Can They Get Out?

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Alewife(*Alosa pseudoharengus*)

- Anadromous(Lives in the ocean and spawns in freshwater)
- Gather in large schools, migration events can consist of tens of thousands of individuals
- They are filter feeders who feed on plankton
- Listed as a species of concern due to population declines
  - Declines were believed to be a result of the implementation of many man-made barriers, including dams

Aim of Our Project

- Our project focuses specifically on juvenile alewives
- In comparison to adult alewives, the juveniles have been overlooked
- If we only study the adults, then we are only getting a portion of the picture
- We argue that a well informed conservation approach requires more knowledge about the juvenile portion of the life cycle

Why are we worried about the juveniles?

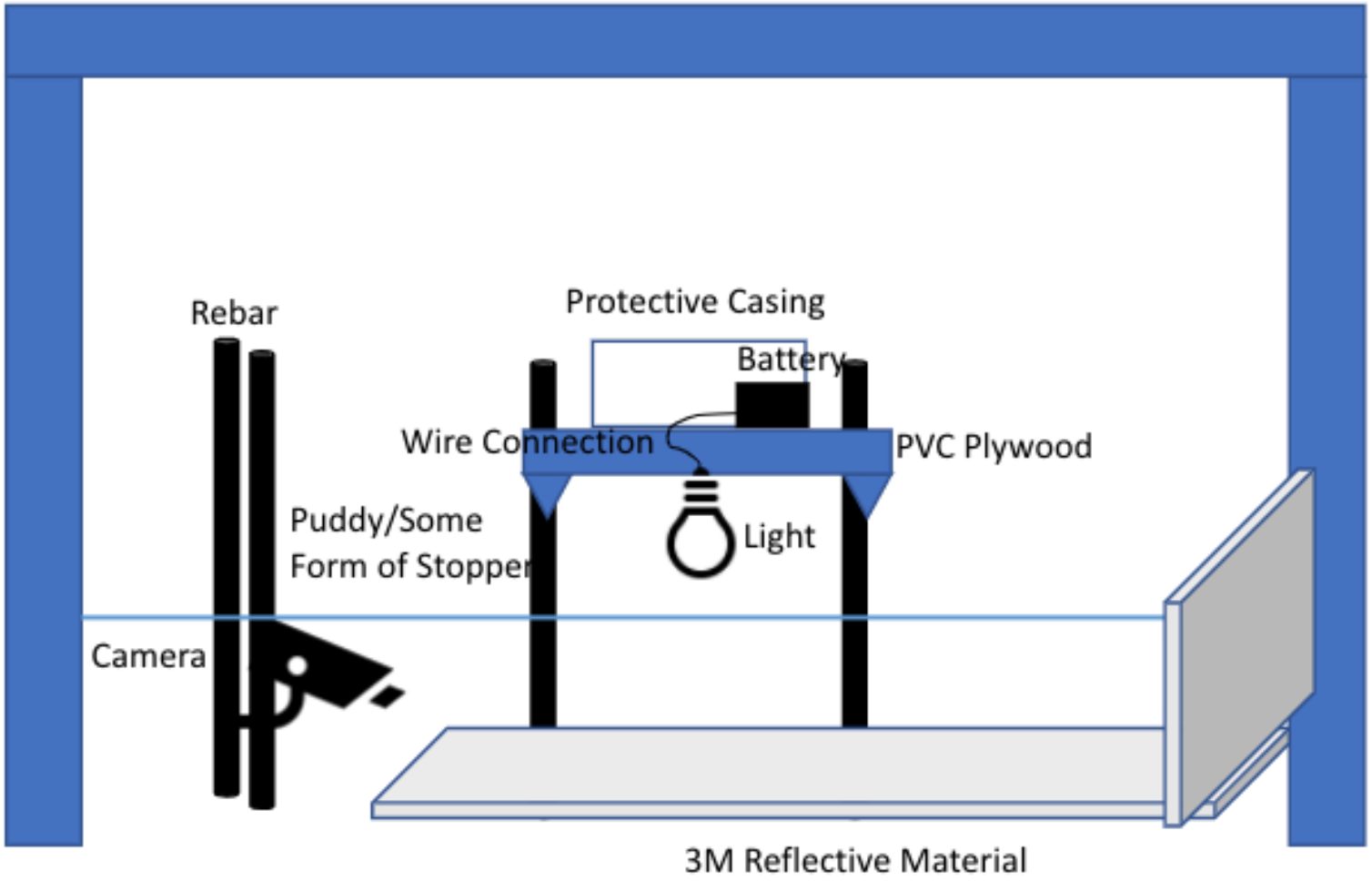
- Juveniles out migrate predominantly in June-August
- Summer months experience the least amount of precipitation
- The result is loss of connectivity between habitats
- How is this loss of connectivity affecting the population?

