5-6-2004

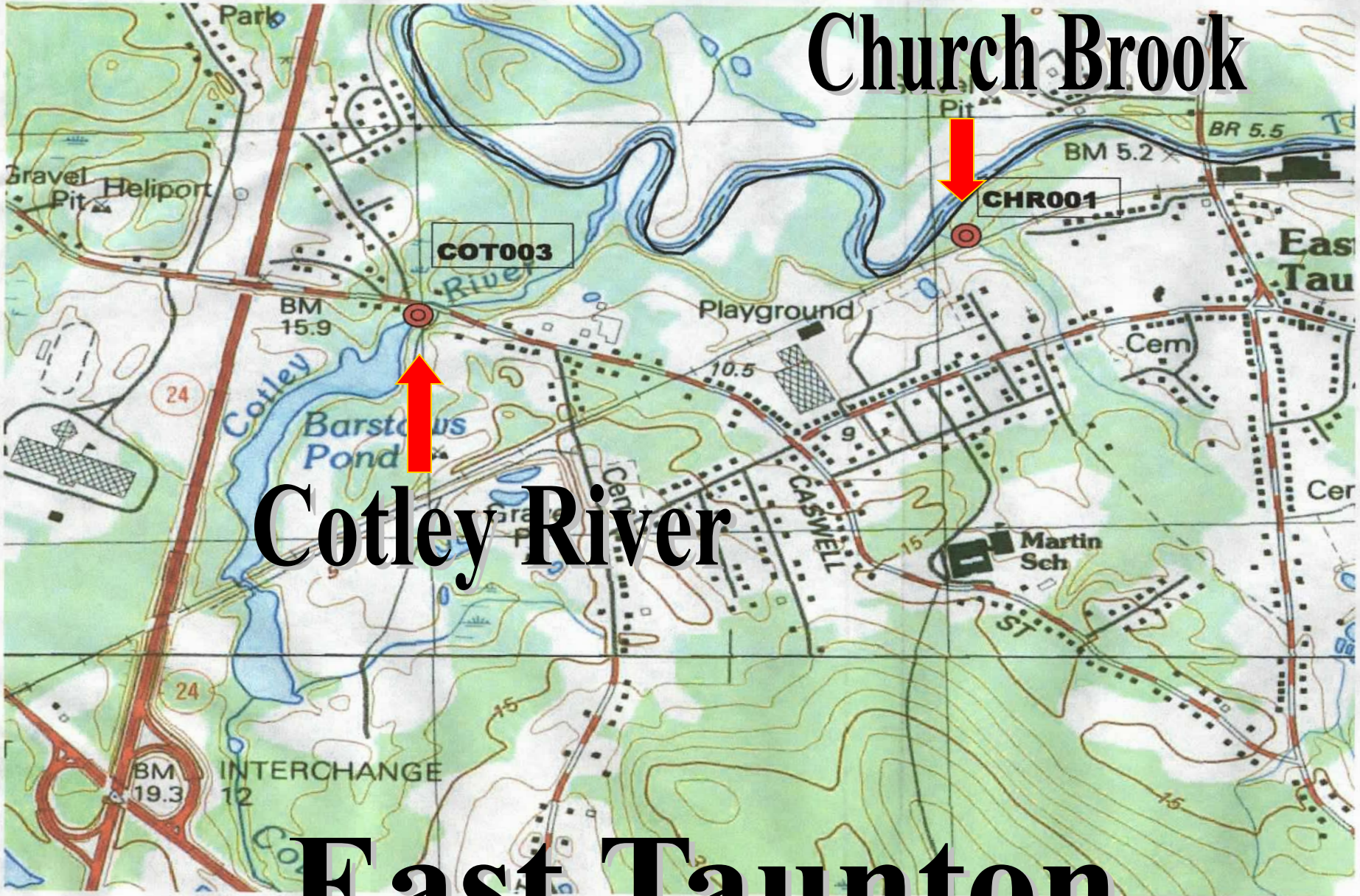
Friedman's Bugwatch Water Quality Study - An Update

