STREAM HABITAT ASSESSMENT

Michigan Clean Water Corps

Volunteer Stream Monitoring Program
Michigan Streams Ours to Protect.

I. Stream, Team, Location Information

Site ID:_____ Date:_____ Time:_____

Site Name:_____ Lat/Long _____

Names of Team members:_____

II. Stream and Riparian Habitat

A. General Information *Circle one or more answers as appropriate*						Notes and Observations: Give further explanation when needed.
1 Average Stream Width (ft)	< 10	10-25	25-50	>50		
2 Average Stream Depth (ft)	<1	1-3	>3	>5		
3 Has this stream been channelized? (Stream shape constrained through human activity- look for signs of dredging, armored banks, straightened channels)	Yes, currently	Yes, sometime in the past	No	Don't know		
4 Estimate of current stream flow	Dry or Intermittent	Stagnant	Low	Medium	High	
5 Highest water mark (in feet above the current level)	<1	1-3	3-5	5-10	>10	
6 Which of these habitat types are present? **Select all that apply**	Riffles	Pools	Large woody debris	Large rocks	Undercut bank	
	Overhanging vegetation	Rooted Aquatic Plants	Other:	Other:	Other:	
7 Estimate of turbidity	Clear	Slightly Turbid (can partially see to bottom)		Turbid (cannot see to bottom)		
8 Is there a sheen or oil slick visible on the surface of the water?	No	Yes				
9 If yes to #8, does the sheen break up into pieceswhen poked with a stick?	Yes (sheen is most likely natural)		No (sheen could be artifical)			
10 Is there foam present on the surface of the water?	No	Yes				
11 Does the foam smell soapy and look white and pillow like or look gritty with dirt mixed in?	Soapy (foam could be artifical)		Gritty (foam is most likely natural)			
The following are optional measurements not currently funded by MiCorps						
8 Water Temperature						
9 Dissolved Oxygen						
10 pH						
11 Water Velocity						

MiCorps Site ID#:_____   Date:_____

II. Stream and Riparian Habitat (continued)

B. Streambed Substrate		
Estimate percent of stream bed composed of the following substrate. Leave blank if group will take transects and pebble counts (in Section IV).		
Substrate type	*Size*	*Percentage*
Boulder	>10" diameter	
Cobble	2.5 - 10" diameter	
Gravel	0.1 - 2.5" diameter	
Sand	coarse grain	
Silt/Detritus/Muck	fine grain/organic matter	
Hardpan/Bedrock	solid clay/rock surface	
Artificial	man-made	
Other (specify)		
Can't see		

You may wish to take photos of unstable or eroded banks for your records. Record date and location.

Comments:

C. Bank stability and erosion.			
Summarize the extent of erosion along <u>each bank separately</u> on a scale of 1 through 10, by circling a value below. Left/right banks are identified by looking downstream.			
Excellent	Good	Marginal	Poor
Banks Stable. No evidence of erosion or bank failure. Little potential for problems during floods. < 5% of bank affected.	Moderately stable. Small areas of erosion. Slight potential for problems in extreme floods. 5-30% of bank in reach has areas of erosion.	Moderately unstable. Erosional areas occur frequently and are somewhat large. High erosion potential during floods. 30-60% of banks in reach are eroded.	Unstable. Many eroded areas. > 60% banks eroded. Raw areas frequent along straight sections and bends. Bank sloughing obvious.
LEFT BANK 10 - 9 **10** **9**	LEFT BANK 8 - 7 - 6 **8** **7** **6**	LEFT BANK 5 - 4 - 3 **5** **4** **3**	LEFT BANK 2 - 1 - 0 **2** **1** **0**
RIGHT BANK 10 - 9 **10** **9**	RIGHT BANK 8 - 7 - 6 **8** **7** **6**	RIGHT BANK 5 - 4 - 3 **5** **4** **3**	RIGHT BANK 2 - 1 - 0 **2** **1** **0**

II. Stream and Riparian Habitat (continued)

D. Plant Community

What percentage of the stream is covered by overhanging vegetation/tree canopy?

