# Three Lakes Internship 2016

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# Large Woody Debris Project

History: How did the Grass River end up like this?

- Dredging and Sediments
- Boat Traffic

**Construction and Assembling** 

- Purpose: What was this project intended for?
- Transects: Measurements of the river depth
- Structures: Dead Trees such as Tamaracks and Fir trees fastened together
- Anchoring: Duck Bills and Posts









# **Eurasian Water Milfoil**

#### History of Eurasian Water Milfoil

#### Where it came from

- What is it?
- Where did it come from? Asia & Europe
- Subspecies: Native, Hybrid, Eurasian

#### **Conservation Efforts**

- Benthic Barriers, Chemical Treatment, Diver Assisted Suction
- Were they successful?

What Can You Do to Help?

- Clean Your Boat or Let it sit for five days
- Know what you're looking at



Left: Torch Lake Milfoil Samples

#### Right: Alden Harbor Eurasian Milfoil



Left: The plant sample on the left is Native Water Milfoil, note how much more lush the native is than its invasive counterpart.



# The Benthic Barriers

Placement of a Benthic Barrier

![](_page_6_Picture_2.jpeg)

# Quanta Hydrolab

What is the Hydrolab for?

- The Hydrolab is used for monitoring water quality
- Measurements we took consisted of...
- Temperature, pH, Dissolved Oxygen (DO), Standard Plate Count(SpC), and depth.

#### Locations of Testing

- Torch Lake
- Clam Lake
- The Grass River
- Lake Bellaire

Should we continue using this equipment?

• Yes, the Hydrolab has proven to be a very useful and productive tool, within reason, using this every two to three years would be more productive.

![](_page_7_Picture_12.jpeg)

Site Names	DO	рН	SpC	Depth	Тетр
Mouth of Clam River at Torch Lake	8.67	8.19	0.366	1.2 Meters	23.09 C°
South of Dewitt	8.48	8.13	0.399	1 Meter	24.53 C°
North of Dewitt	7.29	7.89	0.403	5 Meters	21.89 C°
Clam Lake at Grass River	8.74	8.12	0.408	1.2 Meters	21.43 C°
Finch Creek at Grass River	8.64	8.12	0.413	0.8 Meters	21.50 C°
Cold Creek at Grass River	8.93	8.07	0.400	0.4 Meters	20.40 C°
Shanty Creek at Grass River	8.88	8.20	0.417	0.3 Meters	21.87 C°
Grass River at Lake Bellaire	7.95	8.17	0.395	0.4 Meters	26.15 C°
Muary Creek at Lake Bellaire	8.30	8.17	0.672	0.1 Meters	20.13 C°
Muary Creek at Culvert	7.96	8.14	0.614	0.1 Meters	20.12 C°

Site Name		Yea	r Te	Temperature (C°)		Depth Metres		Dissolved Oxygen (DO)			рН	Standard Plate Count (spc)
Lake Bellaire @ Grass River Inlet		2014		20.07C°		0.4		9.03		3	8.53	0.343
Lake Bellaire @ Grass I Inlet	River	201	6 2	26.15	C°		0.4		7.9	5	8.17	0.395
Site Names			DO	pН	SpC		Depth			Temp		
Mouth of Clam River at Torch Lake	Site Name Coded L001AE	Common Torch lake o	ffshore of Cla	Time		emp	pH	SpC mS/cr	DO % sat	bDO mg/L	Depth m	
South of Dewitt	R004AA	River Clam River (	@ Butch's	10.1		1-110	0.24	6.351	-	0.34	1.0	
	L002AH	Clam Lake @	CLMP 0501	101	0 2	0.37	7.75	0.355	-		6.4	
North of Dewitt	R005AB	Grass River	outlet @ Clar	n 10:5	16 1	1.41	8.40	0,351		8.92	1-1	
	C007AC	Finch Creek	@ Grass Riv	er (0 *	55 18	(.HJ	8.40	0.356		5 50	0.4	
Clam Lake at Grass River	C006AD C005AB	Cold Creek ( Shanty Cree	@ Grass Rive k @ Grass Ri	iver	21 12	0-03	8.19	0.375		9.45	0.6	
	L003AC	Lake Bellaire	e @ Grass Riv	ver his	52 3	50.0	8.53	0.343		9.03	0.4	
Finch Creek at Grass River	COZONO	Moury Creek	c@ Lake Bell	aire an	21 2	94	0.29			10.61	01	
	C023AA	Maury Creek	c @ Fisherma	in's 13:1	4 19	5.68	8.29	0.580		12-8	.1	
Cold Creek at Grass River	C023AC	Maury Creek	@ old RR gr	rade 13	19 15	5.57	\$.46	C-586		9.42	- 1	
	C023AD	Maury Creek	< @ M-88 inflo	w (3	:30 (1	-20.0	8.49	0.574		A.8.50	- (	
Shanty Creek at Grass River	C023AE	Maury Creek	c @ Pond out	flow (3:	41 1	7.19	5.11			12.93	-1	
	C023AF	Maury Creek	c @ Pond infle	ow 15:	45 1	6.22	8.45	0.010		9.18	01	
Grass River at Lake Bellaire			7.95	8.17	8.17 0.395		0.4 Meters		26.15 C°			
Muary Creek at Lake Benane		0 20	0.47	.47 0.072		U. I WIETE		rs 20.13 C°				
Muary Creek at Culvert		7.96	8.14	0.614	1	0.1 Me	ters		20.12 C°			

