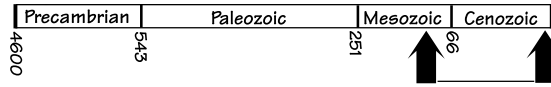




## Rocks of the Coastal Plain *Region 3*



The Coastal Plain region has fairly straightforward geology. The rocks here are actually not yet rocks! Instead, there are usually unconsolidated sediments that have not been cemented or compacted. The sediments are geologically very young, ranging in age from the Cretaceous to the Quaternary. The sediments include gravel, sand, and silt; it may take tens or hundreds of millions of years before these sediments are turned to rock. Overlying the Paleozoic rocks, the Coastal Plain sediments form a wedge of nearly flat-lying layers of sediment that thicken eastward onto the continental shelf and slope and then thin again further to the east.

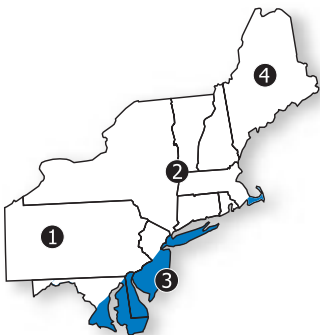
Consider the geologic events between the Cretaceous and the Quaternary: the Northeast was experiencing a relatively quiet time tectonically and the east coast of North America had become a passive margin (there were no longer converging or diverging plates right at the margin of the continent). In this time of tectonic quiet, significant erosion of the Appalachian highlands occurred. The sediment deposits were similar to the formation of the *Queenston* and *Catskill Deltas* of the Taconic and Acadian mountain building millions of years before. Rivers draining from the mountains brought sediment down to the coast. The oldest deposits seen on the Coastal Plain (Cretaceous) record the story of eroded sediments transported by rivers to the coast and are found along the inner edge of the region (Figure 2.23). Cretaceous sediments are also found on Martha's Vineyard at Gay Head Cliff, uplifted and pushed forward by the ice sheet during the Quaternary.

Throughout the Tertiary and Quaternary periods, the Northeast repeatedly experienced rise and fall of sea level, in part due to the build-up and melting of glaciers. Overlying the older river deposits of the Cretaceous, Tertiary marine sediments record the rise and fall of sea level over greater than sixty million years (Figure 2.24). 'Greensand' is common in marine Tertiary sediments because marine deposits often contain the green mineral, glauconite,



Figure 2.23: Cretaceous sediments exposed in the Coastal Plain.

Unlike the *Queenston* and *Catskill Deltas*, which have been cemented and compacted to become thick sequences of sedimentary rock, the sediments being transported from the Appalachians have not yet become sedimentary rocks.





lending the sediment a greenish tinge.

The Quaternary is recorded in the youngest sediments of the Coastal Plain (Figure 2.25). Long Island, Cape Cod and the several smaller islands off the coast of New England (Block Island, Nantucket, Martha's Vineyard) are testaments to the advance and retreat of an enormous ice sheet over the continent. The islands are actually formed from glacial outwash: gravel, sand and silt that piled up in front of the glacier as it melted. The islands represent the maximum extent of the most recent glacial advance over 20,000 years ago. The glaciers never advanced further south than Long Island and northern Pennsylvania. Where the glacier stood still (neither advancing nor retreating for some time) huge *deposits* of outwash built up in front of the glacier. This feature is known as a terminal moraine. There are a series of terminal moraines in the Northeast that represent the retreat of the glacier toward the north.

While the continental ice sheet never made it as far south as New Jersey, Delaware, Maryland, or southern Pennsylvania, the glaciers still left their mark on the area. Melt water streaming off the retreating glaciers brought gravel, sand, silt and clay that had been carried along by the glacier downstream to the Coastal Plain. Quaternary deposits make up most of the sediments you see immediately adjacent to modern estuaries and streams because they are relatively recent deposits.

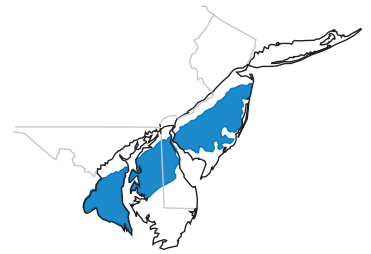


Figure 2.24: Tertiary sediments exposed in the Coastal Plain.

see *Glaciers*, p. 61,  
for more on glacial  
*deposits*.

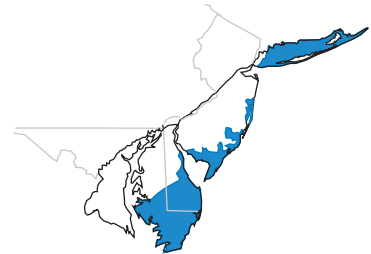


Figure 2.25: Quaternary sediments exposed in the Coastal Plain.

