Article 144

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Sligo Creek: Comprehensive Stream Restoration

Perhaps the most comprehensive urban stream restoration project yet attempted is Sligo Creek. An urban creek that drains through Maryland's Piedmont, Sligo Creek had become severely degraded over time. An interagency team from Metropolitan Washington Council of Governments, Interstate Commission on the Potomac River Basin, Montgomery County Department of Environmental Protection, Maryland Department of the Environment, and Maryland-National Capitol Park and Planning Commission has worked for a decade to restore the stream. The restoration strategy consisted of comprehensive implementation of stormwater retrofits, instream habitat creation, riparian reforestation, and fish reintroductions (see Table 1). Biomonitoring was conducted before, during, and after each phase of the project. The project was conducted in two phases: first Wheaton Branch and then the Sligo Creek mainstem and Flora Lane tributary. Figure 1 shows the approximate location of the project's components.

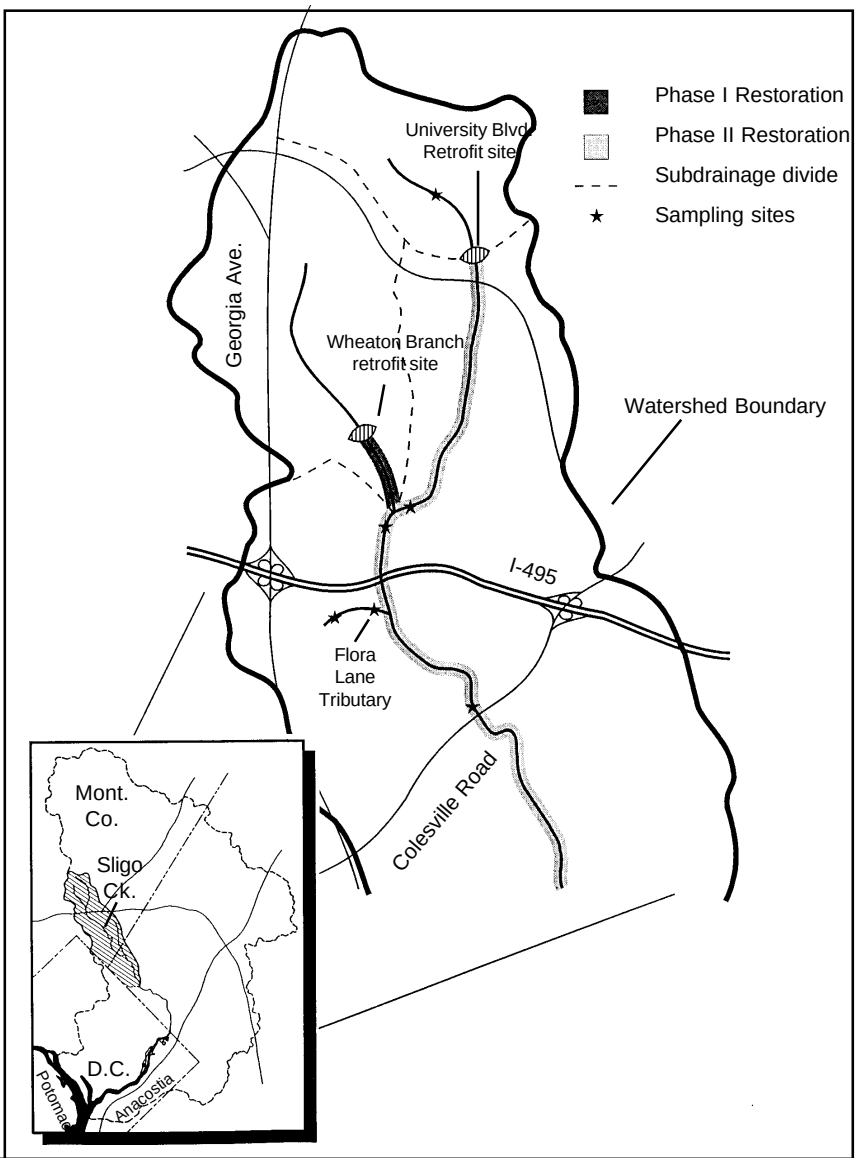

Figure 1: Vicinity Map (Galli, 1992)

Wheaton Branch

Wheaton Branch was a severely degraded urban stream. Its thousand-acre subwatershed is approximately 55% impervious. Frequent flooding had increased the stream channel width from 15 feet to as much as 86 feet (Galli and Schueler, 1992.) The streambed consisted of very large cobbles embedded in silt and clay, much of which was contaminated by petroleum hydrocarbons. Water temperatures averaged 2-7°C warmer than nearby forested streams. The aquatic community was severely degraded, with only two pollution-tolerant species of fish present: blacknose dace (*Rhinichthys atratulus*) and northern creek chub (*Semotilusatro maculatus.*) In comparison, less heavily-impacted reference streams in the Anacostia basin contained 12 to 15 fish species. Indeed, the biological quality of Wheaton Branch, as measured by the Index of Biologic Integrity (IBI), was zero prior to restoration.

The restoration of Wheaton Branch is unique in that it addressed all restoration steps in a single project. To control stormwater flows and improve water quality, an existing flood control structure was converted into a multi-cell pond/marsh system. With three interconnected pools (total surface area 5.9 acres), this retrofit detained runoff for as long as 36 hours (Figure 2). A system of weirs, pipes, and gate valves was then used to gradually release the water. Construction of the pond/marsh system was completed in June 1990.

After the stormwater retrofit pond was completed, the next step called for the replacement of nearly all functional components of the stream ecosystem within a 900-foot reach. Stone wing deflectors and boulders were installed to concentrate stream flow thereby enhancing pool/riffle areas. Notched log drop structures were used to create pools. Brush bundles, rootwads, and imbricated rip-rap were employed to stabilize banks and provide cover (Figures 3 and 4). Debris was