

Climate Change and Macroinvertebrates

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Headwaters of the Delaware River

2021-2022



Purpose of Study

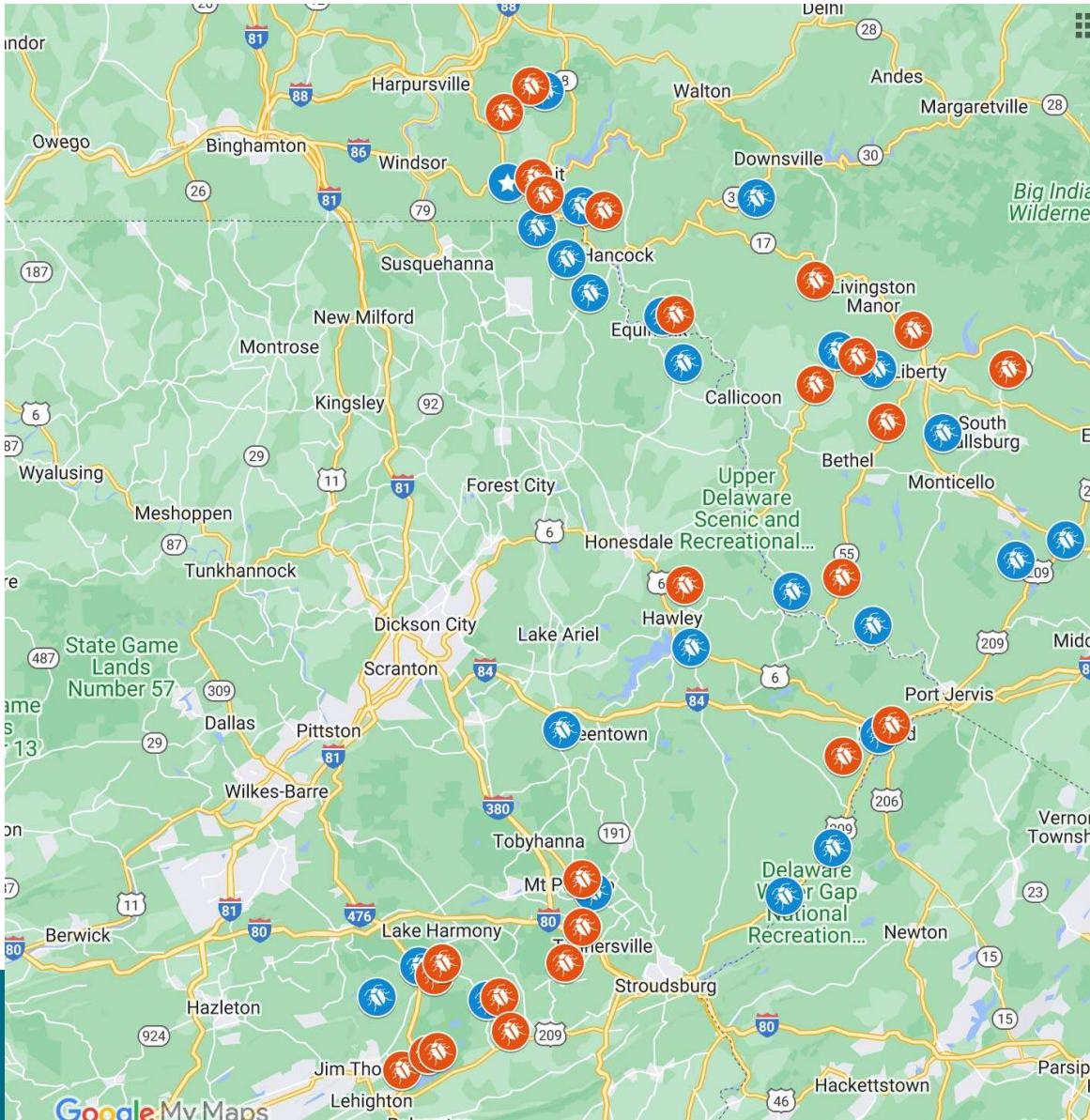
- PA & NY have climate change action plans to protect waterways & increase resilience of natural systems, including water resources.
- Climate change is impacting our streams, but we don't have a good understanding of their biodiversity or function
- In order to understand these streams, we are focusing on relationships between structure (habitat, organisms present) and function (metabolism and other indicators of energy processing, etc.)