Friedman Middle School

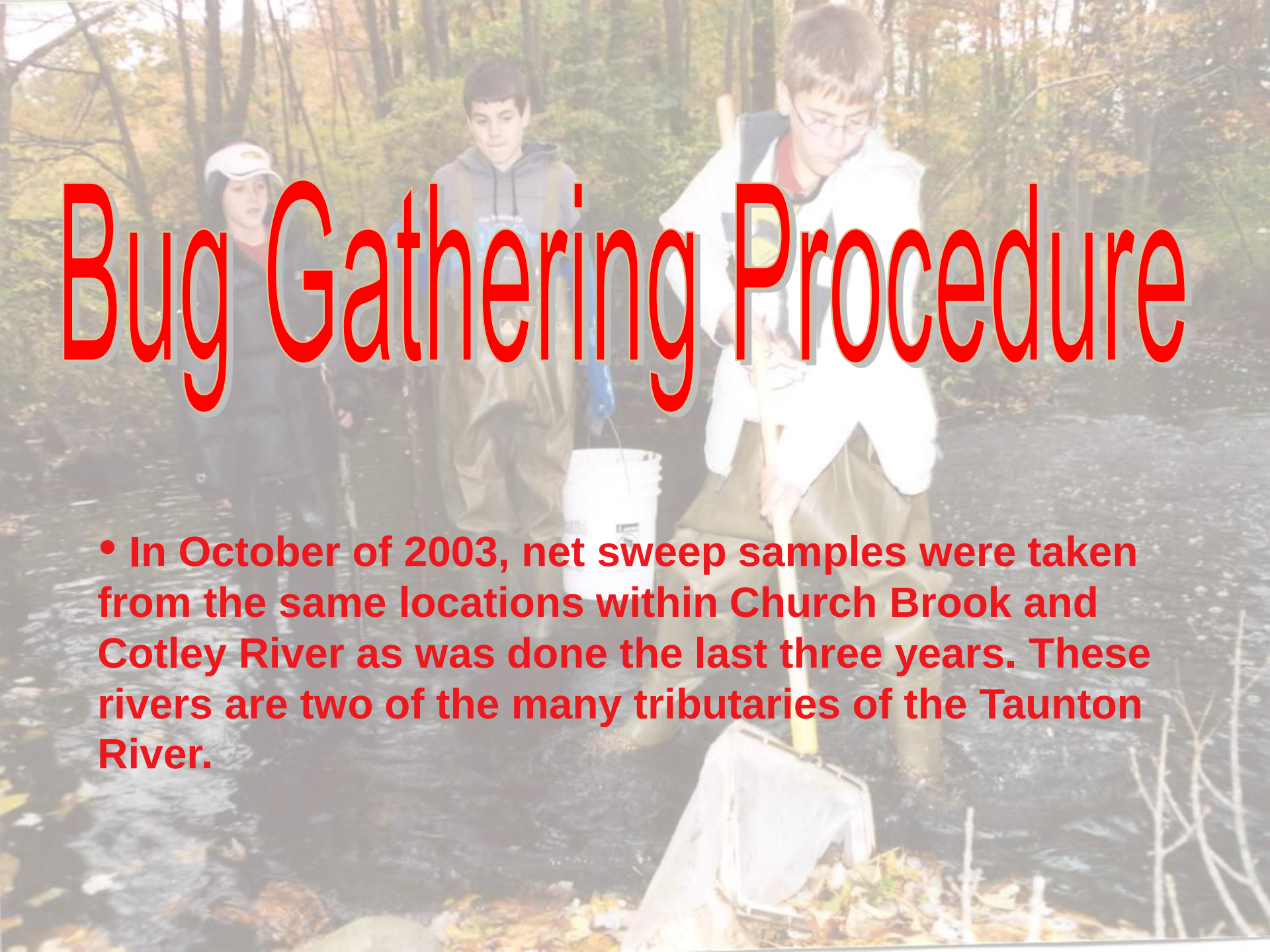
Outdoor Education

Lots and lots of....

Bugs!


