Bridgewater State University
Virtual Commons - Bridgewater State University

Watershed Access Lab Projects | Watershed Access Lab

12-5-2005

A River with History: Evaluating the Aberjona River

Follow this and additional works at: https://vc.bridgew.edu/wal_projects

Part of the Environmental Monitoring Commons, and the Natural Resources and Conservation Commons

Recommended Citation

Reading High School, Reading, Massachusetts (2005). *A River with History: Evaluating the Aberjona River*. In Watershed Access Lab Projects. Project 36.
Available at: https://vc.bridgew.edu/wal_projects/36

This item is available as part of Virtual Commons, the open-access institutional repository of Bridgewater State University, Bridgewater, Massachusetts.

A River with History; Evaluating the Aberjona River

Reading Memorial High School
Honors Field Biology Class

Presented By

- Chris Angelini, Jessica Gover, Ryan Hall, Cheryl Pedersen, Leah Silva, Andy Slezak, Ashley Walshaw, Colin Wilkinson, Sheena Zerfas

Purpose

- To determine the water quality of the Aberjona River by analyzing macroinvertebrates
- To seek a better understanding and appreciation for our environment

General Information about the Aberjona River

- Part of the Mystic River Watershed
- Begins in Reading and runs through Woburn, Wilmington and empties into the Mystic Lakes.

A Brief History of the Aberjona River

- Many industries formed along the Aberjona:
  - Tanning Industries were formed in the 1600's until the 1900's.
  - Chemical companies- 1850-1950
- Many of the wastes made from these industries were disposed of in the Aberjona River and the surrounding wetlands.

Brief History of the Aberjona River Continued

- Continued dumping into the Aberjona and the surrounding area caused two wells to be closed in 1979 and the Massachusetts EPA identified the area as one of the largest hazardous sites in the country.
- The wells that were closed had been used by the Woburn residents. Many people have connected poor health to their drinking water.
- A civil case was brought against two industries - the story was made into the movie “A Civil Action”

Procedure

1. Collect macroinvertebrates at two sample sites along the Aberjona River
2. Identify the collected macroinvertebrates
3. Determine the tolerance value for each group of macroinvertebrates sampled
4. Calculate the major group biotic index for each site
5. Determine the water quality for each site