Obstacles to Juvenile River Herring

What are the steps we are taking?

- Juvenile outmigration is not well-documented
- Our aim is to use time lapse photography to understand more about how and when they leave
- We will also collect samples to see their weights, lengths, and age at time of out migration

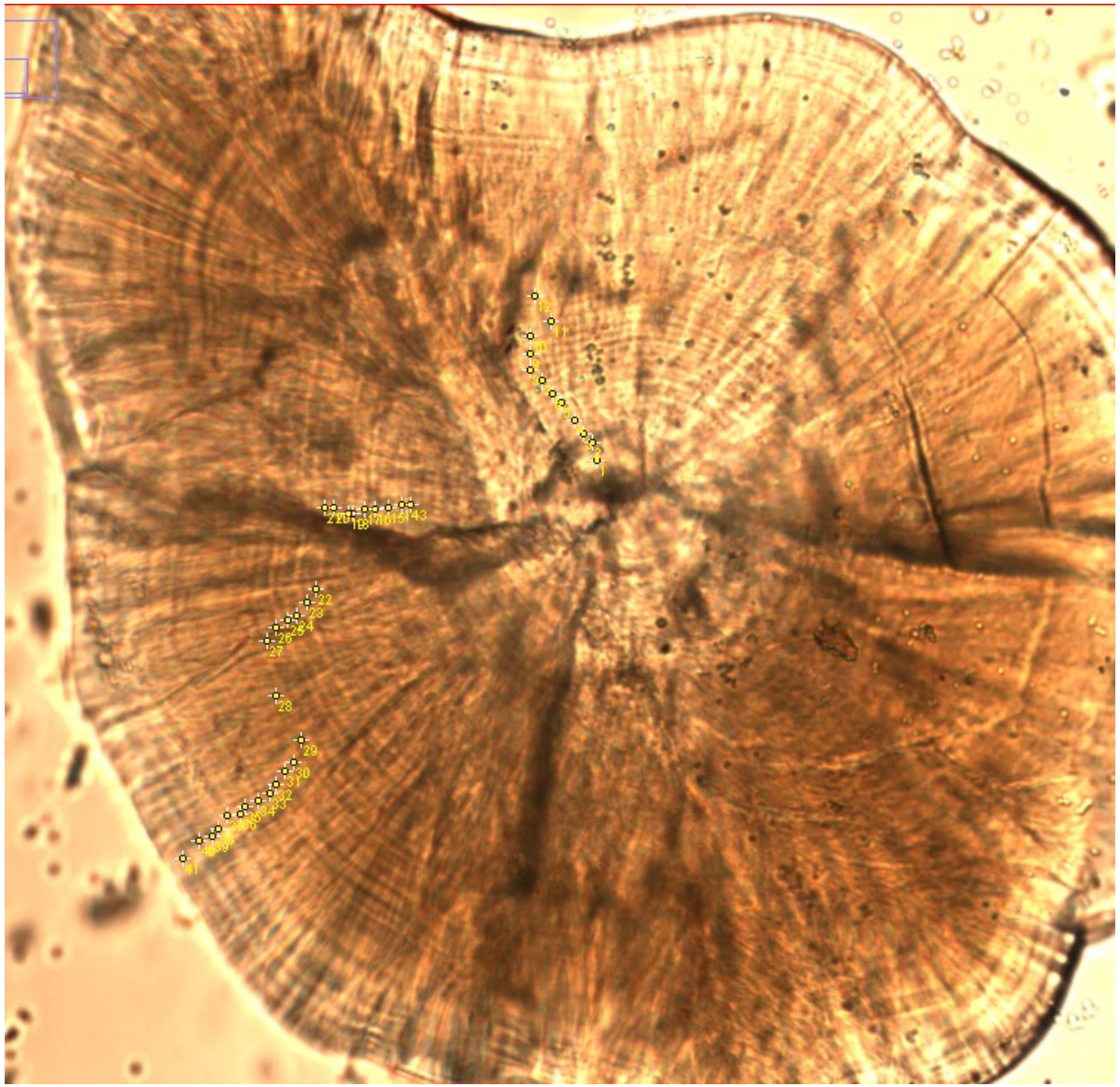
Time Lapse Photography



