

The Patapsco and the Chesapeake Bay

The Chesapeake Bay is a body of water and, like a human body, its health depends on what goes into it. But, as everyone knows, the Chesapeake is not as healthy as it once was. The problems stem, in part, from the declining quality of the rivers that feed the Bay. This fact sheet explains how the Patapsco River contributes to the Bay.

AROUND THE PATAPSCO

Like the clues in a treasure hunt, pieces of the Patapsco River's history lay strewn along its banks from the headwaters in central Maryland to its junction with the Chesapeake Bay. Since the Indians' early occupation of the Patapsco River valley, the river has served as a means of transport, a source of energy, drinking water, food, and home to one of the most important ports in the country. Yet, years of human alterations to the river along with catastrophic floods, erosion and siltation have blurred the river's past. Part of an old wooden dam jutting from the river bank, remnants of sea going vessels on the river bottom, abandoned textile and flour mills, and the spare, dark landscape surrounding the Bethlehem Steel plant, all quietly whisper the history of the Patapsco.

The Patapsco is an average river in many respects, made unique only by the events that have shaped its past. One of the smaller rivers emptying into the western edge of the Chesapeake Bay, the Patapsco extends a mere 52 miles from its headwaters to its mouth. Along the way, it drains about 540 square miles of land. The river starts inauspiciously, as most rivers do, seeping from a small pond on a farm at Parr's Spring. This seep develops into the South Branch which is joined by the North Branch at Marriotsville. Not until the small stream reaches Elkridge does the Patapsco widen and deepen maturing into a full-fledged river.

The Tidewater area of the Patapsco is composed of Northwest Harbor and Middle Branch. Like the Chesapeake this section of the Patapsco is considered an estuary - the zone where fresh and salt water meet. Several secondary tributaries flow into the Patapsco River Estuary: Jones Falls (much of which is channelized) joins the harbor just north of the famed Baltimore Inner Harbor while Gwynns Falls discharges into the Middle Branch. To the South, smaller tributaries empty into the Patapsco.

THE PATAPSCO THROUGH TIME

Early settlers on the Patapsco found more of interest than did Captain John Smith, the first white man to explore the Patapsco River, and began to populate her shores in relatively large numbers. The port of Baltimore proved to be a fine place to dock ships after the 150-mile journey up the Chesapeake Bay. Imports from the West Indies and Europe and exports from thriving industries such as the Patapsco Flour Mill allowed the young city to flourish.

As the colonies grew restless and increasingly anxious to dissociate themselves from the strangle hold of England, the settlers decided to protect Baltimore by fortifying the small peninsula to the southeast of the city. Maryland later erected Fort McHenry -- inspiration for the "Star Spangled Banner" -- on the same site.

Development and construction of the Baltimore Clipper ship before the War of 1812

had already boosted the status of the port around the world. During World War II, Bethlehem Steel's second shipyard on the Patapsco's Curtis Bay became the country's leading shipbuilder, constructing over 500 ships before war's end.

THE CONSEQUENCES OF DEVELOPMENT

As the Patapsco became increasingly important to the economic concerns of the region, Marylanders began to devise ways to tailor the river to their needs. A free-flowing river offers transportation, but a river's water flow harnessed by dams also provides energy. To entice ever larger ships into the port of Baltimore, dredging of the Patapsco's main channel became commonplace. More insulting to the river was the dumping of ever-more-noxious effluents into its waters by the industries and towns lining the river's banks.

DAMMING THE RIVER

The construction of dams began innocently enough back in the 1700's. As mills sprang up along the river at Avalon, Ilchester, Granite, Orange Grove and other places, the dams began to disturb migratory fish populations. Dams built for other purposes, such as hydropower and drinking water, also added to the problem. Dam building continued until 1954.

Despite the relatively good water quality in the upper Patapsco River, very few anadromous fish now spawn in these waters. Once, before construction of downstream dams and other barriers in the river, the upper Patapsco supported American and hickory shad, alewife, blueback herring, and yellow and white perch. Since the mid-1800's, however, four dams have blocked 23 miles of Patapsco spawning grounds, representing 350 acres of habitat. Only the freshwater fish, such as trout and bass, which inhabit the river year round remain.

CHANNEL DREDGING

As demand for Baltimore's port services grew, the naturally shallow depth of the harbor and river began to impede the size ship that could navigate to the city. As early as 1798, dredging of the river began and it continues to this day. Along the way, watermen grew increasingly anxious and vocal, protesting the dumping of dredge spoil into the Bay where these muds could smother the oysters. In modern times, however, scientists also realized that the dredged muds were not completely "clean". Years of industrial and shipping activity in the area had caused toxic compounds to accumulate within the bottom sediments, so the spoil is now dumped behind a 29,000 foot dike positioned just outside the mouth of the Patapsco.

