

Cobbs Creek

By
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Cobbs Creek rises (at elevation of about 385 feet above sea level) in the Piedmont in Bryn Mawr, drops steeply in Havertown and Philadelphia onto the Coastal Plain, and joins Darby Creek in Eastwick (at 15 feet elevation). The Cobbs figured prominently in regional history and culture—e.g., Printz’s (Swedes) Mill Dam, Bluebell Tavern, The Grange, Pont Reading, the Gunpowder Mill, Millbourne (1757)—which means it has over 300 years of ecological abuse. The various anthropogenic impacts on the creek overlap in time and interact in effect, but I’ll try to tease out the major lines of cause and effect. In this installment, I will discuss land clearing and construction of dams. In a later issue, I’ll discuss impacts related to urban, industrial and suburban development.

Land clearing. Forests were cut for lumber, fuel and to develop pastures, crop fields and buildings. The impacts of each activity would have varied with intensity and factors such as slope, soil type and distance from streams. Two widespread effects, erosion and hydrological change, are well known. Large amounts of land erosion led to deposition of sediment in streams. Deposits accumulated in floodplains of streams and in impoundments upstream of dams. These deposits can be seen in various places in the valley where they are exposed by dam failure or stream erosion. These deposits often still have low organic content and low water holding capacity, leading to low soil moisture during drier periods. It is possible that these dry conditions provide an advantage to Japanese knotweed, which typically occurs on dry slopes in its native range. These deposits remain a source of stream bank erosion, creating a paradox—steep, eroding stream banks are a sign of the stream cleaning itself from old deposition. Hydrological change occurred through combined upland erosion and deforestation plus channel deposition. Changes in the uplands resulted in decreased infiltration and increased runoff. These in turn led to higher storm flows and lower base flows (flows from ground water as opposed to storm flows). This concept is not new, though it has been forgotten and has had to be relearned several times. Peter Kalm, a Swedish scientist who visited Pennsylvania and New Jersey in 1748-1749, noted (of the area, not particularly the Cobbs Creek drainage) that springs dried up after land was cleared. Classically, in his dialogue *Critias*, Plato says that before the cutting of forests in the mountains, “the land reaped the benefit of the annual rainfall, not as now losing the water which flows off the earth into the sea” (Benjamin Jowett translation). Deposition in the floodplain also lowered water storage capacity of the floodplain, increasing downstream effects of high flows, although this effect may have been relatively

small for the largest flooding events. These dams wouldn't have had the major effect on high and low flows that are created by flood control, water supply and hydroelectric dams, but they would have had large effects on habitats for aquatic organisms, water temperature, and downstream channel shape. Remaining small dam impoundments show a very different fauna than undammed stream sections, and dam removal in the area (e.g., on Manatawny Creek) have led to faunal changes—away from the pond fauna supported by the dam towards a typical stream fauna. It is hard to know how much the dams on Cobbs Creek blocked fish migration. The primary migratory fish in the creek was probably the American eel, which can ascend or get around many small dams. The lowermost dam likely blocked other migratory species, such as river herring. Remaining dams may also prevent recolonization of organisms after improvements in water quality. effects of high flows, although this effect may have been relatively small for the largest flooding events.

I don't know of any detailed studies of the amounts of different types of farmland over time in the Cobbs Creek valley. Development wasn't necessarily a one-way process. Farm abandonment or changes in farming practices could lead to local reforestation. With its proximity to Philadelphia, horse pastures or hayfields may have been an important land cover when horses were the dominant form of transportation. Much of the valley was probably rural into the early 20th Century (look at photos in the historical panels at the 69th Street Station). Urban development added new impacts to Cobbs Creek; I will discuss these impacts in future articles.

Damming. Dams were built to power mills. Sawmills were often built early during settlement, followed by grist mills and a variety of industrial mills (on Cobbs Creek, these included the Nitre Hall Gunpowder Mill, textiles, woolen, snuff, plaster, and iron manufacturing mills). The 1826 Report of the Committee of Delaware County on the subject of manufactures, unimproved mill seats, &c (accessible at www.phillyh2o.org, the Philadelphia Water Department website, which contains a great deal of relevant information, compiled by Adam Levine) lists 14 mill sites (presumably all partly or entirely manmade dams) on the main stem of Cobbs Creek, with a total drop of 212 feet. This total comprises over half of the total drop of the creek. The amount of stream length covered by impoundments would have been less, since most mills are built in steeper parts of streams. Additional dams and mills were built on tributaries. Two of the main stem dams remain (one above Main Street near Bluebell Tavern and another above Market Street in Millbourne). In addition to the historical record, old dam sites may be evident from dam remnants on the land, by flat areas of fine sediment representing deposits in the impoundment of the former dam, or by steep, bouldery drops, which may look like natural rapids. The impacts discussed above would have been evident in some form from the earliest European

settlement and would have been widespread in the drainage by the mid-nineteenth Century. Another major group of impacts involved more urban development, pollution, and major changes in tributary drainages. Some of these effects, such as various types of pollution, also started with earliest development, but the greatest impacts started in the early to mid-nineteenth century and continued through to today. I will discuss these in another installment.

This is the first in a series of articles about the Cobbs Creek. The portion of the William Penn Foundation Grant to the Darby Creek Valley Association is for stream monitoring and stormwater remediation in the Cobbs Creek and Naylor's Run. We hope that more DCVA members and friends will become involved in these projects.

