Macroinvertebrate Survey of Peconic River

Pre-treatment – June 18, 2021
Post-treatment – October 10, 2021

Field Survey Team:
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Abstract
The Department of Environmental Conservation (DEC) surveyed macroinvertebrate communities at three sample sites within the freshwater portion of the Peconic River. This report details selection of sites, subsequent collection, and assemblage of macroinvertebrate communities before and after herbicide treatment for *Ludwigia peploides*. The purpose of this report is to provide a baseline for macroinvertebrate assemblage to compare pre- and post-herbicide treatment. The methods were not designed to be quantitative or to assess water quality, instead only to look for changes in community assembly found pre- and post-treatment of aquatic herbicide application. No significant changes to the macroinvertebrate community assemblage were observed when comparing survey results pre- and post-herbicide treatment.

Methods
Based on a desktop survey conducted by DEC, six locations were selected within the freshwater portion of the Peconic River as potential collection sites. On-site, in-person scouting was then conducted by DEC based on accessibility and suitable habitat. Of the six potential locations, river conditions permitted collection at three of the sites. The unsampled sites were either inaccessible (i.e. too deep for traditional river sampling techniques), or unsuitable habitat (i.e. impounded, slow moving – almost stagnant, very soft bottomed).

For each sample site, GPS coordinates were recorded (Table 1). Pre-treatment samples were collected on June 18th, 2021. Post-treatment samples were collected on October 5th, 2021.

TABLE 1. PECONIC RIVER MACROINVERTEBRATE SAMPLING GPS COORDINATES AND SITE CHARACTERISTICS.

Site	Coordinates		Composition
1	40.01384	-72.68678	5% edge, 85% riffle, 10% fast run
2	40.905500	-72.743126	50% fast run, 50% riffle
3	40.90324	-72.76879	10% edge, 90% pool

Samples were collected using kick nets (D-nets). Two staff members collected samples each spanning a 5 meter transect for 5 minutes. Samples were identified to lowest practicable level using McCafferty, W. P. (1981) and Voshell Jr. (2002). Weather had

little impact on our sampling as the river is impounded at multiple points and was slow moving.

Results

Site 1 was a shaded riffle over loosely embedded cobbles and gravel located downstream of a 1-meter dam (with a pool of slow-moving water above and shaded riffle just below the dam).

> Pre-treatment (June 18th, 2021): The water temperature was ~22°C (71°F). The assemblage was dominated by amphipods (in the genera *Gammarus* and *Hyalella)* and common netspinner caddisfly larvae (in the genera *Cheumatospyche* and *Hydropsyche)*. Leeches (*Helobdella stagnalis*) and broad-winged damselfly larvae (Calopterygidae) were present but less abundant. Flat head mayfly larvae (*Maccaffertium* sp.) were present in very low numbers. Asian clams (*Corbicula fluminea*) were also present.
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> Post-treatment (October 5th, 2021): The water temperature was ~21°C (70°F). The assemblage was dominated by amphipods (in the genera *Gammarus* and *Hyalella)* and flat head mayfly larvae (*Maccaffertium* sp.). Asiam clams (*Corbicula fluminea*) were present and abundant. Common netspinner caddisfly larvae (in the genera *Cheumatospyche* and *Hydropsyche)* and broad-winged damselfly larvae (Calopterygidae) were also present but less abundant. Planaria (Turbellaria) were present in very low numbers.

Site 2 was a fast run/riffle over hard bottom and gravel located just below Edwards Avenue Dam (downstream of the pilot herbicide treatment area for *Ludwigia peplodies)*.

> Pre-treatment (June 18th, 2021): The water temperature was ~22°C (71°F). The assemblage was dominated by amphipods (in the genera *Gammarus* and *Hyalella*) and aquatic sowbugs (Asellidae). Water boatmen (*Hesperoxorixa* sp.) and broad-winged damselfly larvae (Calopterygidae) were also present but less abundant.
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> Post-treatment (October 5th, 2021): The water temperature was ~21°C (70°F). The assemblage was dominated by flat head mayfly larvae (*Maccaffertium* sp.) and amphipods (in the genera *Gammarus* and *Hyalella*). Aquatic sowbugs (Asellidae) were also present and abundant. Broad-winged damselfly larvae (Calopterygidae), skimmer dragonfly larvae, and (Anisoptera) were also present but not abundant.

Site 3 was a quiescent slow flowing pool with soft sandy bottom.

> Pre-treatment (June 18th, 2021): The water temperature was ~22°C (71°F). The assemblage was dominated by amphipods (in the genera *Gammarus* and *Hyalella)*. The only other macroinvertebrates present were spread-winged

damselfly larvae (Lestidae). A young of year chain pickerel (*Esox niger*) was also found in the net and quickly released.

Post-treatment (October 5th, 2021): The water temperature was ~21°C (70°F). The assemblage was once again dominated by amphipods (in the genera *Gammarus* and *Hyalella*) and flat head mayfly larvae (*Maccaffertium* sp.). Water skimmers (Gerridae) and darners (Aeshnidae) were present and abundant. Two fish species, a tessellated darter (*Etheostoma olmstedi*) and a fourspine stickleback (*Apeltes quadracus*) were found in the net and quickly released.

References

McCafferty, W. P. 1981. *Aquatic entomology: the fishermen's guide and ecologists' illustrated guide to insects and their relatives.* Jones and Bartlett Publishing Company, Boston, Massachusetts.

Stroud Water Research Center. The Atlas of Common Freshwater Macroinvertebrates of Eastern North America. https://www.macroinvertebrates.org/

Voshell Jr., J. Reese (2002). *A Guide to Common Freshwater Invertebrates of North America*. The McDonald & Woodward Publishing Company .