<10%   10-50%   50-90%   >90%

Using the given scale, estimate the relative abundance of the following:

Plants in the stream:		Plants on the bank/riparian zone:	
Algae on Surfaces of Rocks or Plants, or floating	Filamentous Algae (Streamers)	Shrubs	Trees
Macrophytes (Standing Plants)	**0= Absent 1= Rare 2= Common 3= Abundant**	Herbaceous plants	**0= Absent 1= Rare 2= Common 3= Abundant**
Identified species (optional)		Identified species (optional)	

E. Riparian Zone

The riparian zone is the vegetated area that surrounds the stream. Right/Left banks are identified by looking downstream.

1. Left Bank
Check the boxes for those land-use types that you can see from this stream reach.
Wetlands   Forest   Mowed Grass   Park   Shrubby/Grassy Field   Agriculture
Construction   Commercial   Industrial   Highways   Golf Course   Other_____

2. Right Bank
Check the boxes for those land-use types that you can see from this stream reach.
Wetlands   Forest   Mowed Grass   Park   Shrubby/Grassy Field   Agriculture
Construction   Commercial   Industrial   Highways   Golf Course   Other_____

3. Summarize the size and quality of the riparian zone along each bank separately on a scale of 1 through 10, by circling a value below.

Excellent	Good	Marginal	Poor
Width of riparian zone >150 feet, dominated by vegetation, including trees, understory shrubs, or non-woody macrophytes or wetlands; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	Width of riparian zone 75-150 feet; human activities have impacted zone only minimally.	Width of riparian zone 10-75 feet; human activities have impacted zone a great deal.	Width of riparian zone ,10 feet; little or no riparian vegetation due to human activities.
LEFT BANK 10 - 9 10 9	LEFT BANK 8 - 7 - 6 8 7 6	LEFT BANK 5 - 4 - 3 5 4 3	LEFT BANK 2 - 1 - 0 2 1 0
RIGHT BANK 10 - 9 10 9	RIGHT BANK 8 - 7 - 6 8 7 6	RIGHT BANK 5 - 4 - 3 5 4 3	RIGHT BANK 2 - 1 - 0 2 - 1 0

MiCorps Site ID#:_____   Date:_____

III. Sources of Degradation

1. Does a team need to come out and collect trash?

2. Based on **what you can see** from this location, what are potential causes and level of severity of any degradation at this stream?

(Severity: S – slight; M – moderate; H – high) (Indicate all that apply)							
Crop Related Sources	S	M	H	Land Disposal	S	M	H
Grazing Related Sources	S	M	H	On-site Wastewater Systems	S	M	H
Intensive Animal Feeding Operations	S	M	H	Silviculture (Forestry)	S	M	H
Highway/Road/Bridge Maintenance and Runoff	S	M	H	Resource Extraction (Mining)	S	M	H
Channelization	S	M	H	Recreational/Tourism Activities (general)	S	M	H
Dredging	S	M	H	• Golf Courses	S	M	H
Removal of Riparian Vegetation	S	M	H	• Marinas/Recreational Boating (water releases)	S	M	H
Bank and Shoreline Erosion/ Modification/Destruction	S	M	H	• Marinas/Recreational Boating (bank or shoreline erosion)	S	M	H
Flow Regulation/ Modification (Hydrology)	S	M	H	Debris in Water	S	M	H
Invasive Species	S	M	H	Industrial Point Source	S	M	H
Construction: Highway, Road, Bridge, Culvert	S	M	H	Municipal Point Source	S	M	H
Construction: Land Development	S	M	H	Natural Sources	S	M	H
Urban Runoff	S	M	H	Source(s) Unknown	S	M	H

Additional comments:

Michigan Clean Water Corps

MiCorps Site ID#:_____

Michigan Clean Water Corps

Stream Macroinvertebrate Datasheet

Site Name: _____

Date:_____ Collection Start Time:_____(AM/PM)

Major Watershed:_____ HUC Code (if known):_____

Latitude:_____ Longitude:_____

Names of Team members: _____

Stream Conditions:

Average water depth:_____feet

Notable weather conditions of the last week:_____

Are there any current site conditions that may impede normal macroinvertebrate sampling? (weather, flooding, poor visibility, etc?)

Habitat Types: Check the habitats that were sampled. Include as many as possible.

____Riffles   ____Backwater areas   ____Submerged Wood
____Rocks   ____Leaf Packs
____Aquatic Plants   ____Pools
____Runs   ____Undercut banks/Overhanging Vegetation

Did you see any crayfish? #:_____, Clams/mussels? #_____
        remember to include them in the assessment on the other side!

