin Delano Roosevelt elected to his first term as president, 1933.
- The Social Security Act of 1935.
- World War II begins in Europe, 1939.
- Regional population nears the 5.5 million mark, 1940.
- America enters World War II on the side of the Allies, 1941.
- The Pentagon opens in Arlington, Virginia, 1942.
- Harry S. Truman becomes president following Roosevelt's death, 1945. World War II ends.
- The Cold War begins. Executive Order 9835 authorizes loyalty checks, 1947.
- Alger Hiss spy case, 1948 to 1950.
- Postwar migration and the baby boom cause regional population to jump to 7 million in 1950.
- The Korean War is fought between United States-led U.N. troops and Communist North Korean and Chinese forces on the Korean peninsula, 1950 to 1953.
- Chesapeake Bay Bridge opens, 1952.
- Federal Interstate Highway Act of 1956.
- National Defense Education Act of 1958.
- The Economic Opportunity Act of 1964.
- American military involvement in Vietnam between 1965 and 1973.
- The Historic Preservation Act of 1966.
- Riots in Washington, Baltimore, and other Chesapeake cities, 1968.
- Amtrak established, 1970.
- Hurricane Agnes devastates the region, 1972.
- The Chesapeake Bay Bridge-Tunnel opens, 1973.
- OPEC oil embargo creates fuel shortages throughout the region, 1973.
- The Environmental Protection Agency establishes the Chesapeake Bay Program, 1983.
- The Cold War ends as the Soviet Union collapses, 1989.
- Regional population reaches 10.5 million, 1990.
- Regional population hits the 12 million mark, 2000.

APPENDIX TWO

Common and Scientific Names of Major Plants and Animals in the Chesapeake Heartland

Alders, <i>Alnus</i> spp.	Black bear, <i>Ursus americanus</i>	Caspian tern, <i>Sterna caspia</i>
Alewife herring, <i>Alosa pseudoharengus</i>	Blackberries, <i>Rubus</i> spp.	Cat, <i>Felis catus</i> or <i>Felis domesticus</i>
Amaranths, <i>Amaranthus</i> spp.	Black gum (Sour gum or Tupelo), <i>Nyssa sylvatica</i>	Chain pickerel, <i>Esox niger</i>
American beech, <i>Fagus grandiflora</i>	Blackjack oak, <i>Quercus marilandica</i>	Channel bass (Red drum), <i>Sciaenops ocellatus</i>
American bison, <i>Bison bison</i>	Black oak, <i>Quercus velutina</i>	Channel catfish, <i>Ictalurus punctatus</i>
American black duck, <i>Anas rubripes</i>	Black locust, <i>Robinia pseudoacacia</i>	Channeled whelk, <i>Busycon canaliculatum</i>
American coot, <i>Fulica americana</i>	Black racer, <i>Coluber constricta constricta</i>	Chenopodium, <i>Chenopodium berlandieri</i>
American crow, <i>see</i> Common crow	Black rat, <i>Rattus rattus</i>	Chestnut, <i>Castanea dentata</i>
American eel, <i>Anguilla rostrata</i>	Black rat snake, <i>Elaphe obsoleta obsoleta</i>	Chestnut oak, <i>Quercus prinus</i>
American elm, <i>Ulmus americana</i>	Black sea bass, <i>Centropristis striata</i>	Chickweed, <i>Cerastium arvense</i> var. <i>villosimum</i>
American holly, <i>Ilex verticillata</i>	Black walnut, <i>Juglans nigra</i>	Cockroaches, <i>Orthoptera</i> spp.
American hornbeam, <i>Carpinus carolinensis</i>	Blueback herring, <i>Alosa aestivalis</i>	Copepods, <i>Copepoda</i> spp.
American ivy (<i>see</i> Virginia creeper)	Blueberries, <i>Vaccinium</i> spp.	Common carp, <i>Cyprinus carpio</i>
American kestrel, <i>Falco sparverius</i>	Blue crab, <i>Callinectes sapidus</i>	Common clam worm, <i>Nereis succinea</i>
American mammoth, <i>Mammut americana</i>	Bluefish, <i>Pomatomus saltatrix</i>	Common (American) crow, <i>Corvus brachyrhynchos</i>
American mastodon, <i>Mammathus americana</i>	Bluegill, <i>Lepomis macrochirus</i>	Common garter snake, <i>Thamnophis sirtalis</i>
American oyster, <i>Crassostrea virginica</i>	Blue-green algae, <i>Cyanophyta</i> spp.	Common grackle, <i>Quiscalus quiscula</i>
American shad, <i>Alosa sapidissima</i>	Blue jay, <i>Cyanocitta cristata</i>	Common grass shrimp, <i>Palaemonetes pugio</i>
Arbor vitae, <i>Thuja occidentalis</i>	Blue mussel, <i>Mytilus edulis</i>	Common king snake, <i>Lampropeltis getulus</i>
Arrow arum (Tuckahoe), <i>Peltandra virginica</i>	Boat-tailed grackle, <i>Quiscalus major</i>	Common loon, <i>Gavia immer</i>
Arrowheads (Wapato), <i>Sagittaria</i> spp.	Bobcat (wildcat), <i>Lynx rufus</i>	Common milkweed, <i>Asclepias syriaca</i>
Ashes, <i>Fraxinus</i> spp.	Bobwhite, (Quail) <i>Colinus virginianus</i>	Common mud turtle, <i>see</i> Eastern mud turtle
Atlantic croaker, <i>Micropogonias undulatus</i>	Box elder, <i>Acer negundo</i>	Common pigeon, <i>see</i> Rock Dove
Atlantic menhaden, <i>Brevoortia tyrannus</i>	Box turtle, <i>Terrapene carolina</i>	Common reed, <i>Phragmites australis</i>
Atlantic ribbed mussel, <i>Geukensia demissa</i>	Brant, <i>Branta bernicla</i>	Common snapping turtle, <i>Chelydra serpentina serpentina</i>
Atlantic sturgeon, <i>Acipenser oxyrinchus</i>	Briers, <i>Smilax</i> spp.	Common strawberry, <i>Fragaria virginiana</i>
Atlantic white cedar, <i>Chamaecyparis thyoides</i>	Broad-leaved cattail, <i>Typha latifolia</i>	Common tern, <i>Sterna hirundo</i>
Bald cypress, <i>Taxodium distichum</i>	Brown bullhead, <i>Ictalurus nebulosus</i>	Common waterweed, <i>Elodea canadensis</i>
Bald eagle, <i>Haliaeetus leucocephalus</i>	Brown pelican, <i>Pelecanus occidentalis</i>	Coontail, <i>Ceratophyllum demersum</i>
Barn swallow, <i>Hirundo rustica</i>	Brown rat <i>Rattus norvegicus</i>	Copperhead snake, <i>Agkistrodon contortrix</i>
Barred owl, <i>Strix varia</i>	Bullfrog, <i>Rana catesbeiana</i>	Cordgrasses, <i>Spartina</i> spp.
Bay anchovy, <i>Anchoa mitchilli</i>	Bulrushes, <i>Scirpus</i> spp.	Corn snake, <i>Elaphe guttata</i>
Bay barnacle, <i>Balanus improvisus</i>	Butterflies, <i>Lepidoptera</i> spp.	Cougar (Mountain lion), <i>Puma concolor</i>
Beans, <i>Phaseolus</i> spp.	Canada bluegrass (Wiregrass), <i>Poa compressa</i>	Cownose ray, <i>Rhinoptera bonasus</i>
Beaver, <i>Castor canadensis</i>	Canada goose, <i>Branta canadensis</i>	Coyote, <i>Canis latrans</i>
Bees, <i>Hymenoptera</i> spp.	Canadian hemlock, <i>Tsuga canadensis</i>	Crabgrasses, <i>Digitaria</i> spp.
Belted kingfisher, <i>Megaceryle alcyon</i>	Cane, <i>Arundinaria gigantea</i>	
Birches, <i>Betula</i> spp.	Canvasback, <i>Aythya valisineria</i>	
Bitternut hickory, <i>Carya cordiformis</i>	Cardinal, <i>Pyrrhuloxia cardinalis</i>	
	Caribou, <i>Rangifer tarandis</i>	
	Carolina chickadee, <i>Parus carolinensis</i>	
	Carolina parakeet, <i>Conuropsis carolinensis</i>	