ABERJONA SITE #1
Mill Street, Woburn, MA

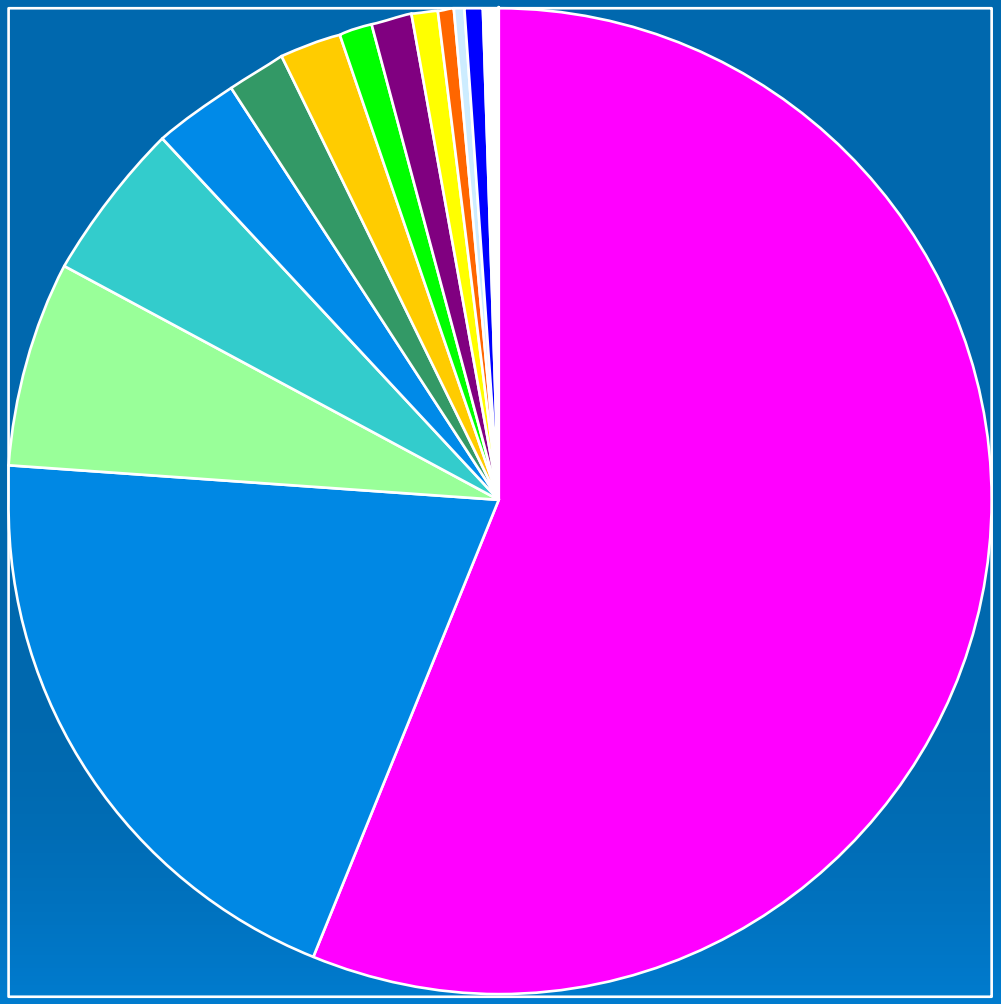
Aberjona Sample Site #1:

- Physical Characteristics:
  - Bottom substrate was rocky.
  - Very little flow- negative readings at some spots.
  - Near a main road and two residential streets
  - Found floating garbage, as well as garbage along riparian zone.

Aberjona Sample Site #1 Continued

- Biotic Characteristics:
  - Vegetation was found on rocks in the river as well as in the riparian zone
  - Major groups of macroinvertebrates collected included: *Amphipoda, Trichoptera, Diptera, and Odonata*

Macroinvertebrate Group Percentages-Site #1



- Trichoptera
- Amphipoda
- Diptera: Other
- Diptera: Chironomidae
- Odonata
- Oligochaeta
- Ephemeroptera
- Hirudinea
- Gastropoda
- Plecoptera
- Decapoda
- Pelecypoda
- Coleoptera