Do not take crayfish, fish, clams, and mussels from the water.

Collection Finish Time: _____(AM/PM) Picking Finish Time:_____(AM/PM)

Identifications made/supervised by:_____

Rate your confidence in these identifications: Quite confident   Not very confident
                                              5   4   3   2   1

Order Level Identification

MiCorps Site ID#:_____

IDENTIFICATION AND ASSESSMENT

*** Do NOT count empty shells, pupae, or terrestrial macroinvertebrates***
Taxa are listed from most pollution sensitive to most pollution tolerant

Count	Common Name	Scientific Taxa	Sensitivity Rating (0-10)	Count x Sensitivity
	Hellgrammite (Dobsonfly)	Megaloptera, Corydalidae	0.0	
	Clubtail Dragonfly	Odonata, Gomphidae	1.0	
	Stonefly	Plecoptera	1.6	
	Sensitive True Fly (water snipe fly,net-winged midge, dixid midge)	Athericidae, Blephariceridae, Dixidae,	1.9	
	Caddisfly	Trichoptera	2.6	
	Mayfly	Ephemeroptera	3.0	
	Dragonfly	Odonata	3.4	
	Alderfly	Megaloptera, Sialidae	4.0	
	Beetle	Coleoptera	4.4	
	Common net-spinning caddisfly	Hydropsychidae, Trichoptera	4.5	
	True Bug	Hemiptera	5.5	
	Somewhat Sensitive True Fly	Dipterans (those not listed elsewhere)	5.9	
	Scud	Amphipoda	6.0	
	Crayfish	Decapoda	6.0	
	Damselfly	Odonata	6.2	
	Bivalve/Snail	Pelecypoda, Gastropoda	7.1	
	Sowbug	Isopoda	8.0	
	Tolerant True Fly (mosquito, rat-tailed maggot, soldier fly)	Culicidae, Syrphidae, Stratiomyidae	8.5	
	Leech	Hirudinae	10.0	
	Aquatic Worm	Oligochaeta	10.0	

First: If your total abundance is Less than 30 → Automatically give it a WQR of 10 (Very Poor rating)
Less than 60 → Automatically give it a WQR of 7 (Poor rating)

Water Quality Rating		Degree of Organic Pollution
0.0-3.50	excellent	Pollution unlikely
3.51-4.50	very good	Slight pollution possible
4.51-5.50	good	Some pollution possible
5.51-6.50	fair	Fairly substantial pollution likely
6.51-7.50	fairly poor	Substantial pollution likely
7.51-8.50	poor	Very substantial pollution likely
8.51-10.0	very poor	Severe pollution likely

Water Quality Rating =

Sum of (Count x Sensitivity) Divided By Total Abundance

= _____

	Total Abundance

	Sum of (Count x Sensitivity):	

FAMILY LEVEL IDENTIFICATION AND ASSESSMENT

Instructions: If you choose to identify macroinvertebrates at the family level, fill out the front page of the order-level Macroinvertebrate datasheet with the location and sample information, don't fill out the back with the simpler identification scheme, and then staple this to it. The Water Quality Rating score can be calculated in a similar manner as in the simpler identification, though due to improved resolution of identification, you will see improved accuracy in assessing the water quality.

Count	Name	Sensitivity Rating	Count x Sensitivity

ANNELIDA-Segmented Worms

Count	Name	Sensitivity Rating	Count x Sensitivity
	Hirudinea	10	
	Oligochaeta	10	

COLEOPTERA- Beetles

Count	Name	Sensitivity Rating	Count x Sensitivity
	Curculionidae	5	
	Dryopidae	5	
	Dytiscidae	5	
	Elmidae	4	
	Gyrinidae	5	
	Haliplidae	5	
	Hydrophilidae	5	
	Lampyridae		
	Noteridae		
	Psephenidae	4	
	Ptilodactylidae	3	
	Scirtidae	5	
	Staphylinidae	8	

DIPTERA- True Flies

Count	Name	Sensitivity Rating	Count x Sensitivity
	Athericidae	2	
	Blephariceridae	0	
	Ceratopogonidae	6	
	Chaoboridae	8	
	Chironomidae	6	
	Culicidae	8	
	Dixidae	1	
	Dolichopodidae	4	
	Empididae	6	
	Ephydridae	6	
	Muscidae	6	
	Psychodidae	8	
	Ptychopteridae	9	
	Sciomyzidae	6	
	Simuliidae	6	
	Stratiomyidae	8	
	Syrphidae	10	
	Tabanidae	6	
	Tipulidae	4	