Church Brook
Cotley River
East Taunton
Park
Gravel Pit
Heliport
COT003
CHR001
Pit
BR 5.5
BM 5.2
BM 15.9
Playground
Cem
10.5
Cotley
Barstons Pond
CASWELL
Martin Sch
ST
24
15
BM 19.3
INTERCHANGE 12
0.4
0
0.4
0.8 Miles

Bug Gathering Procedure



- In October of 2003, net sweep samples were taken from the same locations within Church Brook and Cotley River as was done the last three years. These rivers are two of the many tributaries of the Taunton River.

Bug Identification Procedure

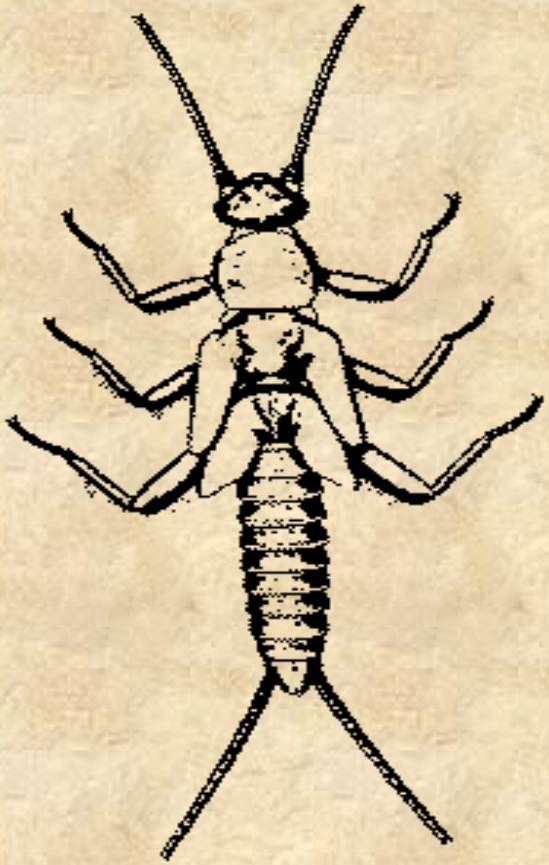
- These net sweep samples were preserved in alcohol over the winter. With instruction from Professor Curry at his biology lab, two groups of students identified the bugs during the winter months.

Bioindex

- Bioindex is the way that bugs are classified. The higher the bioindex number, the more tolerant the bug is to contamination. The lower the bioindex number, the less tolerant the bug is to contamination. The bioindex numbers range anywhere from 0.0 to 10.0

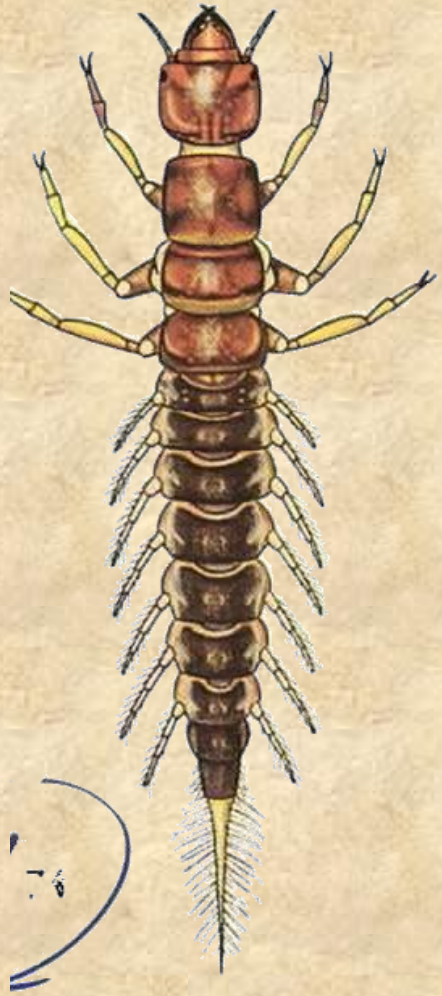
- Stonefly @ 2.0 Fishfly @ 2.0 Mayfly @ 4.0 Caddisfly @ 4.0 Beetle @4.0 Aquatic Fly @ 4.0 Scud @ 4.0 & 6.0 Sowbug @ 8.0 Leech @ 10.0

Stonefly



- Stoneflies (order plecoptera) live only in clean water. The sighting of a stonefly is one of the best ways to indicate the quality of water. It is called the stonefly because it is often found lying on stones. There are over 500 species of stoneflies in North America alone, most of which are herbivores, while some eat nothing at all.