APPENDIX TWO

- Crickets, *Orthoptera* spp.
- Curly pondweed, *Potamogeton crispus*
- Dandelion, *Taraxacum officinale*
- Deerflies, *Chrysops* spp.
- Diatoms, *Bacillariophyceae* and *Chrysophyta* spp.
- Dinoflagellates, *Pyrrophyta* spp.
- Dog, *Canis familiaris*
- Dolphin, *see* Harbor porpoise
- Domestic chicken, *Gallus gallus*
- Domestic goat, *Capra hircus*
- Domestic pigeon, *see* Rock dove
- Domestic sheep, *Ovis aries*
- Domestic swine, *Sus domesticus*
- Double-crested cormorant, *Phalacrocorax auritus*
- Downy woodpecker, *Picoides pubescens*
- Dragonflies, *Anisoptera* and *Odonata* spp.
- Dwarf Chinquapin oak, *Quercus prinoides*
- Eastern chipmunk, *Tamias striatus*
- Eastern cottonmouth (Water moccasin), *Agkistrodon piscivorus piscivorus*
- Eastern cottontail, *Sylvilagus floridanus*
- Eastern garter snake, *Thamnophis sirtalis sirtalis*
- Eastern gray squirrel, *Sciurus carolinensis*
- Eastern mole, *Scalopus aquaticus*
- Eastern (Common) mud turtle, *Kinosternon subrubrum subrubrum*
- Eastern short-faced bear, *Arctodus pristinus*
- Eelgrass, *Zostera marina*
- Elk, *Cervus elaphis*
- Enteromorphas, *Enteromorpha* spp.
- Eurasian watermilfoil, *Myriophyllum spicatum*
- European cattle, *Bos taurus*
- European starling, *Sturnus vulgaris*
- Fish crow, *Corvus ossifragus*
- Flax, *Linum usitatissimum*
- Flowering dogwood, *Cornus florida*
- Forster's tern, *Sterna forsteri*
- Freshwater grass shrimp, *Palaemonetes paludosus*
- Freshwater mussels, *Anodonta* and *Lampsilis* spp.
- Giant beaver, *Castoroides ohioensis*
- Giant waterbugs, *Belostomatidae* and *Hemiptera* spp.
- Ginseng, *Panax quinquefolium*
- Gizzard shad, *Dorosoma cepedianum*
- Grapes, *Vitis* spp.
- Grasshoppers, *Orthoptera* spp.
- Grass pickerel, *see* Redfin pickerel
- Gray fox, *Urocyon cinereoargenteus*
- Gray wolf, *Canis lupus*
- Great black-backed gull, *Larus marinus*
- Great blue heron, *Ardea herodias*
- Great egret, *Casmerodius albus*
- Greater yellowlegs, *Tringa melanoleuca*
- Green algae, *Chlorophyta* spp.
- Green ash, *Fraxinus pennsylvanica*
- Green-backed heron, *Butorides striatus*
- Green frog, *Rana clamitans melanota*
- Groundhog, *see* Woodchuck
- Groundnut, *Apios americana*
- Hackberry, *Celtis lavaegata*
- Harbor Porpoise (Dolphin), *Phocaena phocaena*
- Hard clam (Quahog), *Mercenaria mercenaria*
- Herring gull, *Larus argentatus*
- Hickories, *Carya* spp.
- Hickory shad, *Alosa mediocris*
- Hog, *see* Domestic swine
- Hooded merganser, *Lophodytes cucullatus*
- Hornbeam (Ironwood), *Carpinus carolinensis*
- Horse, *Equus caballus*
- Horseshoe crab, *Limulus polyphemus*
- Horsetails, *Equisetum* spp.
- House mouse, *Mus musculus*
- House sparrow, *Passer domesticus*
- Human beings, *see* People
- Hydrilla, *Hydrilla verticillata*
- Indian (Sweet) corn, *Zea mays*
- Indian tobacco, *Lobelia inflata*
- Ironwood, *see* Hornbeam
- Jack pine, *Pinus banksiana*
- Jimson weed (Wysoccan), *Datura stramonium*
- Johnny Jump-up, *Viola tricolor*
- Knobbed whelk, *Busycon carica*
- Knotweeds, *Polygonum* spp.
- Largemouth bass, *Micropterus salmoides*
- Laughing gull, *Larus atricilla*
- Least sandpiper, *Calidris minutilla*
- Lesser scaup, *Aythya affinis*
- Lined seahorse, *Hippocampus erectus*
- Loblolly pine, *Pinus taeda*
- Longnose gar, *Lepisosteus osseus*
- Long-tailed weasel, *Mustela frenata*
- Mallard, *Anas platyrhynchos*
- Mallow, *Althaea officinalis*
- Manninose, *see* Soft-shelled clam
- Mapleleaf viburnum, *Viburnum acerifolium*
- Marsh crab, *Sesarma reticulatum*
- Marsh elder (Sumpweed), *Iva annua*
- Marsh grass, *see* Salt meadow cordgrass
- Marsh periwinkle, *Littorina irrorata*
- Marsh rabbit, *Sylvilagus palustris*
- Marsh wren, *Cistothorus palustris*
- Meadow vole, *Microtus pennsylvanicus*
- Midges, *Chironomidae* and *Diptera* spp.
- Milk snake, *Lampropeltis triangulum*
- Mink, *Mustela vison*
- Mountain laurel, *Kalmia latifolia*
- Mountain lion, *see* Cougar
- Mourning dove, *Zenaidura macroura*
- Muskrat, *Onodatra zibethica*
- Mute swan, *Cygnus olor*
- Narrow-leaved cattail, *Typha angustifolia*
- Northern diamondback terrapin, *Malaclemys terrapin*
- Northern harrier, *Circus cyaneus*
- Northern water snake, *Nerodia sipedon sipedon*
- Norway rat, *see* Brown rat
- Nutria, *Myocastor coypus*
- Oats, *Avena sativa*
- Oldsquaw, *Clangula hyemalis*
- Osprey, *Pandion haliaetus*
- Oxeye daisy, *Leucanthemum vulgare*
- Partridge, *see* Ruffed Grouse
- Passenger pigeon, *Ectopistes migratorius*
- Paw paw, *Asimina triloba*
- People (Human beings), *Homo sapiens sapiens*
- Persimmon, *Diospyros virginiana*
- Phisteria, *see* Dinoflagellates
- Pickerelweed, *Pontederia cordata*
- Pig, *see* Domestic swine

