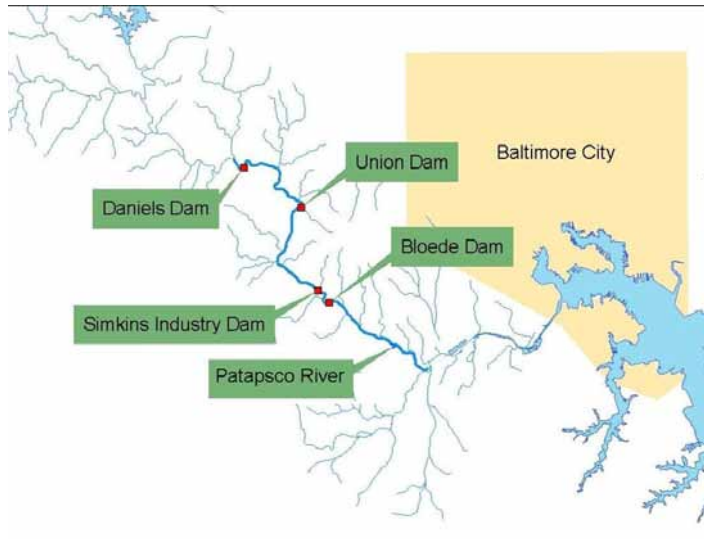# Patapsco River Dam Removal Monitoring Project

Introduction

The Maryland Biological Stream Survey (MBSS), in collaboration with American Rivers, NOAA, and the Maryland Fisheries Service, is performing biological monitoring in the Lower North Branch Patapsco River as part of the removal of Simkins and Union Dams. The goals of this project are to determine the potential impacts of dam removal on American eel (*Anguilla rostrata*) distribution as well as fish, benthic macroinvertebrate, and freshwater mussel communities of the Patapsco River.

Simkins Dam

There were a total of four dams on the Lower North Branch Patapsco River. Union Dam has already been removed, and work has begun on the removal of Simkins Dam, with completion expected before the end of 2010. There are no immediate plans to remove either Daniels or Bloede Dams.

Union Dam

Juvenile striped bass, a migratory gamefish, caught below Bloede Dam

What is MBSS Doing?

The two main objectives of this project include:
1) Determine whether American eels will utilize the river and tributaries to the river upstream of Simkins and Union dams after removal of these dams.
2) Quantify changes in the river's overall fish and benthic macroinvertebrate communities following dam removal, as well as monitor freshwater mussel populations throughout the survey area.

Twenty-one sites were chosen along the Patapsco and its tributaries above and below the existing dams. These sites were sampled for fishes, benthic macroinvertebrates, physical habitat, water chemistry, mussels, and crayfishes Sampling began the summer of 2009 and will continue through the summer of 2012.

Electrofishing below Daniels Dam

Target Species

Two species are of particular interest in the Lower North Branch of the Patapsco River– the American eel and the triangle floater.

Juvenile American eel from the Patapsco River

American Eel *Anguilla rostrata*

American eels spend the majority of their lives in fresh water, but migrate to the ocean to reproduce. Barriers such as dams interfere with these migrations and have contributed to eel population declines. MBSS monitoring on the Patapsco was to determine if American eel population or distribution changes following the removal of Union and Simkins Dams.

Triangle Floater *Alasmidonta undulata*

The triangle floater is a state endangered freshwater mussel. Freshwater mussels as a whole are the most imperiled aquatic taxa in Maryland, and this particular mussel is only known from a handful of locations within seven river basins, including the Patapsco. It is the only native mussel found in this part of the Patapsco River, and MBSS and USFWS personnel are surveying a locality known to have had a historical triangle floater population as well as previously unsampled areas with suitable habitat to gain a better understanding of the distribution, demographics, and size of triangle floater populations in the Patapsco River.
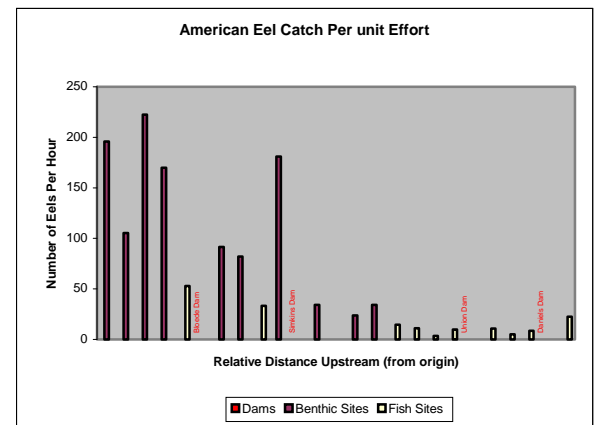

Live triangle floater below Daniels Dam

Preliminary Findings

American Eel

- American eels were encountered at every site with exception of one small tributary.
- Numbers of eels captured were noticeably higher downstream than upstream.
- The gradient in eel abundance may be due to the cumulative effects of multiple dams impeding breeding and dispersal migrations
- Sampling in the two years after the dam removal and any corresponding changes in eel numbers and distribution should demonstrate more clearly the specific impact of dams on American eels in the Patapsco River.

Triangle Floater

- Eight live triangle floater were observed during qualitative sampling between Union Dam and Old Frederick Road and shells were encountered below Bloede Dam.
- One live specimen was collected during quantitative sampling downstream of Daniels Dam.
- At present, sampling has confirmed the triangle floater to be distributed over three kilometers of the Patapsco River, but it is suspected that future sampling will uncover addition populations in previously unsurveyed areas.

Quantitative triangle floater sampling

May 2011