Fishfly

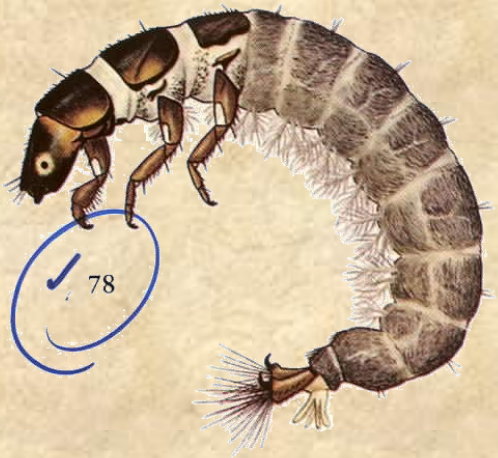


- Fishflies (order megaloptera) inhabit streams, rivers, and ponds. Fishflies have long, slender bodies, usually ranging between 25 to 90 mm; they are also equipped with antennae. A fishfly will normally take between one and three years to fully develop. Unlike other bugs, the fishfly is carnivorous and will eat other insects, sometimes without even chewing them.

Mayfly

- Mayflies (order ephemeroptera) live in only fresh water, living off of decomposed plants and animals. The Mayfly is the preferred food of carnivorous insects and is a huge link in the bottom feeding food chain. Today, there are over 700 species of Mayflies.

Caddisfly



- Caddisflies (order trichoptera) are closely related to butterflies and moths, which explains why they are attracted to light. Once they reach the adult stage, Caddisflies live about 1 to 2 months. Their diet mainly consists of plants, which makes them herbivores.

Water Beetle

- Water Beetles (order coleoptera) and land beetles make up most of the insect species, with over 30,000 different types of beetles known to man. Water beetles are said to have adapted to aquatic conditions over the years. They range in size from 10 to 11 mm, and their body parts include chewing mouthparts, well-developed eyes, and antennae.

Aquatic Fly

- Aquatic Flies (order diptera) start out as larvae and then grow into adults. Larva measures 2-20 mm but are occasionally larger. As adults, they have long slender bodies, similar to the bodies of mosquitoes. They are bottom dwellers which live in tubes underwater. As adults they are short-lived and non-feeding.

Scud

• Scuds (order amphipoda) were the most common bugs that we found. There were two types that we encountered. One was the gammaridae which had a bioindex of 4.0, and the other was the hyallelidae with a bioindex of 6.0. There were just two of the 90 different types of scuds that are known today. They can be from 5 to 20 mm long with two large antennae.