Alewives Caught on Camera

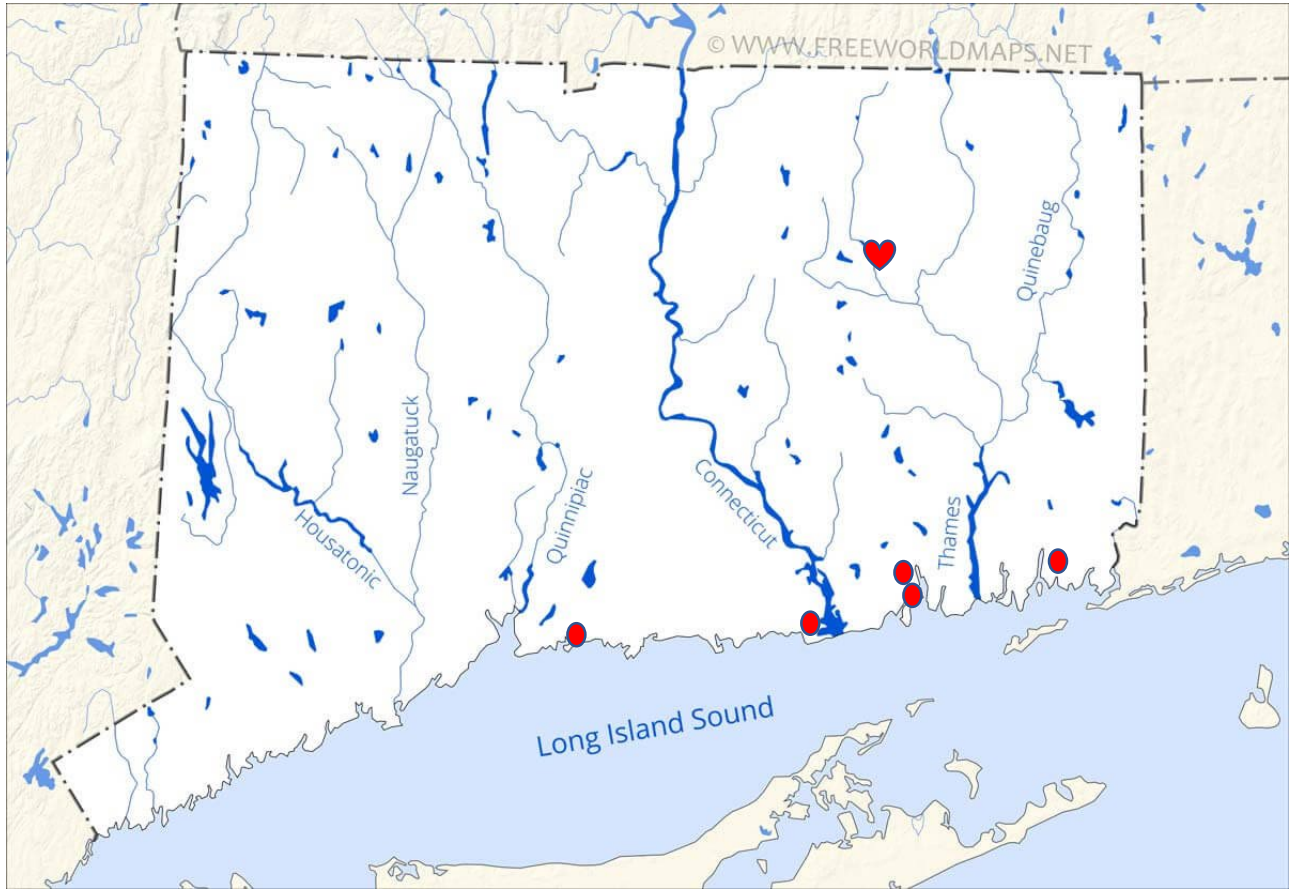
Otolith Aging

Approximately 41-day old fish

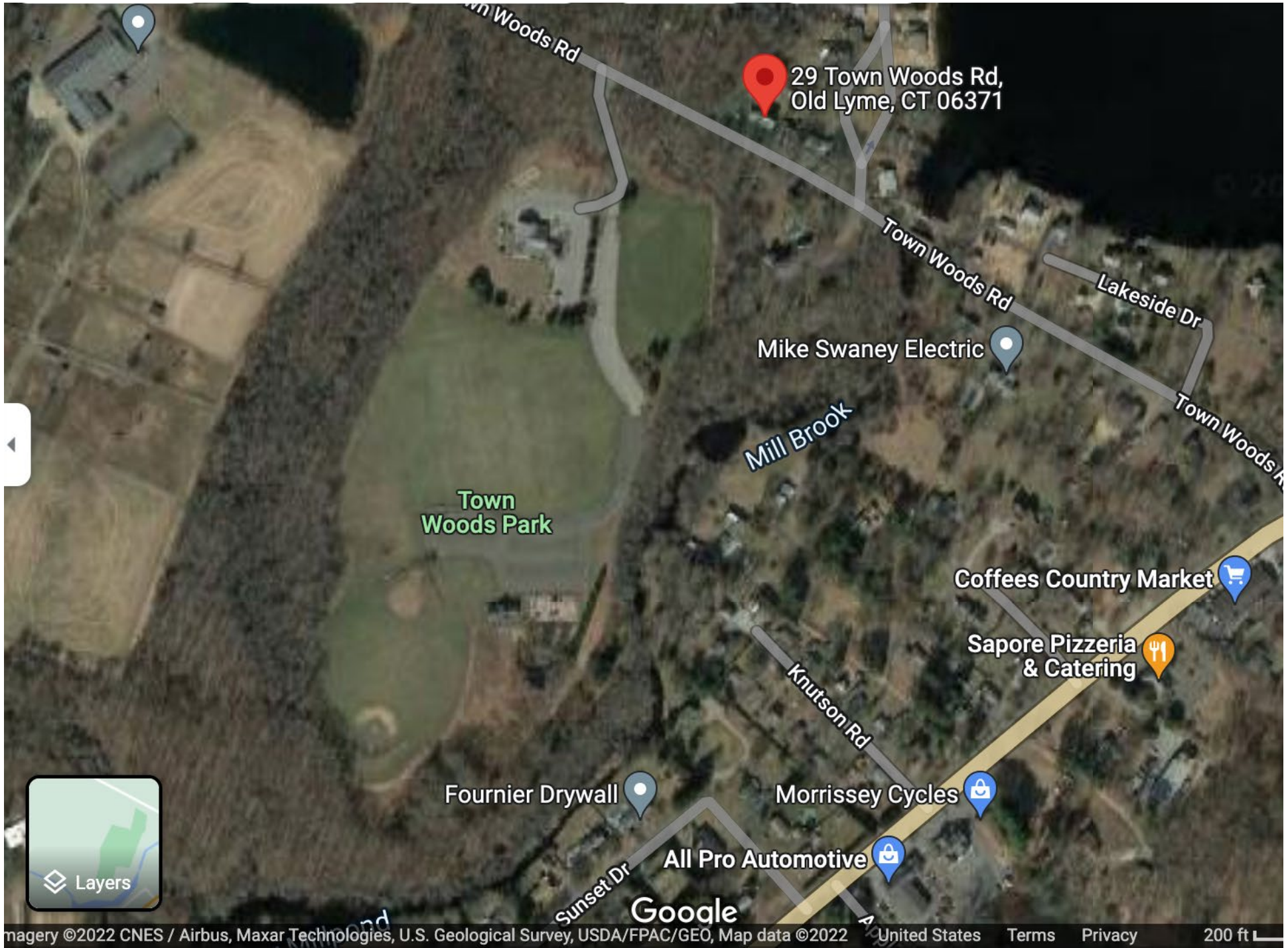


Sites Outside of Rogers

Site Name	Location
Branford Supply Pond	Branford, CT
Bride Lake	East Lyme, CT
Fishing Brook	Old Saybrook, CT
Pattagansett	Niantic, CT
Whitford	Mystic, CT



Rogers Site Location



How did we improve from last year?

- Time lapse was too long
  - Shortened to 1 minute
- Extremely high flow year, structures swept away by flow
  - Reduced the size of our structures to help minimize surface area
- Lighting attracted unwanted visitors
  - Switched from LED lights to Infrared lights
- Poor chute placement
  - Targeting lower flow areas

