

Benthic Macroinvertebrate Field Data Sheet (front)

Station ID: _____ Ecoregion: _____ Land Use: _____
 Field Team: _____ Survey Reason: _____ Start Time: ____:____
 Stream Name: _____ Location: _____ Finish Time: ____:____

Date: ____/____/____ Latitude: _____ Longitude: _____

Stream Physicochemical Measurements

Instrument ID number: _____ pH: _____ Average Width (m) _____
 Temperature: _____ °C Conductivity: _____ uS/cm Reach Length (m) _____
 Dissolved Oxygen: _____ mg/l Did instrument pass all post-calibration checks? Y / N
 If NO - which parameter(s) failed and action taken: _____ **40x avg. width, 150m min., 800m max. Transfer number to Fall Habitat Sheet**

Benthic Macroinvertebrate Collection

Method used (circle one) Single Habitat (Riffle) Multi Habitat (Logs, plants, etc)
 Riffle Quality (circle one) Good Marginal Poor None Perservative: _____
 Habitats sampled (circle one) Riffle Snags Banks Vegetation
 # jabs Area Sampled (sq. m.): _____

Weather Observations

Current Weather (circle one) Cloudy Clear Rain/Snow Foggy
 Recent precipitation (circle one) Clear Showers Rain Storms Other _____
 Stream flow (circle one) Low Normal Above Normal Flood

Biological Observations

0 1 2 3	Periphyton	0 1 2 3	Salamanders	0 1 2 3	Other....
0 1 2 3	Filamentous algae	0 1 2 3	Warmwater Fish	0 1 2 3	
0 1 2 3	Submerged Macrophytes	0 1 2 3	Coldwater Fish	0 = Absent	
0 1 2 3	Emergent Macrophytes	0 1 2 3	Beavers	1 = Sparse	
0 1 2 3	Crayfish	0 1 2 3	Muskrats	2 = Common to Abundant	
0 1 2 3	Corbicula	0 1 2 3	Ducks/Geese	3 = Dominant -	
0 1 2 3	Unionidae	0 1 2 3	Snakes	abnormally high density where other taxa are insignificant in relation to the dominant taxa. There can be situations where multiple taxa are dominant such as algae and snails.	
0 1 2 3	Operculate Snails	0 1 2 3	Turtles		
0 1 2 3	Non-operculate Snails	0 1 2 3	Frogs/Tadpoles		

NOTES:

HighGradient Habitat Data Sheet

	Optimal	Suboptimal	Marginal	Poor
1. Epifaunal Substrate/Available Cover	Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e. logs/snags that are not new fall and not transient).r	40-70% mis of stable habitat; well suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of new fall, but not yet prepared for colonization (may rate at high end of scale).	20-40% mix of stable habitat; habitat availability less than desirable; sbstrate frequently disturbed or removed.r	Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
2. Embeddedness	Optimal Gravel, cobble, and boulder particles are 0-25% surrounded by fine sediment. Layering of cobble provides diversity of niche space.	Suboptimal Gravel, cobble, and boulder particles are 25-50% surrounded by fine sediment.	Marginal Gravel, cobble, and boulder particles are 50-75% surrounded by fine sediment.	Poor Gravel, cobble, and boulder particles are more than 75% surrounded by fine sediment.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
3. Velocity/Depth Regime	Optimal CoverAll four velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast-shallow). Slow is <0.3 m/s, deep is >0.5 m/s.	Suboptimal Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes).	Marginal Only 2 of the 4 habitat regimes present (if fast-shallow or slow-shallow are missing, score low).	Poor Dominated by 1 veolcity/depth regime (usually slow-deep).
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
4. Sediment Deposition	Optimal Little or no enlargement of islands or point bars and less than 5% (<20% for low-gradient streams) of the bottom affected by sediment deposition.	Suboptimal Some new increase in bar formation, mostly from gravel, sand or fine sediment. 5-30% (20-50% for low-gradient) of the bottom affected; slight deposition in pools.	Marginal Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% (50-80% for low-gradient) of	Poor Heavy deposits of fine material, increased bar development; more than 50% (80% for low-gradient) of the bottom changing frequently; pools almost absent.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