CRUSTACEA- Crustaceans

Count	Name	Sensitivity Rating	Count x Sensitivity
	Amphipoda	6	
	Decapoda	6	
	Isopoda	8	

EPHEMEROPTERA- Mayflies

Count	Name	Sensitivity Rating	Count x Sensitivity
	Ameletidae	0	
	Ametropodidae		
	Anthropleidae		
	Baetidae	4	
	Baetiscidae	3	
	Caenidae	7	
	Ephemerellidae	1	
	Ephemeridae	4	
	Heptageniidae	4	
	Isonychiidae	2	
	Leptohyphidae	3	
	Leptoplebiidae	2	
	Metretopodidae	2	
	Neoephemeridae		
	Polymitarcyidae	2	
	Potamanthidae	4	
	Pseudironidae		
	Siphlonuridae	7	

GASTROPODA- Snails, Limpets

Count	Name	Sensitivity Rating	Count x Sensitivity
	Ancylidae	6	
	Bithyniidae	8	
	Hydrobiidae	6	
	Lymnaeidae	6	
	Physidae	8	
	Planorbidae	7	
	Pleuroceridae	6	
	Pomatiopsidae		
	Valvatidae	6	
	Viviparidae	6	
	Unidentified Snail	6.5	

Count	Name	Sensitivity Rating (0-10)	Count x Sensitivity

HEMIPTERA- True Bugs

Count	Name	Sensitivity Rating (0-10)	Count x Sensitivity
	Belostomatidae	10	
	Corixidae	5	
	Gelastocoridae		
	Gerridae	5	
	Hydrometridae		
	Mesoveliidae		
	Naucoridae	5	
	Nepidae	8	
	Notonectidae		
	Pleidae		
	Saldidae	10	
	Veliidae	6	

LEPIDOPTERA- Moths and Butterflies

Count	Name	Sensitivity Rating (0-10)	Count x Sensitivity
	Cosmopterigidiae		
	Nepticulidae	5	
	Noctuidae		
	Pyralidae	5	
	Tortricidae		

MEGALOPTERA

Count	Name	Sensitivity Rating (0-10)	Count x Sensitivity
	Corydalidae	0	
	Sialidae	4	

ODONATA- Damselflies, Dragonflies

Count	Name	Sensitivity Rating (0-10)	Count x Sensitivity
	Aeshnidae	3	
	Calopterygidae	5	
	Coenagrionidae	9	
	Cordulidae	2	
	Cordulegastridae	3	
	Gomphidae	1	
	Lestidae	9	
	Libellulidae	9	
	Macromiidae	3	

PELECYPODA-bivalves

Count	Name	Sensitivity Rating (0-10)	Count x Sensitivity
	Corbiculidae	6	
	Dreissenidae	8	
	Sphaeriidae (aka Pisidiidae)	8	
	Unionidae	6	

Note: MiCorps was not able to locate a tolerance value of every taxa listed here; in those cases, it was left blank. If you can aid our research with tolerance values, please email psteen@hrwc.org . If you find taxa with a missing tolerance value during your identification, record their Count but leave their "Count x Sensitivity" column blank and don't add the count into the Total Abundance, essentially leaving them out of the Water Quality Rating score.

PLECOPTERA- Stoneflies

Count	Name	Sensitivity Rating (0-10)	Count x Sensitivity
	Capniidae	1	
	Chloroperlidae	1	
	Leuctridae	0	
	Nemouridae	2	
	Perlidae	1	
	Perlodidae	2	
	Pteronarcyidae	0	
	Taeniopterygidae	2	

TRICHOPTERA- Caddisflies

Count	Name	Sensitivity Rating (0-10)	Count x Sensitivity
	Apataniidae	3	
	Brachycentridae	1	
	Dipseudopsidae	5	
	Glossosomatidae	1	
	Goeridae	3	
	Helicopsychidae	3	
	Hydropsychidae	4.5	
	Hydroptilidae	4	
	Lepidostomatidae	3	
	Leptoceridae	4	
	Limnephilidae	4	
	Molannidae	6	
	Odontoceridae	0	
	Philopotamidae	3	
	Phryganeidae	4	
	Polycentropodidae	6	
	Psychomyiidae	2	
	Rhyacophilidae	0	
	Sericostomatidae	3	
	Uenoidae	3	