Sowbug

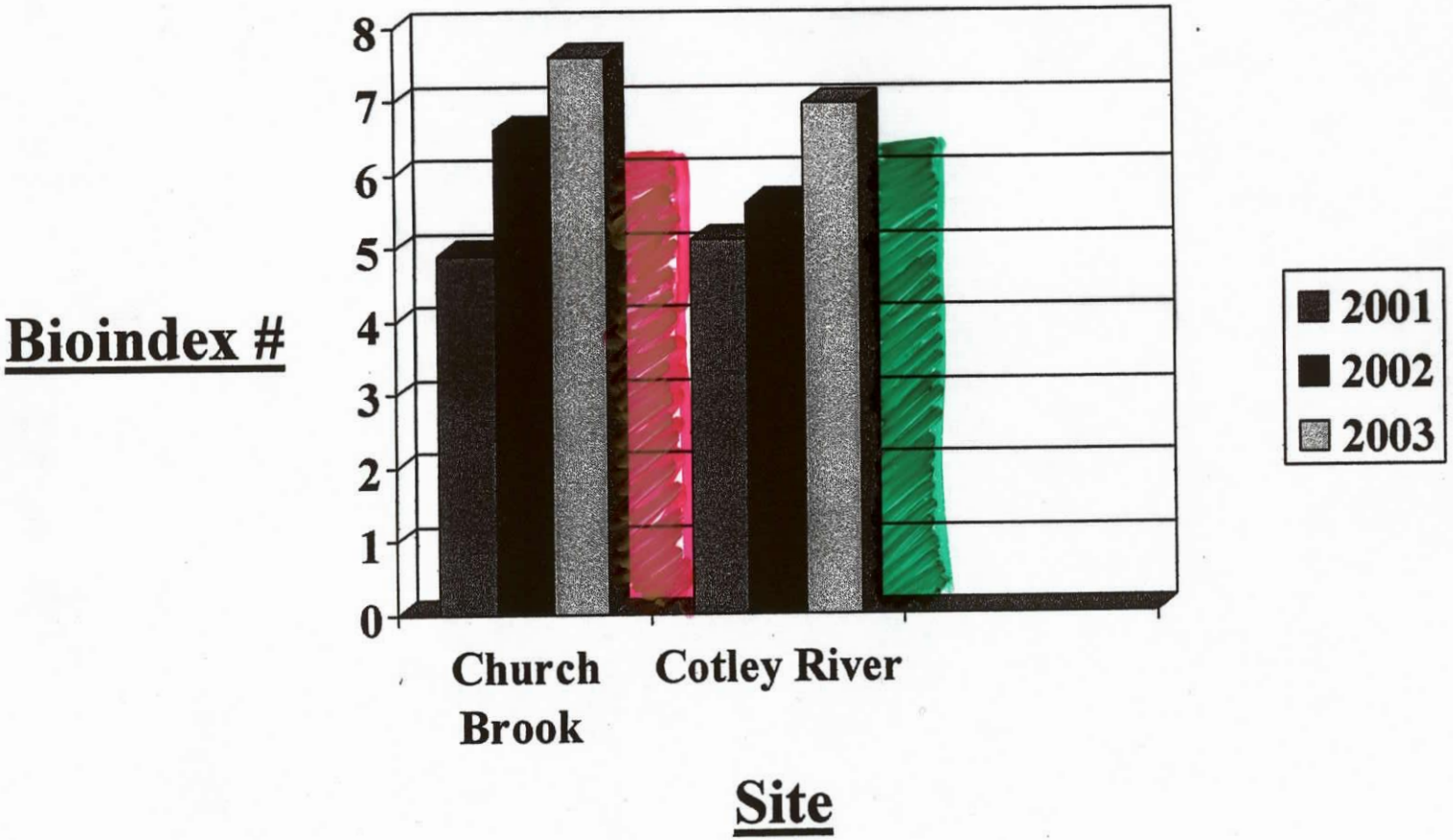
- Sowbugs (order isopoda) are found throughout North America. Ranging from 5 to 20 mm, sowbugs are usually found underneath leaves and twigs to stay away from predators; they also are black and brown in color to help blend their surroundings. Their fourteen strong legs are used to move more easily on the ground and the water.

Leech

- Leeches (order hirudinea) are flattened worms that measure 5 to over 400 mm in length. Many are patterned and brightly colored. They have suckers which they use to take in blood from humans and wildlife. The blood is the source of food, which they need to survive. Although all leeches are thought to be bloodsuckers, only some of the species actually are.

Bug Results

Bug Watch Results 2001-2003



• As you can see from these graphic results, the contaminant levels at both locations have increased over the first three years, but dropped this last year. The bioindex value at Cotley River increased from 5.10 to 6.94, then dropped to 6.10, while the bioindex level increased from 4.90 to 7.50, then dropped to 6.02 at Church Brook.

- We think the contaminant levels dropped at both locations due to the effects of more runoff last year versus drought conditions the two previous years. More runoff appears to dilute the amounts of contamination.

- The more dramatic drop in contamination at Church Brook may be due to channel clean out efforts that increased the amount of water flow. Although contaminant levels have dropped, cleaning out stormwater runoff, catch basins would probably lower contaminant levels even more.

• We will now try and answer any questions you may have about Friedman Middle School's Bug Watch program, and our four years of bug-related water quality results.

The End