5. Channel Flow Status: Optimal Water reaches base of both lower banks, and minimal amount of channel substrate is exposed. Suboptimal Water fills >75% of the available channel; or 25% of channel substrate is exposed. Marginal Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed. Poor Very little water in channel and mostly present as standing pools

SCORE 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0

6. Channel Alteration Optimal Channelization or dredging absent or minimal; stream with normal patter. Suboptimal Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr.) may be present, but recent channelization is not present. Marginal Channelization may be extensive; embankments or shoring structures present on both banks; and 40 - 80% of stream reach channelized and disrupted. Poor Banks shored with gabion or cement over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.

SCORE 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0

7. Frequency of Riffles (or bends) Optimal Occurrence of riffles relatively frequent ratio of distance btw. riffled divided by width of the stream <7:1 *generally 5 to 7); variety of habitats if key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important. Suboptimal Occurrence of riffles infrequent; distance btw. riffles divided by the width of the stream is btw. 7 to 15. Marginal Occasional riffle or bend; bottom contours provide saome habitat; distance btw. riffles divided by the width of the stream is btw. 15 to 25. Poor Generally all flat water or shallow riffles; poor habitat; distance btw. riffles divided by the width of the stream is a ration of >25%.

SCORE 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0

8. Bank Stability (score each bank) Optimal Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. < 5% of bank affected. Suboptimal Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion. Marginal Moderately unstable, 30-60% of bank in reach has areas of erosion; high erosion potential during floods. Poor Unstable; many eroded areas "raw" areas

SCORE LB 10 9 8 7 6 5 4 3 2 1 0

SCORE RB 10 9 8 7 6 5 4 3 2 1 0

9. Vegetative Protection (score each bank) Optimal More than 90% of the stream bank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or non-woody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally. Suboptimal 70-90% of stream bank surfaces covered by native vegetation, bnut one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining. Marginal 50-70% of the stream bank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining. Poor Less than 50% of the stream bank surfaces covered by vegetation; disruption of stream bank vegetation is very high; vegetation has been removed to 5 cm or less in average stubble height.

SCORE LB 10 9 8 7 6 5 4 3 2 1 0

SCORE RB 10 9 8 7 6 5 4 3 2 1 0

10. Riparian Vegetative Zone Width (score each bank) Optimal Width of riparian zone >18 m; human activities (i.e. parking lots, roadbaeds, clear-cuts, lawns, or crops) have not impacted zone. Suboptimal Width of riparian zone 12-18 m; human activites have impacted zone only minimally. Marginal Width of riparian zone 6-12 m; human activiteid have impacted zone a great deal. Poor Width if riparian zone <6 m; little or no riparian vegetation due to human activities.

SCORE LB 10 9 8 7 6 5 4 3 2 1 0

SCORE RB 10 9 8 7 6 5 4 3 2 1 0

SCORE _____

LANDUSE CHECKLIST (Blank=Not observed, L=Low, M= Moderate, H=Heavy)				(circle all that apply within reach)					
Residential	Recreational	Agricultural	Industrial	Stream Management					
L M H Residences	L M H Hiking Trails	L M H Crops	L M H Industrial	L M H Liming					
L M H Lawns	L M H Parks, Camps	L M H Pasture	L M H Mines/Quarries	L M H Chemical					
L M H Construction	L M H Primitive Parks	L M H Livestock on pasture	L M H Oil/Gas	L M H Angling					
L M H Pipes, Drains	L M H Trash/Litter	L M H Animal feeding operation	L M H Power Plants	L M H Dredging					
L M H Roads	L M H Surface Films	L M H Orchards	L M H Logging	L M H Channelization					
L M H Dumping		L M H Irrigation	L M H Fire	L M H Flow Alterations					
L M H Bridge Culverts			L M H Odors	L M H Fish Stocking					
L M H STPs			L M H Commercial	L M H Dams					

Upon completion fax copy to WCRO. Photos- rivermilus, rivermileds, rivermilea... Optional map.