WATER QUALITY

The water quality in the Patapsco runs the gamut from the relatively clean waters near its source to the poor quality waters washing through Baltimore Harbor. Land surrounding the upper Patapsco's South Branch is not highly developed although the sprawl of suburbia in recent years threatens the relatively unspoiled nature of its waters. The North Branch, heavily modified by Liberty Dam, has marked variations in water quality dependent on the season. Some sections of the upper river suffer from high levels of nutrients, bacteria and suspended sediments due to runoff from agriculture.

From Marriotsville down towards the junction of the Patapsco with the Bay, there is an overall degradation of water quality. Where the river runs fast through relatively rugged terrain, the water quality is reasonably good. In sluggish sections of the river, mostly below Elkridge, the quality worsens due to industrial and municipal effluents and urban pollutants moving in from the harbor. The harbor area of the Patapsco remains poor in both water and habitat quality. Toxic substances are buried in the muds coating the harbor floor, fish may have fin rot and tumors, the submerged aquatic grasses needed by fish and other animals have long since disappeared, and the river continues to accept the treated sewage of an ever-growing populace.

Due to the pollutants, fish kills are a commonplace occurrence in the harbor each year. A combination of factors, including seasonal low oxygen levels, disease, and chemical spills, is likely responsible. In an example of chemical contamination at the closed Allied Signal Corporation plant, sixty-two pounds of chromium are discharged into ground and surface waters each day. In March 1989, the corporation agreed to clean up the site at a cost of \$61 million; the cleanup is presently underway.

These problems are not new. Even back in 1910, Baltimoreans christened their harbor "Hellbroth" in honor of the foul odor wafting from the water. Not only did the animals and plants of the river succumb, but the river itself became a human health hazard, harboring organisms that could cause typhoid fever, hepatitis, polio and cholera. The Patapsco was clearly in need of help.

RESTORATION OF THE PATAPSCO

The restoration of the Patapsco has only just begun. Concerns about the river's health started growing back in the 1960s. Yet, years of neglect, along with the time it takes to reverse policies harmful to the Patapsco's welfare, have retarded the rate of restoration. Never the less, the public is concerned about their river, scientists continue to monitor and propose solutions to the problems, and managers are instituting regulations to lessen the stress on the Patapsco system.

Despite the current poor report card for the lower Patapsco, there have been substantial improvements. Raw sewage no longer flushes into the river but is now routed via pipeline to wastewater treatment plants, eliminating the source of many infectious organisms. In Baltimore Harbor, the discharge of nitrogen and phosphorus, nutrients which can cause depletion of the river's dissolved oxygen, declined by 29 and 99% respectively from the mid-1970s to 1988. With stiffer regulations, industrial dischargers are releasing smaller quantities of the toxic substances that for so many years filtered through the water and adhered to the muds on the Baltimore Harbor bottom. The release of some toxic metals, such as chromium and copper, has declined by more than 99% in recent years. As a reflection of these improvements, measurements taken by scientists show the number of beneficial bottom-dwelling organisms increased from 3000 per square meter in the 1970s to 25,000 per square meter in the late 1980s.

For the first time in centuries, new wetlands are being created to add to the pitiful fifteen acres of wetlands remaining within Baltimore City limits. Wetlands assist in maintaining or boosting the water quality of a river. For the benefit of both people and wildlife, Maryland has launched the Greenways Program to open up corridors of green space throughout the state. One such corridor is planned along the Patapsco River valley. Additionally, Maryland has designated portions of the Patapsco and its tributaries as part of state projects such as the Small Creek and Estuary Restoration

Program.

Recreational fishing, while not outstanding, has improved significantly since the 1960's. For those migratory fish that can handle the marginal water quality of the lower Patapsco, the biggest threat to their populations has been the dams and culverts which cut them off from their spawning grounds. State, federal and private organizations have targeted seven dam sites on the Patapsco and its tributaries to provide the migrating fish with passage around or through the dams. Complementing the effort are stocking programs which reintroduce anadromous fish such as the American shad and river herring to the Patapsco.

If improvements continue, fish and other aquatic species will undoubtedly make their way back into the Patapsco. It may take a longtime. But, if the Patapsco, once so close to the abyss of full blown ecological disaster, can be rehabilitated, the future is promising for the rest of the Chesapeake Bay and her rivers.