APPENDIX TWO

- Pileated woodpecker, *Dryocopus pileatus*
 Pine snake, *Pituophis melanoleucas*
 Poison ivy, *Toxicodendron radicans*
 (formerly *Rhus radicans*)
 Poison oak, *Toxicodendron diversiloba*
 (formerly *Rhus toxicodendron*)
 Poison sumac, *Toxicodendron vernix*
 (formerly *Rhus vernix*)
 Post oak, *Quercus stellata*
 Prothonotary warbler, *Protonotaria citrea*
 Pumpkinseed, *Lepomis gibbosus*
 Quahog, *see* Hard clam
 Quail, *see* Bobwhite
 Queen Anne's Lace (Wild carrot),
Daucus carota
 Raccoon, *Procyon lotor*
 Raspberries, *Rubus* spp.
 Red-bellied woodpecker, *Melanerpes*
carolinus
 Red cedar, *Juniperus virginiana*
 Red drum, *see* Channel bass
 Red maple, *Acer rubrum*
 Redfin (Grass) pickerel, *Esox americanus*
 Red fox, *Vulpes vulpes*
 Red-shouldered hawk, *Buteo lineatus*
 Reed squirrel, *Tamiasciurus hudsonicus*
 Redwing blackbird, *Agelaius phoeniceus*
 Rice rat, *Oryzomys palustris*
 Ringnecked pheasant, *Phasianus*
colchicus
 River birch, *Betula nigra*
 River otter, *Lutra canadensis*
 River snail, *Goniobasis virginiana*
 Robin, *Turdus migratorius*
 Rock dove (Domestic or Common
 pigeon), *Columba livia*
 Rotifers, *Rotifera* spp.
 Ruby-throated hummingbird,
Archilochus colubris
 Ruddy duck, *Oxyura jamaicensis*
 Ruffed grouse (Partridge), *Bonasa*
umbellus
 Rye, *Secale cereale*
 Salt grass, *Distichlis spicata*
 Salt hay, *see* Salt meadow cordgrass
 Salt marsh (Smooth) cordgrass, *Spartina*
alterniflora
 Salt marsh greenhead fly, *Tabanus*
nigrovittatus
 Salt marsh mosquito, *Aedes sollicitans*
 Salt meadow cordgrass (Salt hay or
 Marsh grass), *Spartina patens*
 Sandbar shark, *Carcharhinus plumbeus*
 Sassafras, *Sassafras albidum*
 Screech owl, *Olus asio*
 Sea lettuce, *Ulva lactuca*
 Sea nettle, *Chrysaora quinquecirrha*
 Sedge grasses, *Carex* spp.
 Shadbush, *Amelanchier arborea*
 Sheep, *see* Domestic sheep
 Shortnose sturgeon, *Acipenser*
brevirostrum
 Silver maple, *Acer saccharinum*
 Slippery elm, *Ulmus rubra*
 Smallmouth bass, *Micropterus dolomieu*
 Smooth cordgrass, *see* Salt marsh
 cordgrass
 Snow goose, *Chen caerulescens*
 Snowy egret, *Egretta thula*
 Soft-shelled clam (Manninose), *Mya*
arenaria
 Sour gum, *see* Black gum
 Southern flying squirrel, *Glaucomys*
volans
 Southern naiad, *Najas guadalupensis*
 Spiders, *Arachnid* spp.
 Spot, *Leiostomus xanthurus*
 Spotted newt, *Notophthalmus*
viridescens
 Spotted sandpiper, *Actitis macularia*
 Spotted seatrout, *Cynoscion nebulosus*
 Spicebush, *Lindera benzoin*
 Spring peeper, *Hyla crucifer*
 Spruces, *Picea* spp.
 Squashes and Pumpkins, *Cucurbita* spp.
 Striped bass, *Morone saxatilis*
 Striped mullet, *Mugil cephalus*
 Striped skunk, *Mephitis mephitis*
 Summer flounder, *Paralichthys dentatus*
 Sumpweed, *see* Marsh elder
 Sunflowers, *Helianthus* spp.
 Sweet corn, *see* Indian corn
 Sweet flag, *Acorus calamus*
 Sweet gum, *Liquidambar styraciflua*
 Sycamore, *Platanus occidentalis*
 Timber rattlesnake, *Crotalus horridus*
 Tuckahoe, *see* Arrow arum
 Tulip tree (Yellow poplar), *Liriodendron*
tulipifera
 Tundra swan, *Cygnus canadensis*
 Tupelo, *see* Black gum
 Turkey vulture, *Cathartes aura*
 Virginia creeper (American Ivy, Wood-
 bine), *Parthenocissus quinquefolia*
 Virginia opossum, *Didelphis virginiana*
 Virginia pine, *Pinus virginiana*
 Walrus, *Odobenus* spp.
 Wapato, *see* Arrowhead
 Water chestnut, *Trapa natans* or *Trapa*
bicornis
 Water fleas, *Cladocera* spp.
 Water hemp, *Amaranthus cannabinus*
 Water lily, *Nymphaea odorata*
 Water mocassin, *see* Eastern
 cottonmouth
 Wheat, *Triticum aestivum* or *Triticum*
vulgare
 Whippoorwill, *Caprimulgus vociferus*
 Whistling swan, *Olor columbianus*
 White catfish, *Ictalurus catus*
 White perch, *Morone americana*
 White-tailed deer, *Odocoileus virginiana*
 Wild azalea, *Rhododendron nudiflorum*
 Wildcat, *see* Bobcat
 Wild carrot, *see* Queen Anne's Lace
 Wild celery, *Vallisneria americana*
 Wild cherry, *Prunus serotina*
 White-footed mouse, *Peromyscus*
leucopus
 Wild mustards, *Brassica* spp.
 Wild plums, *Prunus americanus*
 Wild rice, *Zizania aquatica*
 Wild turkey, *Meleagris gallopavus*
 Winter flounder, *Pseudopleuronectes*
americanus
 Wire grass, *see* Canada bluegrass
 Witch hazel, *Hamamelis virginiana*
 Woodbine (*see* Virginia creeper)
 Woodchuck (Groundhog), *Marmota*
monax
 Wood duck, *Aux sponsa*
 Woodland vole, *Microtus pinetorum*
 Wysoccan, *see* Jimson weed
 Yellow perch, *Perca flavescens*
 Yellow poplar, *see* Tulip tree