OTHER GROUPS

Count	Name	Sensitivity Rating (0-10)	Count x Sensitivity
	HYDRACARINA Water mites	6	
	COLLEMBOLA springtails	5	
	PLATYHELMINTHES- Turbellaria/Flatworms	4	

WATER QUALITY RATING

	←Add up the Count columns on both sides (Total Abundance) Add up the "Count x Sensitivity" column for both sides →	

First: If your total abundance is Less than 30 → Automatically give it a WQR of 10 (Very Poor rating).

Less than 60 → Automatically give it a WQR of 7 (Poor rating)

Water Quality Rating =

Sum of (Count x Sensitivity)
Divided By
Total Abundance

=

MiCorps Site ID#:_____   Date:_____

Michigan Clean Water Corps

STREAM TRANSECT DATASHEET

B: Boulder -- more than 10"   F: Fines: Silt/Detritus/Muck
C: Cobble -- 2.5 - 10"   H: Hardpan/Bedrock   T= Reading on tape
G: Gravel – 0.1 – 2.5"   A: Artificial   D = Depth
S: Sand -- fine particles, gritty   O: Other (specify)   S = Substrate

	EXAMPLE			Transect #			Transect #			Transect#		
Stream Width	13.3 feet											
	T	D	S	T	D	S	T	D	S	T	D	S
Beginning Water's Edge:	1.5											
1	2.5	0.4	G									
2	3.5	0.4	G									
3	4.5	0.4	G									
4	5.5	0.2	C									
5	6.5	0	S									
6	7.5	0.6	S									
7	8.5	0.7	G									
8	9.5	0.7	G									
9	10.5	0.6	C									
10	11.5	0.7	B									
11	12.5	0.4	G									
12	13.5	0.3	F									
13	14.5	0.2	F									
14												
15												
16												
17												
18												
19												
Ending Water's Edge	14.8											

Bank Side	L	R		L	R		L	R		L	R	
Bank Height	1.7 feet	0.5 feet										
Does the bank have an undercut?	N	Y										
If so, how wide is it?		1 ft										
Bank Angles: Sketch	└	⟍										

Sketch examples:

Undercut   Obtuse   Right
(Acute)

IV. Optional quantitative measurements

A. Transects and Pebble Counts

To take quantitative stream habitat measurements, conduct 10 transects of your stream reach. Required equipment: tape measure long enough to stretch across the stream, and graduated rod or stick to measure water depth. Data sheet is on the next page.

Directions:
1) Determine stream width.
2) Use the rod to measure depth (D) and substrate (S) at more than 10 but less than 20 regular intervals along the entire transect. (For streams less than 10 feet wide, measure every ½ foot, for streams about 10 feet wide, measure every foot, etc.)
3) At every depth measurement, identify the single piece of substrate that the rod lands on. If it is a mix of substrates, randomly pick one of them, and the next time you find a similar grouping, pick the other(s).
4). For every measurement, enter the reading on the tape measure, the depth, and the substrate on the data sheet on the next page.

Data use: The depth and tape measure reading can be used to produce stream cross-section profiles. The pebble count can be used to give a more accurate percentage breakdown of the stream substrate than simply making an eyeball estimate (see Section II-B).

B. Bank Height

Vertical banks higher than 3 feet are usually unstable, while banks less than 1 foot, especially with overhang, provide good habitat for fish. While doing the transects, measure bank heights and record the angle of the bank (right, acute, or obtuse) as indicated on the data sheet. Left/right banks are identified by looking downstream.

Data use: Calculate the percentage of banks with right, obtuse, and acute angles. Right angles indicate higher erosive potential, while acute angles improve the habitat structure of a stream.

V. Final Check

This data sheet was checked for completeness by: _____

Name of person who entered data into data exchange: _____

Date of data entry:_____

VI. Credits

This habitat assessment was created for the MiCorps Volunteer Stream Monitoring Program from a combination of habitat assessments from the Huron River Watershed Council, the Friends of the Rouge River, and the Michigan Department of Environmental Quality. Version 1.0, June 2009. Version 2.0, November 2020.