Macroinvertebrates Collected at Site #1

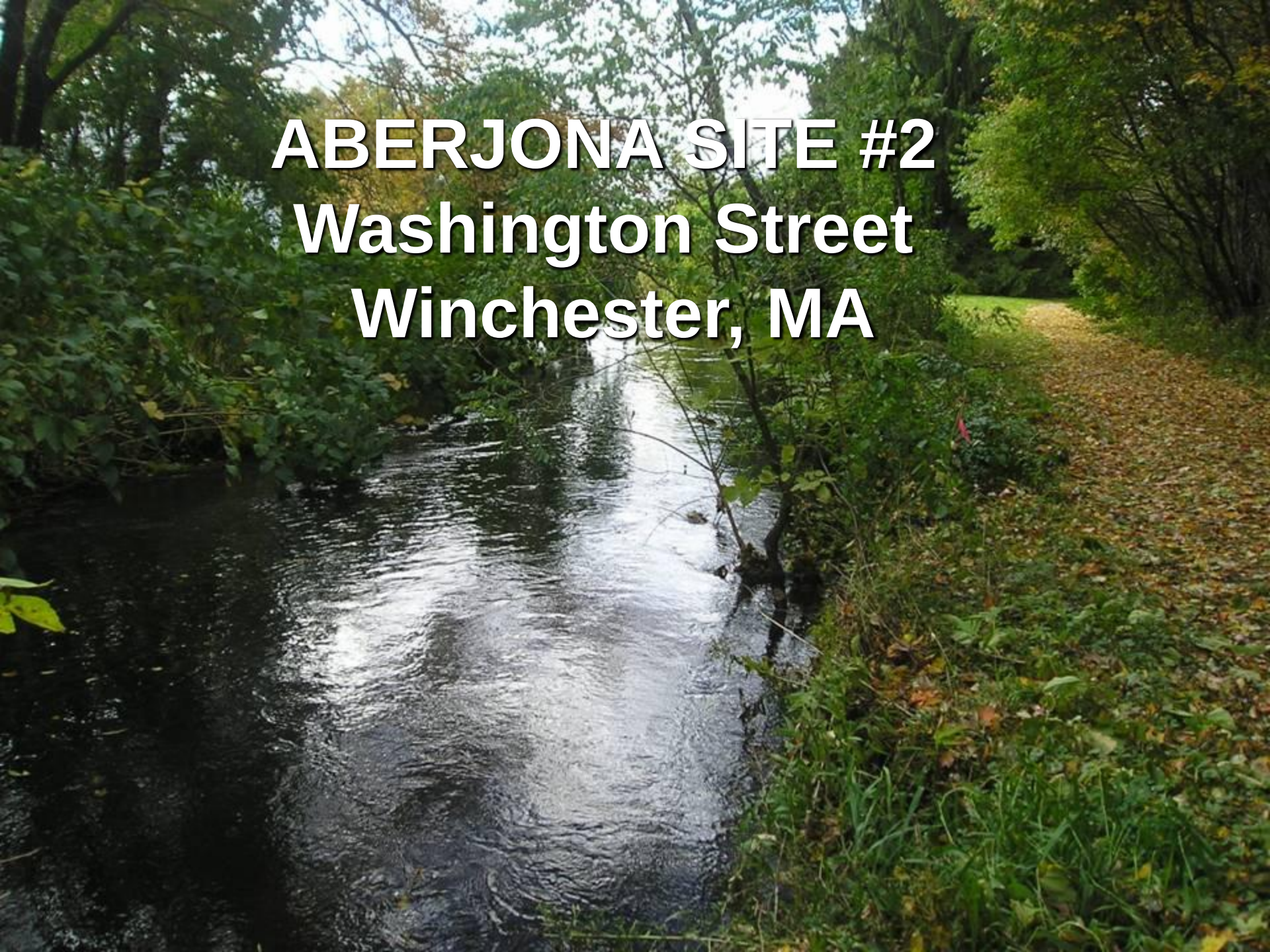
Trichoptera
•Pollution Sensitive

Amphipoda
•Pollutant tolerant

Macroinvertebrates Collected at Site #1

Diptera
•Somewhat tolerant to pollution

Odonata
• Somewhat tolerant to pollution



ABERJONA SITE #2
Washington Street
Winchester, MA

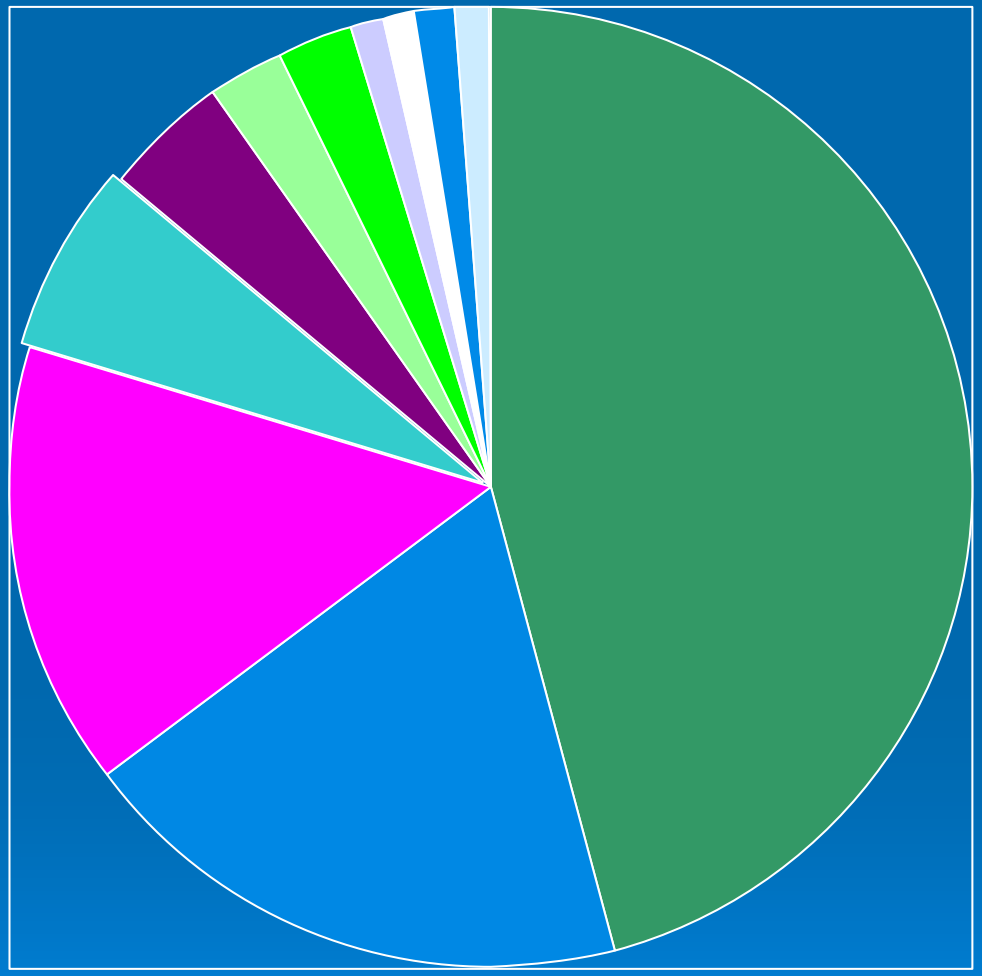
Aberjona Sample Site #2

- Physical Characteristics:
  - Bottom substrate was rocky.
  - Greater flow, probably due mostly to a man-made stream bed
  - Near homes, and a private elementary school.

Aberjona Sample Site #2

- Biotic Characteristics:
  - Some vegetation in the riparian zone, but not as much as site 1.
  - Major groups of macroinvertebrates collected included: *Oligochaeta*, *Trichoptera, Amphipoda, Diptera-Chronomidae*

Macroinvertebrate Group Percentages-Site #2



- Oligochaeta
- Amphipoda
- Trichoptera
- Diptera: Chronomidae
- Gastropoda
- Diptera: Other
- Hirudinea
- Coleoptera
- Hemiptera
- Odonata
- Pelecypoda

Macroinvertebrates Collected at Site #2

Oligochaeta
•Pollution tolerant

Amphipoda
•Pollution tolerant

Macroinvertebrates Collected at Site #2

Trichoptera
•Pollution Sensitive

Diptera
•Somewhat tolerant to pollution

Findings

- Major Group Biotic Index for Site #1 was a 4.5 –good water quality
- Major Group Biotic Index for Site #2 was a 7.3-poor water quality

Possible Explanations

- Site #1 was upstream and had a more vegetated riparian zone –more sheltered
- Site #2 was downstream-upper portion of sample site contained an artificial stream bed which created a man made riffle .
- Between the two sites the river flows adjacent interstate 93 and major secondary roads

Conclusions

- Our results show that in some places the river is showing some improvement, while in other sites humans are still negatively impacting it.
- Hopefully, the communities where the river runs like Reading, will help to clean and preserve the river to make it clean once again. Perhaps another “civil action” needs to take place .

THANKS FOR LISTENING!!