APPENDIX THREE

National Natural Landmarks

Maryland

- Battle Creek Cypress Swamp, Calvert County
- Belt Woods, Prince Georges County
- Gilpin's Falls, Cecil County
- Long Green Creek and Sweathouse Branch, Baltimore County
- Sugar Loaf Mountain, Frederick County

Pennsylvania

- Ferncliff Wildflower and Wildlife Preserve, Lancaster County

Virginia

- Caledon State Park, King George County
- Great Dismal Swamp, Nansemond County
- Charles C. Steirly Natural Area, Sussex County
- Montpelier Forest, Orange County
- Seashore Natural Area, Virginia Beach
- Virginia Coast Reserve, Accomack and Northampton Counties

APPENDIX FOUR

National Historic Landmarks

District of Columbia

- Cleveland Abbe House [1805]
- Administration Building, Carnegie Institution of Washington [1910]
- American Federation of Labor Building [1916]
- American National Red Cross Building [1917]
- American Peace Society [1860s]
- Anderson House [mid-19th century]
- Army Medical Museum and Library [1867]
- Arts and Industries Building, Smithsonian Institution [1881]
- Ashburton House [ca. 1836]
- Newton D. Baker House [1794]
- Blair-Lee House [1827]
- William E. Borah Apartment, Windsor Lodge [ca. 1913]
- Blanche K. Bruce House [1865]
- Carnegie Endowment for International Peace [1860]
- Mary Ann Shadd Cary House [1881-1885]
- City Hall [1820-1849]
- Constitution Hall [1924-1930]
- Corcoran Gallery and School of Art [1893]
- Elliott Coues House [1880s]
- Decatur House [1819]
- Franklin School [1862-1875]
- Gallaudet College [1866]
- General Federation of Women's Club Headquarters [1922]
- General Post Office [1839-1866]
- Georgetown Historic District [18th-19th centuries]
- Samuel Gompers House [1902-1917]
- Charlotte Forten Grimke House [1880]
- Healy Hall [1877-1879]
- General Oliver Otis Howard House [1867-1869]
- Charles Evans Hughes House [1907]
- Hiram W. Johnson House [ca. 1810]
- Lafayette Square Historic District [18th-20th centuries]
- Library of Congress [1886-1897]
- Andrew Mellon Building [1916]
- Memorial Continental Hall [1902]
- Meridian Hill Park [1900-1925]
- National Training School for Women and Girls [1909]
- National War College [1907]
- Octagon House [1800]
- Old Naval Observatory [1844]
- Old Patent Office [1840]
- Pension Building (National Building Museum) [1885]
- Francis Perkins House [1937-1940]
- Philadelphia (Gundelo) [1776]
- Renwick Gallery [1860]
- Zalmon Richards House [1882]
- Saint Elizabeth's Hospital [1852]
- Saint John's Church [1883]
- Saint Luke's Episcopal Church [1879]
- Sequoia (Presidential Yacht) [1931-77]
- Sewall-Belmont House [1820, 1929]
- Smithsonian Institution Building [1855]
- State, War, and Navy Building (Old Executive Office Building) [1871-1888]
- Supreme Court Building [1935]
- Mary Church Terrell House [1907]
- Tudor Place [ca. 1815]
- Twelfth Street YMCA Building [1908-1912]
- Oscar W. Underwood House [19th century]
- United States Capitol [1793-1865]
- United States Department of the Treasury [1836-1862]
- United States Marine Corps Barracks [1906]
- United States Marine Corps Commandant's House [1803]
- United States Soldiers Home [1851]
- Volta Bureau [1893]
- Washington Aqueduct [1853-1863]
- Washington Navy Yard [1800-1910]
- White House [1792, 1815]
- David White House [1890s]
- Woodrow Wilson House [1915]
- Carter G. Woodson House [ca. 1890]
- Robert Simpson Woodward House [ca. 1880s-1890s]
- Rachel Carson House [1956-1964], Montgomery County
- Whittaker Chambers Farm [1948], Carroll County
- Chestertown Historic District [18th-19th centuries], Kent County
- Doughoregan Manor [ca. 1727], Howard County
- Edna E. Lockwood (Log bug-eye) [1889], Talbot County
- Ellicott City Station [1831], Howard County
- Gaithersburg Latitude Observatory [1899], Montgomery County
- Greenbelt Historic District [1935-1946], Prince George's County
- Habre-de-Venture [1771], Charles County
- Hilda M. Willing (Skipjack) [1905], Talbot County
- His Lordship's Kindness [ca. 1735], Prince George's County
- Kathryn (Skipjack) [1901], Talbot County
- London Town Publik House [ca. 1750], Anne Arundel County
- Monocacy Battlefield [1864], Frederick County
- Montpelier [ca. 1745], Prince George's County
- Nellie Crockett (Deadrise buy-boat) [1926], Kent County
- Old Lock Pump House, Chesapeake and Delaware Canal [1837], Cecil County
- Resurrection Manor [ca. 1660], Saint Mary's County
- Riversdale [early 19th century], Prince George's County
- Saint Mary's City Historic District [1634-1695], Saint Mary's County
- Sion Hill [19th-20th centuries], Harford County
- Spacecraft Magnetic Test Facility [1966], Prince George's County
- Thomas Point Shoal Light Station [1875], Anne Arundel County
- Tulip Hill [1756, 1790], Anne Arundel County
- Washington Aqueduct [1853-1863], Montgomery County
- West Saint Mary's Manor [18th century], Saint Mary's County
- William B. Tennon (Bug-eye buy-boat) [1899], Calvert County

