



**Maine Department of Environmental Protection
Biological Monitoring Program
Aquatic Life Classification Attainment Report**

Station Information

Station Number: S-697	River Basin: Kennebec
Waterbody: Halfmoon Stream - Station 697	HUC8 Name: Lower Kennebec
Town: Thorndike	Latitude: 44 34 30.02 N
Directions: 93 M ABOVE RT. 220 BRIDGE	Longitude: 69 16 33.23 W
	Stream Order: 3

Sample Information

Log Number: 2759	Type of Sample: ROCK BAG	Date Deployed: 7/24/2019
Subsample Factor: X4	Replicates: 3	Date Retrieved: 8/21/2019

Classification Attainment

Statutory Class: A	Final Determination: A	Date: 11/12/2019
Model Result with $P \geq 0.6$: A	Reason for Determination: Model	
Date Last Calculated: 11/5/2019	Comments:	

Model Probabilities

<u>First Stage Model</u>		<u>C or Better Model</u>	
Class A	0.50	Class A, B, or C	1.00
Class B	0.48	Non-Attainment	0.00
<u>B or Better Model</u>		<u>A Model</u>	
Class A or B	1.00	Class A	0.79
Class C or Non-Attainment	0.00	Class B or C or Non-Attainment	0.21

Model Variables

01 Total Mean Abundance	1384.00	18 Relative Abundance Ephemeroptera	0.19
02 Generic Richness	67.00	19 EPT Generic Richness	29.00
03 Plecoptera Mean Abundance	4.00	21 Sum of Abundances: <i>Dicrotendipes</i> , <i>Microsestra</i> , <i>Parachironomus</i> , <i>Helobdella</i>	1.34
04 Ephemeroptera Mean Abundance	262.67	23 Relative Generic Richness- Plecoptera	0.03
05 Shannon-Wiener Generic Diversity	4.24	25 Sum of Abundances: <i>Cheumatopsyche</i> , <i>Cricotopus</i> , <i>Tanytarsus</i> , <i>Ablabesmyia</i>	153.38
06 Hilsenhoff Biotic Index	4.51	26 Sum of Abundances: <i>Acroneuria</i> , <i>Maccaffertium</i> , <i>Stenonema</i>	109.33
07 Relative Abundance - Chironomidae	0.27	28 EP Generic Richness/14	1.00
08 Relative Generic Richness Diptera	0.34	30 Presence of Class A Indicator Taxa/7	0.29
09 <i>Hydropsyche</i> Abundance	230.67		
11 <i>Cheumatopsyche</i> Abundance	140.00		
12 EPT Generic Richness/ Diptera Generic Richness	1.26		
13 Relative Abundance - Oligochaeta	0.00		
15 Perlidae Mean Abundance (Family Functional Group)	4.00		
16 Tanypodinae Mean Abundance (Family Functional Group)	52.19		
17 Chironomini Abundance (Family Functional Group)	88.32		

Five Most Dominant Taxa

Rank	Taxon Name	Percent
1	<i>Hydropsyche</i>	16.67
2	<i>Rheotanytarsus</i>	13.73
3	<i>Helicopsyche</i>	13.39
4	<i>Cheumatopsyche</i>	10.12
5	<i>Maccaffertium</i>	7.90



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Sample Collection and Processing Information

Sampling Organization: BIOMONITORING UNIT

Taxonomist: MICHAEL COLE

Waterbody Information - Deployment

Temperature:	22.9 deg C
Dissolved Oxygen:	11.3 mg/l
Dissolved Oxygen Saturation:	130.5 %
Specific Conductance:	143.1 uS/cm
Velocity:	33.5 cm/s
pH:	8.37
Wetted Width:	6.2 m
Bankfull Width:	21 m
Depth:	30 cm

Waterbody Information - Retrieval

Temperature:	18.7 deg C
Dissolved Oxygen:	10.23 mg/l
Dissolved Oxygen Saturation:	108.6 %
Specific Conductance:	136.6 uS/cm
Velocity:	24.4 cm/s
pH:	7.78
Wetted Width:	6.5 m
Bankfull Width:	21 m
Depth:	24 cm

