

The Flavor of the Rifle River

Sites are random but pre-selected by April Simmons (989-220-8688; simmons@michigan.gov), SLHMU Fisheries Biologist. Contact April when a sampling date has been selected.

Survey between June 15th and September 15th but ideally July 15th and August 30th.

Surveys should be conducted in order of fish, macroinvertebrates, and habitat. The fish survey will be conducted by MDNR. TU volunteers should complete datasheets A, B, and C in this order. Note the sampling time required. Six individuals are recommended per survey event to be the most time efficient, though not required.

Collect the following information:

Macroinvertebrate Community

Macroinvertebrate Community (Datasheet A)

Equipment Needed: GPS, thermometer, multiple pencils, write-in-the-rain datasheets, boots/waders, white sorting trays, handheld kick nets (250 mm mesh), forceps/plastic pipettes for picking, jar with alcohol, stopwatch.

1. Determine the three sampling stations (upstream, middle, downstream – avoid pools). April will suggest locations after she visits the site for fish sampling.
2. Two samplers (per station) will use the handheld kick nets to collect macroinvertebrates for 20 minutes.
3. Two identifiers will pick the sample (per station) for 30 minutes. Focus on Midges and EPT species = Mayfly (*Ephemeroptera*), Stonefly (*Plecoptera*), and Caddisfly (*Trichoptera*).
4. Record species and abundance on datasheet A. Species can be placed in jars of alcohol for identification at home (or somewhere more comfy).

Habitat Quality Assessment

Site Information (Datasheet B)

Equipment Needed: Measuring tape, thermometer, measurement stick, GPS, multiple pencils, write-in-the-rain datasheets, boots/waders.

- Calculate the width. Do this by dividing the survey segment into 5 transects and averaging the width at each transect. Indicate if the measurement is in INCHES or FEET.
- Calculate the depth. Do this by locating the run (or riffle if no run is present) and divide the width into 5 points over the run habitat. Measure the depth at each point. Indicate if the measurement is in INCHES or FEET.
- Evaluate the weather conditions by circling the most accurate descriptor on the datasheet and record the time of day. Record the water and air temperature. Water temperature should be taken in the middle of water column and channel.
- Locate and measure the depth of the pool. Record the GPS coordinates of the pool.
- Starting downstream and working your way upstream, visually estimate the percentage of each type of bedform and substrate. Definitions can be found on the datasheet.

Float Method of Estimating Flow (Datasheet C; Figure 1)

Equipment Needed: Measuring tape, thermometer, markers (flagging tape, cones, etc.), stopwatch, GPS, Orange, multiple pencils, write-in-the-rain datasheets, boots/waders.

1. Measure the wetted width (ft)
2. Calculate the average depth of the segment: measure the depth in 1 ft increments across the channel (all depths added up divided by the number of measurements taken = average depth in ft.)
3. Estimate the cross-sectional area (area) of the channel: width x average depth (step 2)
4. Measure 50 feet between the start and finish point and mark with flagging tape or something noticeable so that you are able to do repeatable measurements. I suggest doing this somewhere in the middle of the fish survey segment and marking with a string across the channel.
5. Gently release the orange slightly before the upstream marker and start the timer once the orange has passed the marker. Make sure there aren't any obstacles. Stop the timer when it passes the downstream marker.
6. Repeat two more times. Record time for reach run.
7. Calculate the average float time in seconds.
8. Calculate the average velocity (50 ft [distance of float] divided by average float time [step 7])
9. Calculate stream flow (area x velocity [step 8] divided by 0.85 [correction factor])

The Float Method of Estimating Flow

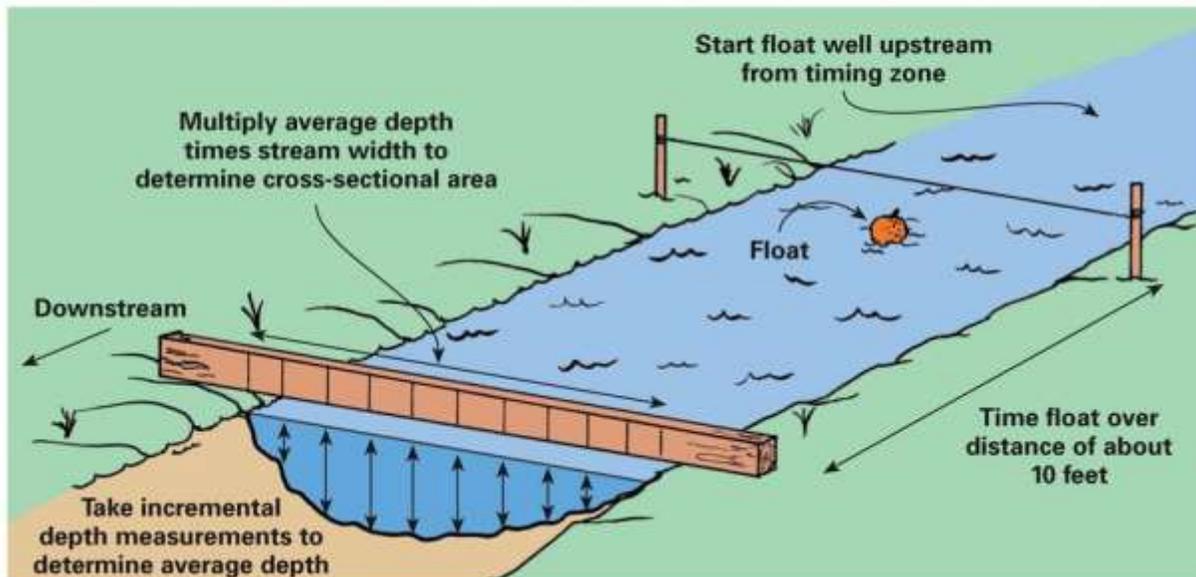


Figure 1. Diagram of the float method. Illustration created by Polarpedia by EDU Arctic.

Glossary

Upstream – the direction the flow is coming from (typically North)

Downstream – the direction the flow is going (typically South)

Segment – the reach between two GPS coordinates; the length of segment is relative to the width of the stream and predetermined by April Simmons (MDNR).

Station – a point within the segment

Wetted Width – the width of the channel where there is currently water

Bankfull Width – this width isn't needed, but it is the width from bank to bank or more formally "the width of the surface of the water at the point where water just begins to overflow into the active flood plain"

Woody – down trees or branches in the water/water's edge

Organic – in this case, organic matter is the same thing as 'leaf litter' or 'muck'