Maryland

- Accokeek Creek Site [A.D. 1000-1675], Prince George's County
- Clara Barton House [ca. 1890], Montgomery County

APPENDIX FOUR

- Wye House [1784, 1799], Talbot County

Annapolis Landmarks

- Brice House [1773], Annapolis, Anne Arundel County
- Chase-Lloyd House [1774], Annapolis, Anne Arundel County
- Colonial Annapolis Historic District [17th-18th centuries], Anne Arundel County
- Hammond-Harwood House [ca. 1774], Annapolis, Anne Arundel County
- Maryland State House [ca. 1772], Annapolis, Anne Arundel County
- William Paca House [1765], Annapolis, Anne Arundel County
- Peggy Stewart House [1764], Annapolis, Anne Arundel County
- United States Naval Academy [1845], Annapolis, Anne Arundel County
- United States Naval Academy Guard House [1881], Annapolis, Anne Arundel County
- Whitehall [ca. 1765], Annapolis, Anne Arundel County

Baltimore City Landmarks

- Baltimore (Tug) [1906], Baltimore City
- Baltimore and Ohio Railroad Roundhouse and Annex, [1884, 1891], Baltimore City
- Baltimore and Ohio Transportation Museum and Mount Clare Station [1830], Baltimore City
- Carrolltown Viaduct [1829], Baltimore City
- Chesapeake (Lightship No. 116) [1930], Baltimore City
- College of Medicine of Maryland [19th-20th centuries], Baltimore City
- Constellation (Sloop of War) [1854], Baltimore City
- First Unitarian Church [1818], Baltimore City
- Homewood [1803], Baltimore City
- Elmer V. McCollum House [ca. 1920], Baltimore City
- H. L. Mencken House [early 1880s], Baltimore City
- Minor Basilica of the Assumption of the Blessed Virgin Mary [1806-1863], Baltimore City
- Mount Clare [ca. 1763], Baltimore City
- Mount Royal Station and Trainshed [1896], Baltimore City
- Mount Vernon Place Historic District [19th century], Baltimore City

- Peale's Baltimore Museum [1814], Baltimore City
- Phoenix Shot Tower [1828], Baltimore City
- Edgar Allen Poe House [1833-1835], Baltimore City
- Ira Remsen House [1880s], Baltimore City
- Henry August Rowland House [1880s], Baltimore City
- Saint Mary's Seminary Chapel [1808], Baltimore City
- Sheppard and Enoch Pratt Hospital and Gate House [1862-1891], Baltimore City
- Star-Spangled Banner House [ca. 1793], Baltimore City
- Thomas Viaduct, Baltimore and Ohio Railroad [1835], Baltimore City
- U.S.C.G.C. Taney (Coast Guard cutter WHEC-37) [1925], Baltimore City
- U.S.S. Torsk [1944], Baltimore City
- William Henry Welch House [1880s], Baltimore City

Pennsylvania

- Bomberger's Distillery [1753, 1840], Lebanon County
- Dwight D. Eisenhower Farmstead [1950s], Adams County
- Ephrata Cloister [1746], Lancaster County
- Fulton Opera House [1852], Lancaster County
- Robert Fulton Birthplace [ca. 1765], Lancaster County
- Stiegel-Coleman House [1758], Lancaster County
- Union Canal Tunnel [1825-1827], Lebanon County
- Wheatland (James Buchanan House) [1828], Lancaster County

Virginia

- Alexandria Historic District [18th-19th centuries], Alexandria City
- Aquia Church [1757], Stafford County
- Bacon's Castle [ca. 1655], Surry County
- Ball's Bluff Battlefield and National Cemetery [1861 and 1865], Loudon County
- Benjamin Banneker SW-9 Intermediate Boundary Stone [1792], Arlington County
- Belmont [1761], Stafford County