Headwaters Sites

- 50 sites were chosen based on the following factors

<i>Parameter</i>	<i>Threshold</i>
Forest (%)	≥ 50
Wetlands (%) (Watershed)	≤ 10
Wetlands (%) (Local)	≤ 2
Watershed Area (acres)	1,000 - 4,000
Major Point Sources (count upstream)	0





2021



2022



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Field Work

- Over two years and at 50 sites we collected bugs, water and assessed habitats in April and May.
- Diatoms were collected in July by BU
- Metabolism was tracked via loggers for 2-6 months



Metrics Collected

- Macroinvertebrates
- Habitat Assessments (high gradient EPA)
- Water Chemistry (DO, pH, TP, TN, TSS)
- Algae (diatoms and biofilms)
- Metabolism (temperature, pressure, oxygen)
- DNA





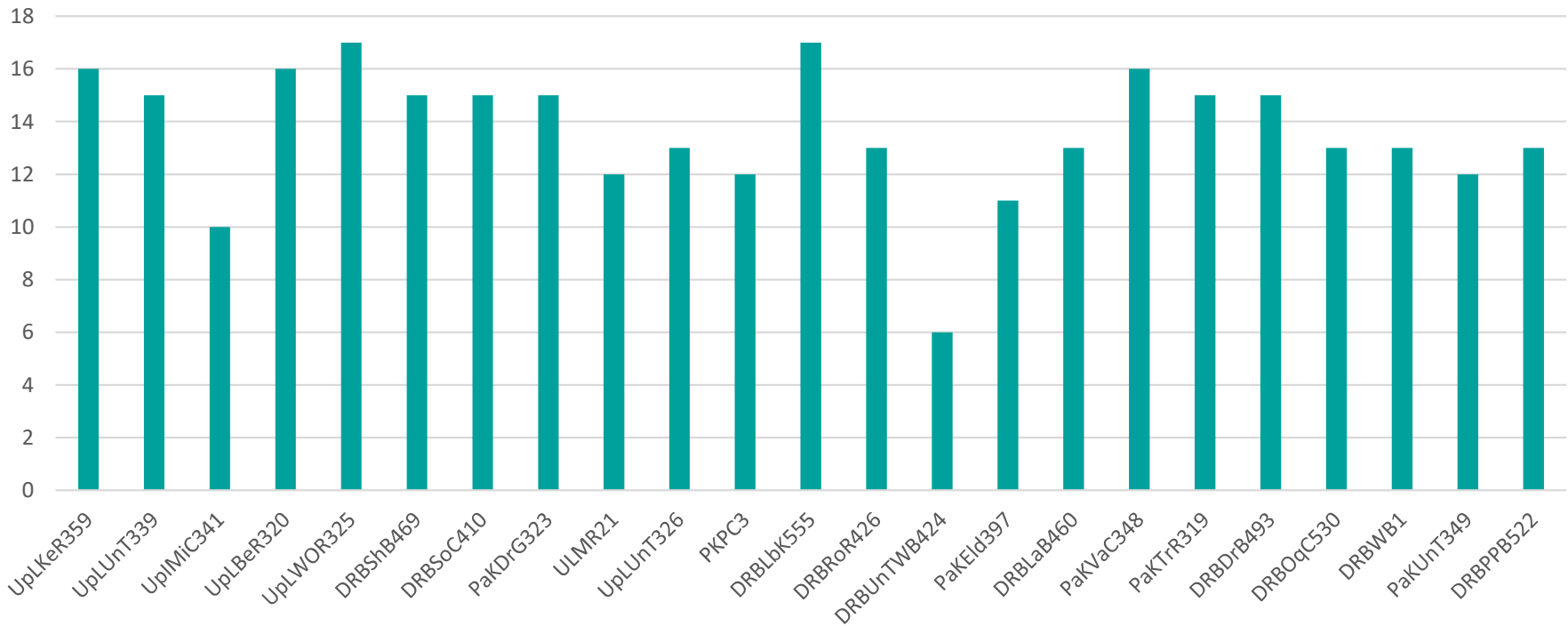
Preliminary Results

- Macroinvertebrates (2021 only)
- Habitat Assessments
- Water Chemistry: partial data
- Algae: Phycologists ID'ing now
- Metabolism (Bloomsburg crunching #s)
- DNA (fish, macroinvertebrates, mussels)