Heavy Rainfall/Flow

Lighting Change

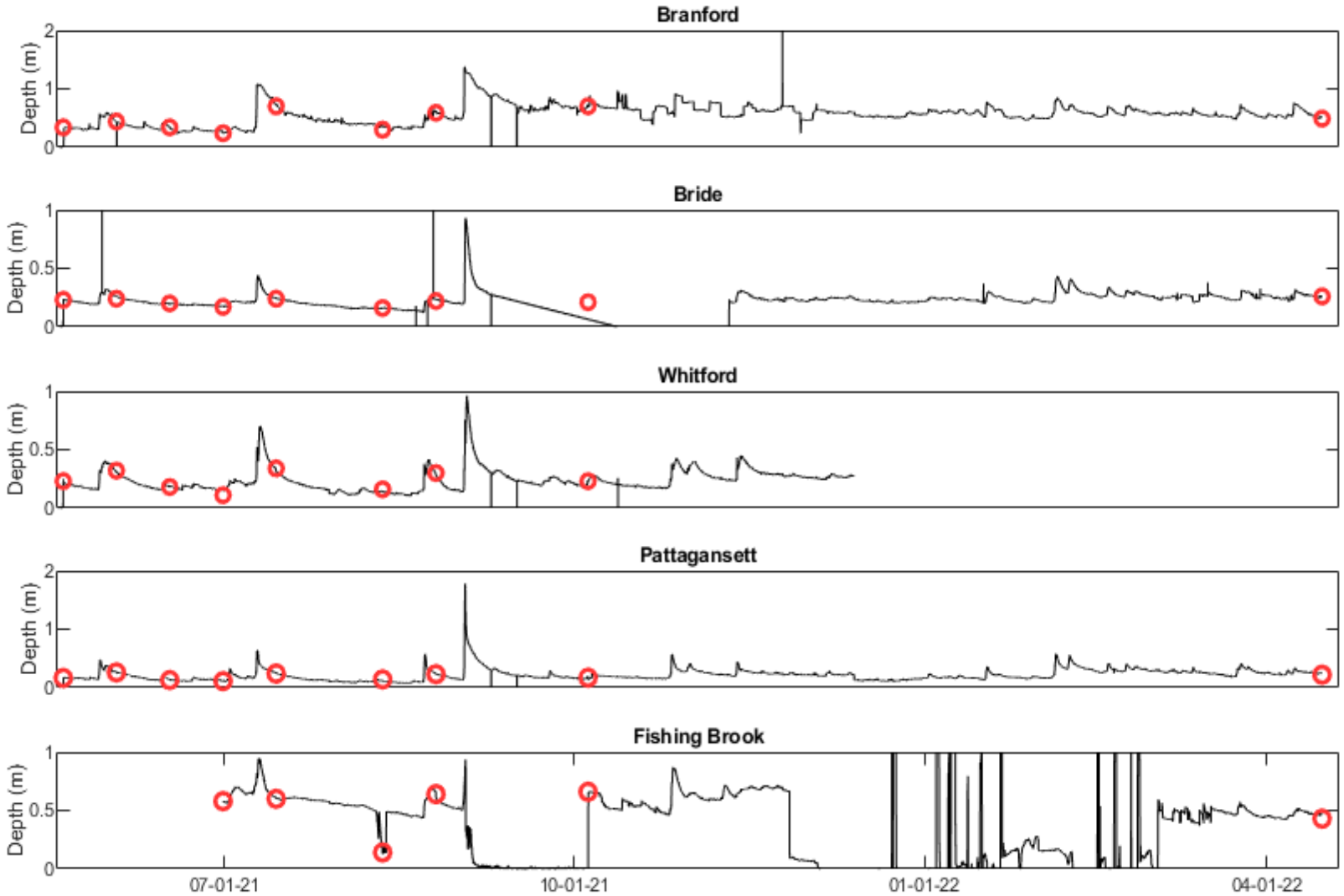
LEDs