- Berkeley [1726], Charles City County
- Brandon [ca. 1720], Prince George County
- Breemo Historic District [early 19th century], Fluvanna County
- Camden [17th-19th centuries], Caroline County
- Camp Hoover [1929-1932], Madison County
- Cape Henry Lighthouse [1792], Virginia Beach
- Carter's Grove [17th-18th centuries], James City County
- Christ Church [1732], Lancaster County
- Christ Church [1768], Alexandria City
- Charles Richard Drew House [1920-1939], Arlington County
- Drydock No. 1 [1827-1834], Portsmouth City
- EightFoot High-Speed Tunnel [1936-1956], Hampton City
- Elsing Green [1758], King William County
- The Exchange [1841], Petersburg City
- Five Forks Battlefield [1865], Dinwiddie County
- Gerald R. Ford, Jr. House [1955], Alexandria City
- Fort Monroe [1819-1834], Hampton City
- Fort Myer Historic District [1900s], Arlington County
- Franklin and Armfield Office [1828-1836], Alexandria City
- FullScale Tunnel [1931], Hampton City
- Gadsby's Tavern [1752, 1792], Alexandria City
- Green Springs Historic District [18th-19th centuries], Louisa County
- Greenway Court [1762], Clarke County
- Gunston Hall [1758], Fairfax County
- Hampton Institute [1868], Hampton City
- Hanover County Courthouse [1735], Hanover County
- Kenmore [1752], Fredericksburg City
- Lunar Landing Research Facility [1965-1972], Hampton City
- Marlbourne (Edmund Ruffin Plantation) [1843], Hanover County
- General George C. Marshall House [1925-1949], Loudon County
- Gari Melchers Home [1916-1932], Stafford County

APPENDIX FOUR

- Menokin [ca. 1769], Richmond County
 - General William “Billy” Mitchell House [1826, 1925], Loudon and Fauquier counties
 - James Monroe Law Office [1758, 1786-1789], Fredericksburg City
 - Monticello [1770-1789], Albemarle County
 - Montpelier [ca. 1760], Orange County
 - Robert R. Moton High School [1950-1974], Prince Edward County
 - Robert R. Moton House [1935], Gloucester County
 - Mount Airy [1762], Richmond County
 - Mount Vernon [1743, 1792-1799], Fairfax County
 - Oak Hill, James Monroe House [1820-1823], Loudon County
 - Oatlands [1800], Loudon County
 - The Pentagon [1942], Arlington County
 - Poplar Forest [1808-1819], Bedford County
 - Portsmouth (Lightship No. 101) [20th century], Portsmouth City
 - Patowmack Canal Historic District [1786-1830], Fairfax County
 - Quarters 1 [1899], Arlington County
 - Virginia Randolph Cottage [1937], Henrico County
 - Rendezvous Docking Simulator [1963-1972], Hampton City
 - Rising Sun Tavern [1760], Fredericksburg City
 - Sabine Hall [ca. 1730], Richmond County
 - Saint John’s Episcopal Church [1741], Richmond County
 - Saint Luke’s Church [1682], Isle of Wight County
 - Savannah (Nuclear ship) [1958], Newport News City
 - Saylor’s Creek Battlefield [1865], Amelia and Prince Edward counties
 - Scotchtown [1719], Hanover County
 - Shack Mountain [1916-1955], Charlottesville City
 - Shirley [1770], Charles City County
 - Spence’s Point, John R. Dos Passos Farm [1806, 1940s], Westmoreland County
 - Stratford Hall [1730], Westmoreland County
 - Adam Thoroughgood House [ca. 1640], Virginia Beach
 - Tuckahoe [ca. 1712], Goochland County
 - John Tyler House [1780, 1842], Charles City County
 - University of Virginia Historic District [19th-20th centuries], Charlottesville City
 - University of Virginia Rotunda [1822-1826, 1898], Charlottesville City
 - Variable Density Tunnel [1921-1940], Hampton City
 - Waterford Historic District [18th-19th centuries], Loudon County
 - Westover [1734], Charles City County
 - Woodlawn [1803-1805], Fairfax County
 - Yecomico Church [ca. 1706], Westmoreland County
- Richmond Landmarks**
- Dr. John Brockenbrough House [1818], Richmond City
 - Egyptian Building [1845], Richmond City
 - Ellen Glasgow House [1841], Richmond City
 - Jackson Ward Historic District [19th-20th centuries], Richmond City
 - Main Street Station and Trainshed [1901], Richmond City
 - John Marshall House [1790], Richmond City
 - James Monroe Tomb [1859], Richmond City
 - Monument Avenue Historic District [1887], Richmond City
 - Monumental Church [1814], Richmond City
 - Old City Hall [1887-1894], Richmond City
 - Tredegar Iron Works [1841], Richmond City
 - Virginia Governor’s Mansion [1811-1813], Richmond City
 - Virginia State Capitol [1785-1792], Richmond City
 - Maggie Lena Walker House [ca. 1909], Richmond City
 - White House of the Confederacy, Dr. John Brockenbrough House [1818, 1861-1865], Richmond City
 - Wickham-Valentine House [1812], Richmond City
- Williamsburg Landmarks**
- Bruton Parish Church [1715], Williamsburg City
 - Peyton Randolph House [1715], Williamsburg City
 - James Semple House [ca. 1770], Williamsburg City
 - Williamsburg Historic District [1633-1779], Williamsburg City
 - Wren Building, College of William and Mary [1702], Williamsburg City
 - Wythe House [ca. 1755], Williamsburg City

APPENDIX FIVE

National Parks

District of Columbia

- Anacostia Park
- Capitol Hill Parks
- Civil War Defenses of Washington (Fort Circle)
- Constitution Gardens
- Ford's Theater National Historic Site
- Franklin Delano Roosevelt Memorial
- Frederick Douglass National Historic Site
- Kenilworth Park and Aquatic Gardens
- Korean War Veterans Memorial
- Lincoln Memorial
- National Capital Parks
 - Memorials
 - Parks
 - Parkways
 - Public Buildings
 - Reservations
- Oxon Run Parkway
- Pennsylvania Avenue
- Presidents Park
- National Mall
- Rock Creek Park
- Theodore Roosevelt Island
- Thomas Jefferson Memorial and Tidal Basin
- Vietnam Veterans Memorial
- Washington Monument
- White House