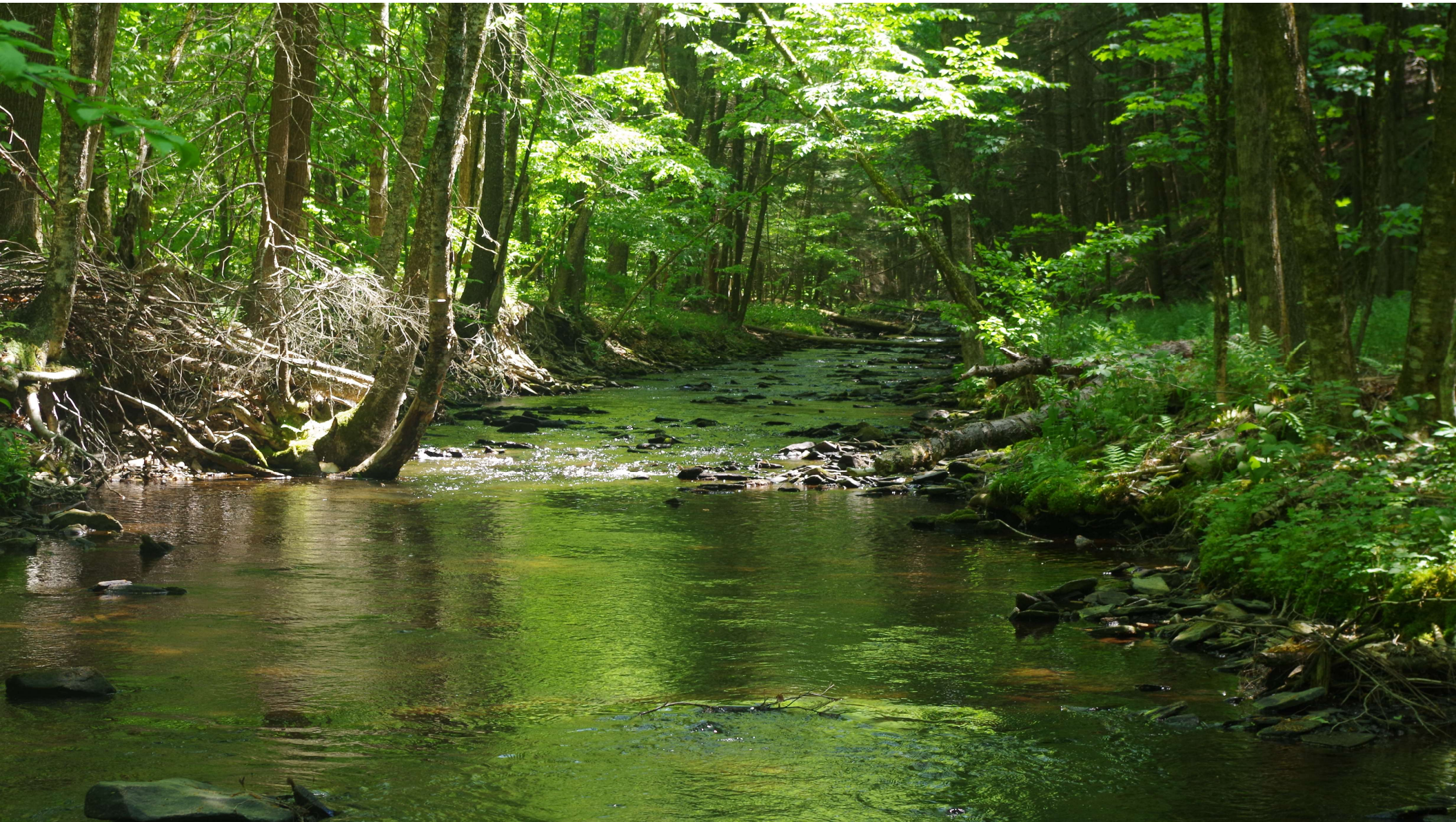
Macroinvertebrates

MAIS









YSI & 2021 Water Cubes

- Temperature
- Dissolved Oxygen
- pH
- TSS (Total Suspended Solids)
- TP (Total Phosphorus)