

Updates on Macroinvertebrate Sampling in South Carolina's Non-wadeable Streams and Rivers

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Introduction

South Carolina has used a timed, qualitative, multi-habitat method to sample wadeable streams for macroinvertebrates for many years. Recently a methodology for sampling non-wadeable streams and rivers in the state was implemented. 2014 through 2016 were devoted primarily to sampling these stations. From 2017 on, non-wadeable streams have been incorporated into South Carolina's normal ambient macroinvertebrate monitoring, with several of them (primarily downstream in major watersheds) being sampled every year along with a majority of wadeable sites.

Equipment

- Boat or kayak
- Life jackets
- Kick-net
- D-frame net
- PVC fine mesh sampler
- Fine mesh bag
- Bucket
- #10 Sieve
- Ponar
- Clam rake
- White pans
- Forceps
- Vials and jars with 85% EtOH
- Labels and micron pen
- Multiparameter meter
- Camera



Methods

- Ideally late summer when water levels lowest
- Qualitative multi-habitat
- No time limit (time recorded)
- Boat or kayak used to navigate to habitats
 - Waded in certain locations
- Same techniques as wadeable used where possible:
 - Kick-net in shallow areas
 - D-frame net in roots and vegetation
 - Habitats washed into midge bucket
 - Sieve along banks and sandbars
 - Individual habitats picked where reachable
- Equivalent methods used where not:
 - Clam rake or bare hands to drag large snags into boat
 - Ponar to sample sediment in deep areas
- P-chem readings, habitat assessment, and photos taken as in wadeable sites
- Samples identified in lab as in wadeable sites

Scoring

- NC Biotic Index and EPT Count used to calculate Bioclassification Score as in wadeable stations
- Criteria of watershed's predominant ecoregion used

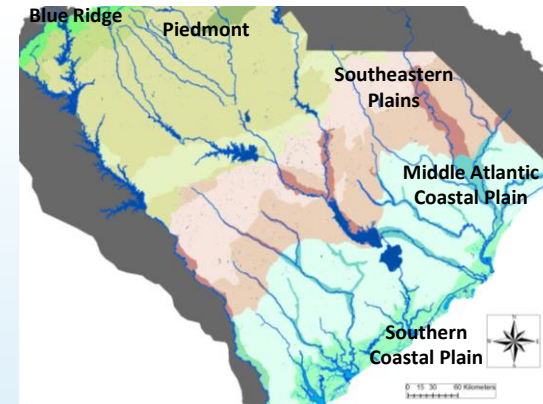


Figure 1: SC ecoregion map

Summary

- 52 non-wadeable samples throughout watersheds in the 2014 – 2016 prime study period
- 22 samples since (focusing on downstream in watershed)
- 7 in 2017
- 5 in 2018
- 4 in 2019
- 6 in 2020

References

Environmental Systems Research Institute (ESRI). 2017. ArcGIS Release 10.5. Redlands, CA.

Lenat, D. R. 1993. A biotic index for the southeastern United States: Derivation and list of tolerance values, with criteria for assigning water-quality ratings. Journal of the North American Benthological Society. 12:279-290.

South Carolina Department of Health and Environmental Control. 2017. Standard Operating and Quality Control Procedures for Macroinvertebrate Sampling. Technical Report No. 0914-17. Bureau of Water. Columbia, South Carolina.

SC Large River Taxa Examples



Asioplax dolani



Hydropsyche phalerata



Numerous Unionidae