IR Lights

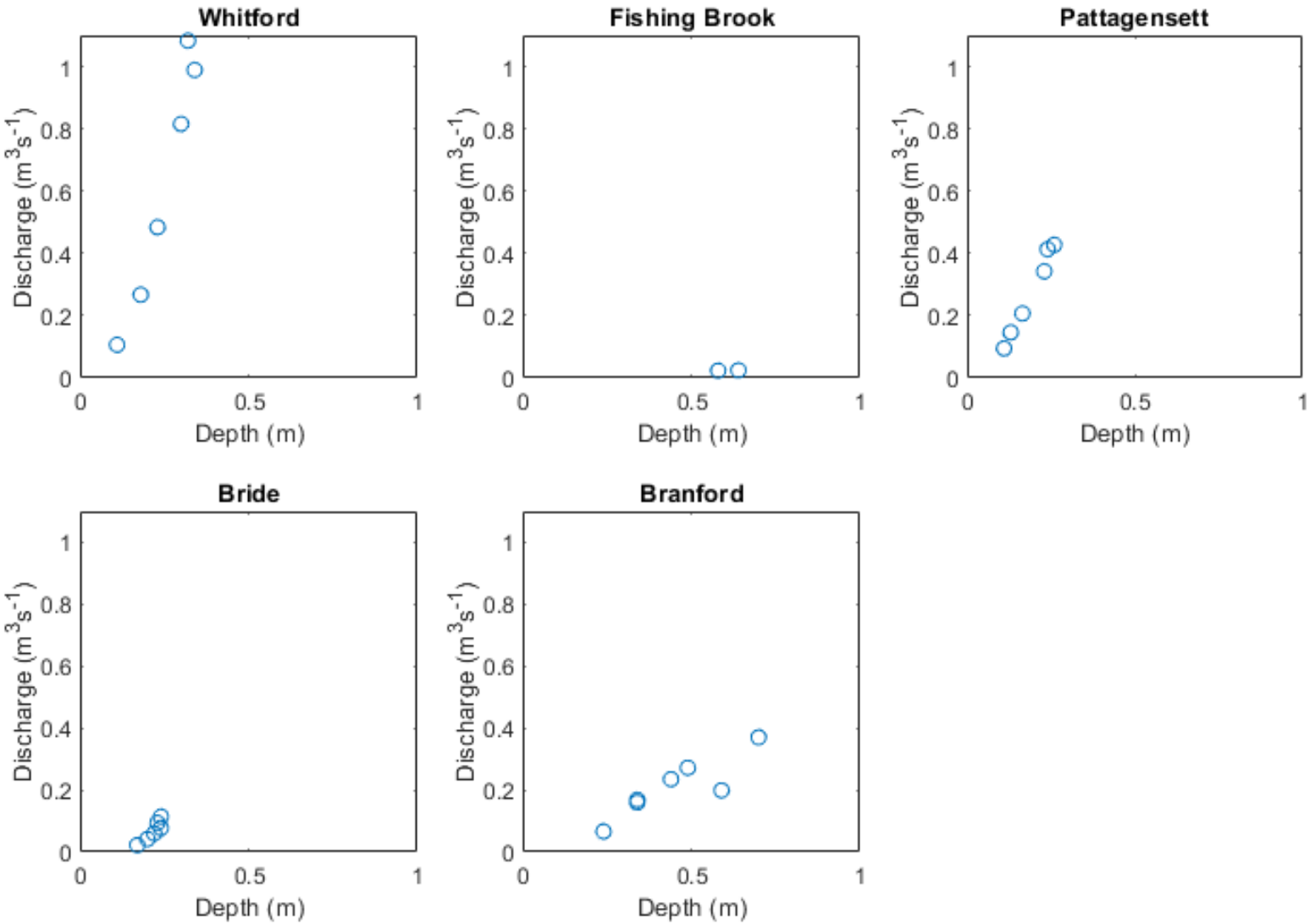
What is the end goal of our project?