Maryland

- Appalachian National Scenic Trail
- Baltimore-Washington Parkway
- Catoctin Mountain Park
- Chesapeake and Ohio Canal National Historical Park
- Clara Barton National Historic Site
- Clara Barton Parkway
- Fort McHenry National Monument and Historic Shrine
- Fort Washington Park
- Greenbelt Park
- Hampton National Historic Site
- Harmony Hall
- Monocacy National Battlefield
- Oxon Cove Park
- Piscataway Park
- Suitland Parkway
- Thomas Stone National Historic Site

Pennsylvania

- Appalachian National Scenic Trail
- Eisenhower National Historic Site
- Gettysburg National Military Park

Virginia

- Appalachian National Scenic Trail
- Appomattox Court House National Historical Park
- Arlington House, the Robert E. Lee Memorial
- Blue Ridge Parkway
- Colonial National Historical Park
- Fredericksburg and Spotsylvania County Battlefields Memorial National Military Park
- George Washington Birthplace National Memorial
- George Washington Memorial Park
- George Washington Memorial Parkway
- Great Falls Park
- Maggie L. Walker National Historic Site
- Manassas National Battlefield Park
- Petersburg National Battlefield
- Prince William Forest Park
- Richmond National Battlefield
- Shenandoah National Park
- Wolf Trap Farm Park for the Performing Arts

West Virginia

- Harper's Ferry National Historical Park

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- Zegers, David A., ed.
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Articles in the following journals, available in local libraries or through interlibrary loan, contain information on Chesapeake Bay region people and places:

- Archaeology of Eastern North America*
Bulletin of the Archaeological Society of Delaware
Bulletin of the Archaeological Society of Virginia
Journal of Middle Atlantic Archaeology
Maryland Archaeology: The Journal of the Archaeological Society of Maryland
Maryland Historical Magazine
North American Archaeologist
Pennsylvania Archaeologist
Pennsylvania History
Pennsylvania Magazine of History and Biography
Virginia Magazine of History and Biography
William and Mary Quarterly

SOURCES

RESOURCE MANAGEMENT REPORTS

Note: In accordance with the terms of the Historic Preservation Act of 1966 and the Archaeological Resource Protection Act of 1979, federal and state agencies may not reveal locations of cultural resources mentioned in reports or listed in survey inventories if such disclosure either threatens site security or is expressly prohibited by the landowner.

National Register Multiple Property Documentation Forms

Regional:

African American Historic Places in the National Register
Civil War Era National Cemeteries
District of Columbia:
Apartment Buildings
Banks and Financial Institutions
Parkways of the National Capital Region
Warehouses and Railroad-Related Industrial Buildings

Maryland:

Ann Arundel County: Prehistoric Human Adaptation to the Coastal Plain Environment
Cast Iron Architecture of Baltimore, 1850-1904
Chesapeake Bay Sailing Log Canoe Fleet, 1882-1947
Chesapeake Bay Skipjack Fleet, 1891-1980
Emergency Conservation Work at Catoctin Mountain Park, Frederick County
Maryland National Guard Armories
Somerset County: Historical and Archaeological Resources

Virginia:

Prehistoric and Historic Resources of Montgomery County

Historic Contexts

District of Columbia:

Historic Contexts for the District of Columbia
Archaeological Survey of the Southwest Quadrant
Downtown Office Building Survey
Early Transportation Systems Survey: Early Roads, Railroads, and Streetcars

Northern Shaw-Strivers Cultural Resources Survey
Sixteenth Street Planning Context Report
Southwest Survey Phase III Historic Context Narrative
Thematic Study of African American Architects and Builders

Maryland:

Preservation Vision 2000, The Maryland Plan
Aberdeen Proving Ground: An Archeological Overview and Management Plan
Eastern Neck National Wildlife Refuge: Cultural Resources and Impact Area Assessment
Calvert County Historic Sites Context Study and National Register Evaluation
Calvert County Tobacco Culture Survey
Maryland's Eastern Shore Watermen's Facilities
Prince George's County: Historic Sites Survey
Piscataway Village Rural Conservation Study
Survey of African-American Architectural and Historical Resources on the Eastern Shore of Maryland
Survey of 19th-Century Black Families in Southern Maryland
Talbot County African American Culture Survey
Talbot County Thematic Context Study

Pennsylvania:

A Comprehensive State Plan for the Conservation of Archaeological Resources
Lancaster County Historic Farming Resources
Lancaster County Historic Transportation Cultural Resource Study
City of Lebanon: Comprehensive Historic Resource Study
Middletown Borough: Comprehensive Historic Resource Study

Virginia:

How to Use Historic Contexts in Virginia: A Guide for Survey, Registration, Protection, and Treatment Projects
Albemarle County: Prehistoric and Historic Contexts
Arlington County: Potomac Palisades Archeological and Architectural Survey
Buckingham County: Archaeology Survey

Caroline County Archaeological Resources Reconnaissance Survey Synthesis
Caroline County Historic Architectural Survey
City of Chesapeake: Historic Preservation Plan
City of Falls Church: Architectural Survey and Assessment
Fluvanna County: Architectural History Identification and Assessment
Fort A.P. Hill Archaeological Investigations
Fort A.P. Hill Phase 1 Cultural Resources Inventory
Fort Belvoir: An Overview of Cultural Contexts
Fort Belvoir Cultural Resource Survey and Evaluation
Forts Eustis and Story: Phase 1 Archeological Survey
Fort Myer: Cultural Resources Management Plan [draft]
Hanover County: Survey of Historic Resources
Langley Air Force Base: Phase 1 Cultural Resources Reconnaissance Survey
Louisa County: Architectural History Identification and Assessment
Newport News: Reconnaissance Survey of Historic Architecture
City of Norfolk: Historic Architectural Survey
Northampton County: Historic Architectural Survey: Settlements, Villages, and Towns
Quantico Marine Corps Base: An Archeological Assessment and Survey
Port Royal: Comprehensive Plan
Powhatan County: Historic Architectural Survey
Southwest Mountain Area Natural Resource and Historic Preservation Study
City of Suffolk: Reconnaissance Survey Report, Southern Section
Virginia Beach: Historic Resources Management Plan

SOURCES

FILM AND VIDEO

A Son of Africa: The Slave Narrative of Olaudah Equiano. Directed by Abrick Riley. Distributed by Resolution, Inc./California Newsreel, San Francisco (\$195.00 plus \$10.00 shipping, or \$75.00 rental per screening plus \$10.00 shipping).