# E. coli

#### What is E. Coli?

- E. Coli is a bacteria that lives in the environment, humans, and animals.
- This bacteria, while some strains are harmless, some are harmful.
- Why we test for E. Coli?
- E. Coli can be harmful
- Can be a telltale sign of a septic failure or sewage leak.
- Is testing important?
  - Public Protection
  - Provides Information on water quality

![](_page_10_Picture_10.jpeg)

7/7/2016 ROOHAA 10 X 11 LOOZAC 0 % 7 x 11 C009 AA HZ G 13 22 11 ROOJ AA 3 5a x 3 11 ROOIAB X COZZ AA 1414 X 11 17 3 x ROOSAA 0 ŋ X CODSAA 13 1) 6 COOGRA 12 X 1) 0 23 X COOT AA 11 D

# Fish Shocking

#### Why we do it?

 We fish shock to gain a better understanding of what aquatic life exists in the stream.

#### Species of fish found:

#### Stream Conditions:

- Brook Trout
- Rainbow Trout
- Mottled Sculpin
- Brown Trout

- Cobble
- Pools
- Submerged Wood
- Root Wads

![](_page_12_Picture_13.jpeg)

![](_page_12_Picture_14.jpeg)

# Macroinvertebrate

#### Needed materials for collecting:

- D- Net
- Bucket of water
- Ourselves

![](_page_13_Picture_5.jpeg)

# Needed materials for identifying:

- Dichotomous Key
- Ice cube trays
- Tweezers
- Little strainers

![](_page_13_Picture_11.jpeg)

Stream Macroinvertebrate Datasheet Group 1: Sensitive Stream Name: STREAM QUALITY SCORE Location: Bridge Caddisfly larvae (Trichoptera) 111 EXCEPT Net-spinning caddis Group 1: Date: 8/4/16 Hellgrammites (Megaloptera) 3 # of R's \* 5.0 = 15 Mayfly nymphs (Ephemeroptera) Major Watershed: ERCOL # of C's \* 5.3 =Gilled (right-handed) snails (Gastropoda) Group 1 Total = 15 Stonefly nymphs (Plecoptera) Latitude: 44, 95151 Water penny (Coleoptera) Group 2: Water snipe fly (Diptera) 4 # of R's \* 3.0 = 12 1 # of C's \* 3.2 = 3.2Monitoring Team: Group 2: Somewhat-Sensitive Group 2 Total = 15.2 Alderfly larvae (Megaloptera) Group 3: Beetle adults (Coleoptera) Collector: Racheal 2 # of R's \* 1.1 = 2.2(Coleoptera) Beetle larvae # of C's \* 1.0 = Other Team Members: (Diptera) Black fly larvae Group 3 Total = 2,2 Clams (Pelecypoda) Crane fly larvae (Diptera) Total Stream Quality Score = 32,4 Cravfish (Decapoda) (Sum of totals for groups 1-3; round to Stream Conditions: Damselfly nymphs (Odonata) nearest whole number) Dragonfly nymphs (Odonata) Is the substrate covered with excessive silt? X No Net-spinning caddisfly larvae Check one: (Hydropsychidae: Trichoptera) (>48) Excellent IDD+ Scuds (Amphipoda) (34 - 48)Good Sowbugs (Isopoda) Fair (19-33)Poor (<19) Group 3: Tolerant Aquatic worms (Oligochaeta) X Riffles Stream Margins Leeches (Hirudinea) Leaf Packs X Cobbles Midge larvae (Diptera) Aquatic Plants Pools K Runs Pouch snails (Gastropoda) (Hemiptera) (water striders) 10 True bugs Other true flies (Diptera) Collection Finish Time: 153 (AM/PM) Identifications made by: Interns

#### Maury Creek (Circle one: Upstream or Downstream of road?) Collection Start Time: 7:30 (AM/PM) HUC Code (if known):\_ Longitude: 85, 20174 Name of Person Completing Datasheet: 211 Average Water Depth: Yes (describe:\_\_\_\_ Substrate Embeddedness in Riffles: X 0-25% 25-50% > 50% Unsure Did you observe any fish or wildlife? () Yes () No If so, please describe:\_\_\_\_ Macroinvertebrate Collection: Check the habitats that were sampled. Include as many as possible. Submerged Wood Other (describe: Undercut banks/Overhanging Vegetation Did you see, but not collect, any **live crayfish**? (\_\_\_Yes X\_\_No), or **large clams**? (\_\_\_Yes Y\_No) \*remember to include them in the assessment on the other side!\*

# The Fair!

#### Antrim County Fair

- Public Outreach
- Plane Rides

![](_page_15_Picture_4.jpeg)

![](_page_16_Picture_0.jpeg)

![](_page_16_Picture_1.jpeg)

![](_page_16_Picture_2.jpeg)

# Recommendations

- Massive Intern Dinner
- Use of the Quanta Hydrolab should consist of Bi or Tri annual usage
- Benthic Barriers, good start, but process needs to be refined.

### A huge thanks to all outside aid and assistance!

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Norton Bretz

Thanks to any others not listed!