- The end result of our study will be an interactive tool that assesses how drought will affect alewife outmigration
- This tool will allow for different rainfall levels to be simulated, and observe how this impacts migration based on the timing data collected throughout the season
- The goal of this tool is to inform those interested in preserving this beautiful fish to consider reduced municipal water use in low flow years
- Eric will speak to you all more about how this tool will work from the hydrological side of things, and the data being collected on that end

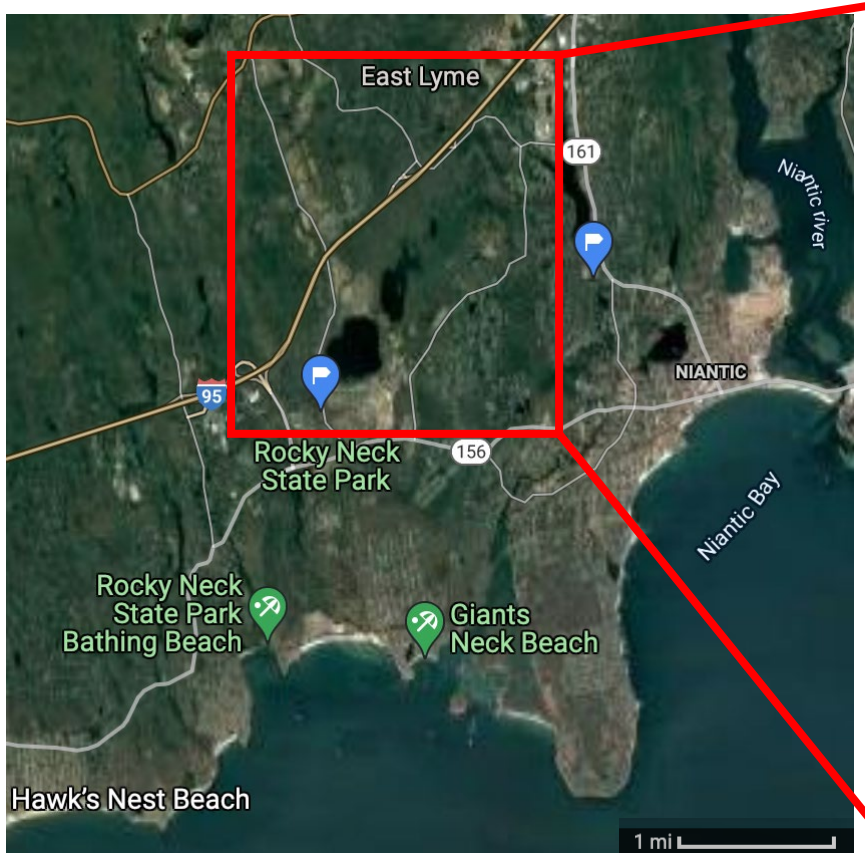
Depth time series for existing sites

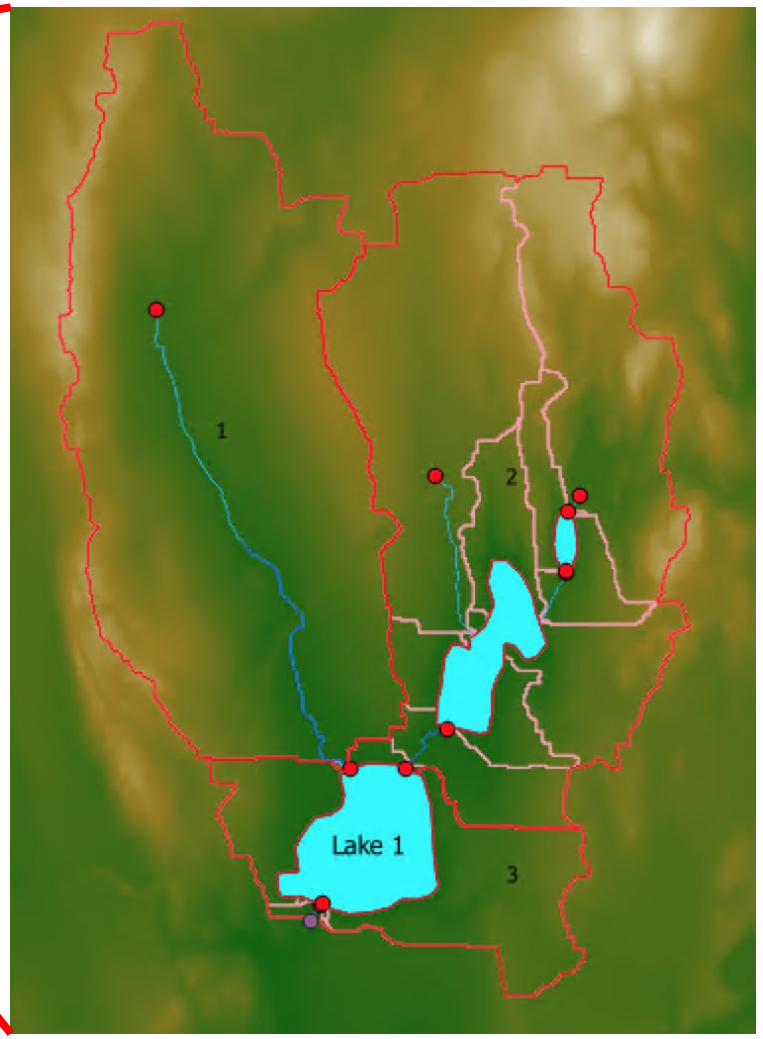


Depth-Discharge rating curves for existing sites



Soil Water Assessment Tool (SWAT) model of Bride Lake Watershed





Legend

- Outlet
- SWAT subbasin

Lakes

- Reservoir
- Pond
- Wetland
- Playa

Channel reaches

- Channel
- Reservoir
- Pond

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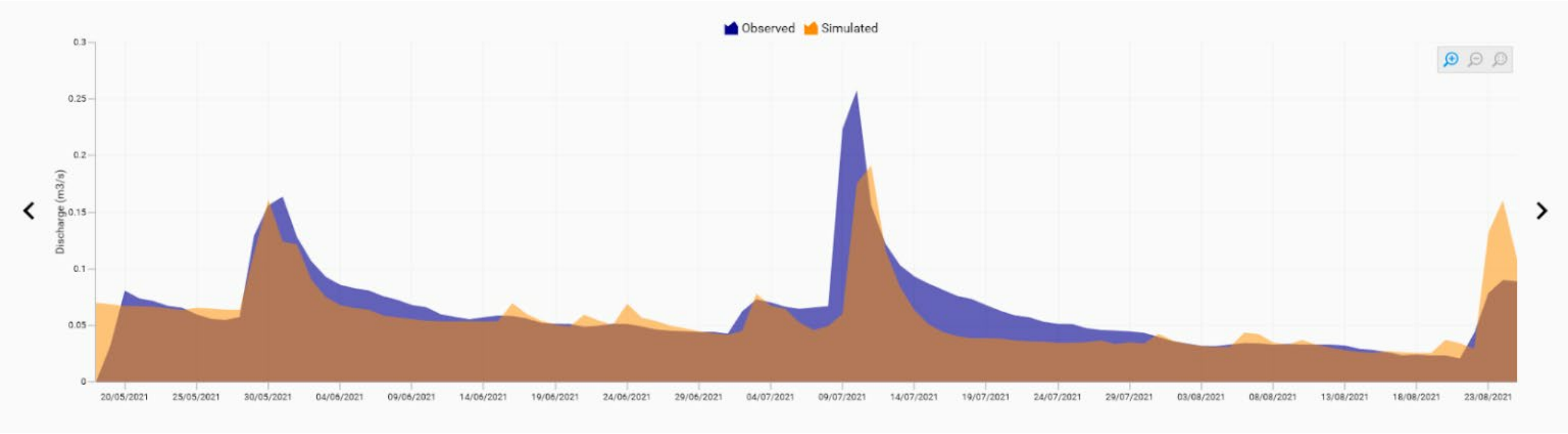
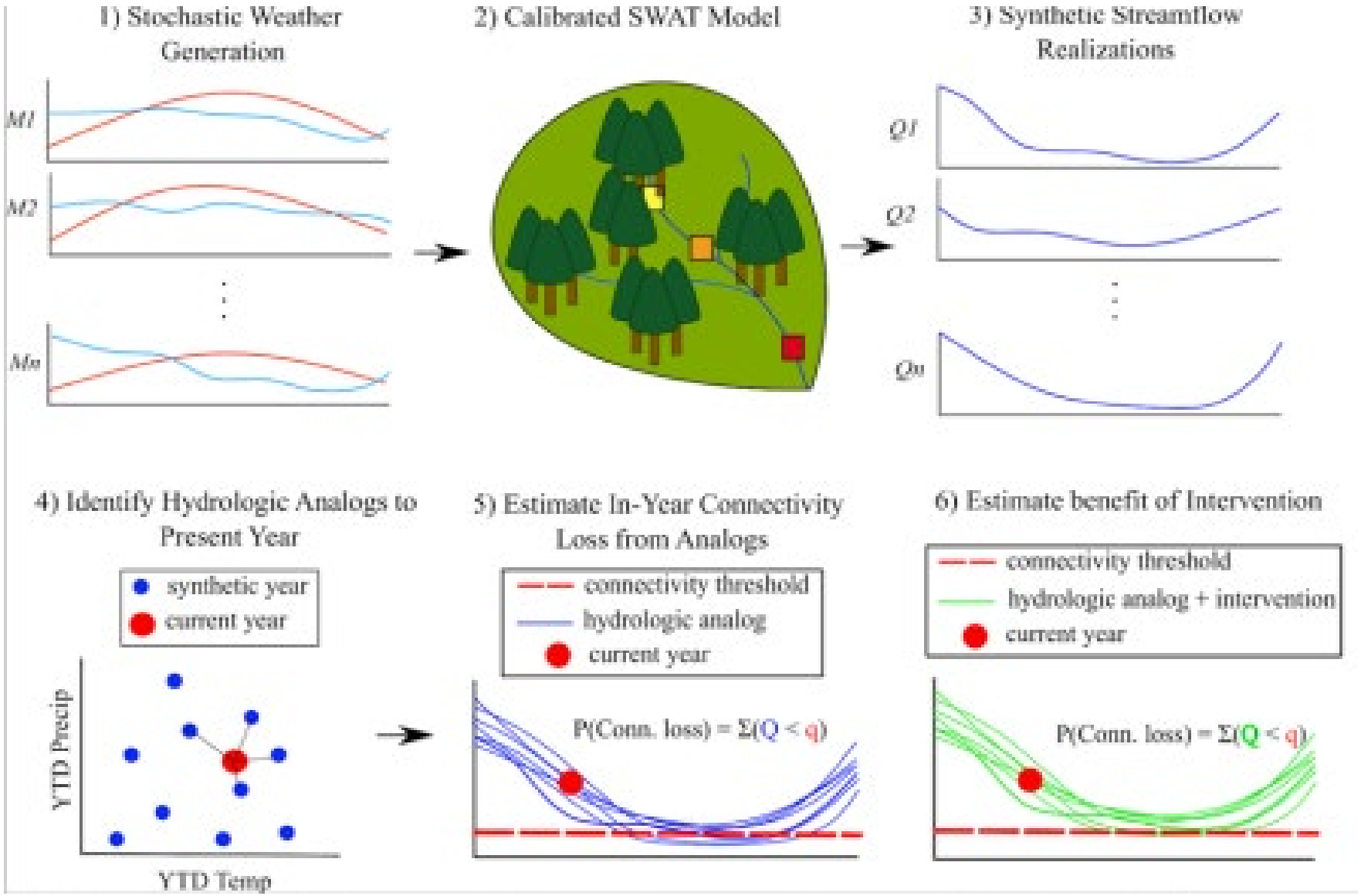


Overview of how we can predict risk of migration loss



Interactive Map Tool (in development)