They Live in Guinea. Produced by Chandos Brown and Sharon Zuber. Distributed by Other Pictures, Inc., New York (\$25.00 plus \$5.00 shipping).

The Money Crop: Tobacco Culture in Calvert County, Maryland. Produced by the Maryland Historical Trust, Crownsville (\$10.00 plus shipping for the video; \$15.00 for the video and book).

Where Ships Were Borne: The Stephen Steward Shipyard. Produced by the Maryland Historical Trust, Crownsville. Running time 32 minutes (\$10.00 plus shipping for the video).

Colonial Williamsburg VHS Video-cassettes, Department 023, P.O. Box 3532, Williamsburg, Virginia 23187-3532, 1-800-446-9240. Videos are \$19.95 each plus shipping:

A Glorious System of Things [Colonial science]. Running time 59 minutes. No. 22871.

The Colonial Naturalist [Scientist Mark Catesby at Williamsburg, 1712-1719]. Running time 55 minutes. No. 22798.

Music of Williamsburg. Running time 40 minutes. No. 26591.

Doorway to the Past [Historical archeology at Colonial Williamsburg]. Running time 29 minutes. No. 102806.

Colonial Clothing. Running time 17 minutes. No. 26872

Williamsburg—The Story of a Patriot [The Revolution]. Running time 36 minutes. No. 25981.

Search for a Century [17th-century archeology at Martin's Hundred and Wolstenholme Towne]. Running time 59 minutes. No. 26344.

The Williamsburg File [Archeology at Colonial Williamsburg]. Running time 45 minutes. No. 22723.

Forged in Wood: Building Anderson's Blacksmith Shop. Running time 29 minutes. No. 176081.

Christmas at Colonial Williamsburg. Running time 29 minutes. No. 195792.

Where America Began [Jamestown]. Running time 60 minutes. No. 175539. Colonial Crafts and Trades Series:

The Cooper's Craft. Running time

39 minutes. No. 26021.

Gunsmith of Williamsburg. Running time 59 minutes. No. 26260.

Hammerman in Williamsburg. Running time 37 minutes. No. 26419.

Basketmaking in Colonial Virginia. Running time 29 minutes. No. 102814.

Silversmith of Williamsburg. Running time 44 minutes. No. 26310.

The Musical Instrument Maker of Williamsburg. Running time 54 minutes. No. 22954.

USEFUL WEB SITES

Academy of Natural Sciences Estuarine Research Center: www.anserc.org

Alliance for the Chesapeake Bay: acb-online.org

Chesapeake Bay Bolide: woodshole.er.usgs.gov/epubs/bolide/location_of_bay.html

Chesapeake Bay Commission: www2.ari.net/cbc/cbc.htm

Chesapeake Bay Foundation: chesapeake@cbf.org

Chesapeake Bay Maritime Museum: www.cbmm.org

Chesapeake Bay Program: Environmental Protection Agency (EPA)

chesapeakebay.net/bayprogram

chesapeakebay.net/bayprogram/data/infobase.htm

chesapeakebay.net/wshed

cimsnt1.chesapeakebay.net/water_quality

cimsnt1.chesapeakebay.net/point_source

cimsnt1.chesapeakebay.net/benthic

epa.gov/gisvis

epa.gov/r3chespk

Chesapeake Bay Trust: www2.ari.net/home/cbt

Chesapeake Bay Weather Network: aws.com/baynet

Fish and Wildlife Service, Chesapeake Bay Office: fws.gov/r5fws

Global Change Master Directory, Chesapeake Bay Site:

gcmd.gsfc.nasa.gov/stream_team/chesapeake_sites.html

Maryland Department of Natural Resources:

Chesapeake Bay Site: dnr.state.md.us/bay

Maryland Historical Trust: www.ari.net/mdshpo

Maryland Sea Grant Research: mdsg.umd.edu/mdsg/research/index.html

Maryland State Parks, Forests, and Wildlife Management Areas:

nr.state.md.us/publiclands/allareas.html

National Estuary Research Reserve: inlet.geol.sc.edu/cbm/home.html

National Oceanographic and Atmospheric Administration (NOAA),

Chesapeake Bay Office: 155.206.19.100/NCBOhome.html

National Technological Information Service Geographic Information System: ntis.gov/fcpc/cpn4250.htm

Occurrence and Distribution of Pesticides in Chesapeake Bay: www.agnic.org/cbp

Pennsylvania Department of Conservation and Natural Resources: dcnr.state.pa.us

Pennsylvania Department of Environmental Protection: dep.state.pa.us

Sara Gottlieb's "Complete" Links to Chesapeake Bay Information Sources: gmu.edu/bios/bay/links.htm

Scientific and Technical Advisory Committee (STAC) of the Chesapeake Bay Program—Chesapeake Bay Information Network: www.chesapeake.org

University of Maryland Center for Environmental Science: umces.edu

United States Army Corps of Engineers: nab.usace.army.mil/environmental/cbay.htm

United States Geological Survey:

Biological Resources Division: pwr.usgs.gov/cbstuds.htm

Chesapeake Bay Initiative: chesapeake.usgs.gov/chesbay

Geographic Information Systems: aegis.er.usgs.gov
chesapeake.usgs.gov/chesbay/mapping/html

Virginia Department of Conservation and Recreation Heritage Home Page: dit1/state/va/us-dcr/vaher.html

Virginia Department of Environmental Quality: deq.state.va.us/envprog/bay.html

Virginia Department of Game and Inland Fisheries: dgif.state.va.us

Virginia Wildlife Management Areas: dgif.state.va.us/hunting/wma-guide.html