Water Chemistry

Summary of Habitat Characteristics

<u>Landuse Name</u>	<u>Canopy Cover</u>	<u>Terrain</u>
Cultivated	Open	Rolling
Pasture		
Upland Hardwood		
<u>Potential Stressor</u>	<u>Location</u>	<u>Substrate</u>
Agricultural Runoff	Above Road Crossing	Bedrock 5 %
	Below Agriculture NPS	Boulder 30 %
		Gravel 15 %
		Rubble/Cobble 45 %
		Sand 5 %

Landcover Summary - 2004 Data

Total Area (ac)	20308	High Int. Dev. %	0.1	Water %	0.3	Non-vegetated %	0.1
		Med Int. Dev. %	0.3	Wetland %	1.4	Tilled Agriculture %	7.3
		Low Int. Dev. %	2.9	Upland Woody %	78.0	Grassland %	9.6
		Development %	3.3	Natural %	79.4	Human Altered %	20.3
						Impervious %	2.7
Total Land (ac)	20250	High Int. Dev. %	0.1	Water %	N/A	Non-vegetated %	N/A
		Med Int. Dev. %	0.3	Wetland %	1.4	Tilled Agriculture %	7.3
		Low Int. Dev. %	2.9	Upland Woody %	78.2	Grassland %	9.6
		Development %	3.3	Natural %	79.6	Human Altered %	20.4
						Impervious %	2.7

Sample Comments



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Subsample Factor: X4

Replicates: 3

Calculated: 11/5/2019

Taxon	Maine Taxonomic Code	Count (Mean of Samplers)		Hilsenhoff Biotic Index	Functional Feeding Group	Relative Abundance %	
		Actual	Adjusted			Actual	Adjusted
<i>Hydra</i>	02010101001	1.33	1.33		PR	0.1	0.1
<i>Girardia</i>	03010102002	20.00	20.00		--	1.4	1.4
<i>Prostoma</i>	04010101001	1.33	1.33		--	0.1	0.1
<i>Neoperla</i>	09020209048	2.67	2.67	1	PR	0.2	0.2
<i>Agnetina</i>	09020209050		1.33	2	PR		0.1
<i>Agnetina capitata</i>	09020209050152	1.33		2	PR	0.1	
Calopterygidae	09020307	1.33	1.33		--	0.1	0.1
<i>Calopteryx</i>	09020307043	1.33	1.33	5	PR	0.1	0.1
<i>Baetis</i>	09020401001		48.00	4	CG		3.5
<i>Baetis flavistriga</i>	09020401001004	17.33			--	1.3	
<i>Baetis intercalaris</i>	09020401001008	14.67			--	1.1	
<i>Baetis pluto</i>	09020401001009	16.00			--	1.2	
<i>Acerpenna</i>	09020401007		18.67	5	CG		1.3
<i>Acerpenna macdunnoughi</i>	09020401007001	2.67			--	0.2	
<i>Acerpenna pygmaea</i>	09020401007011	16.00			--	1.2	
<i>Procloeon</i>	09020401010	1.33	1.33		CG	0.1	0.1
<i>Plauditus</i>	09020401012	2.67	2.67		CG	0.2	0.2
<i>Leucrocuta</i>	09020402011	1.33	1.33	1	SC	0.1	0.1
<i>Stenacron</i>	09020402014	28.00	28.00	7	SC	2.0	2.0
<i>Maccaffertium</i>	09020402015	28.00	109.33	4	SC	2.0	7.9
<i>Maccaffertium vicarium</i>	09020402015055	81.33			--	5.9	
<i>Isonychia</i>	09020404018		6.67	2	CF		0.5
<i>Isonychia bicolor</i>	09020404018059	6.67			--	0.5	
<i>Paraleptophlebia</i>	09020406026	17.33	17.33	1	CG	1.3	1.3
<i>Ephemerella</i>	09020410035	24.00	24.00	1	CG	1.7	1.7
<i>Tricorythodes</i>	09020411038	4.00	4.00	4	CG	0.3	0.3
<i>Caenis</i>	09020412040	1.33	1.33	7	CG	0.1	0.1
<i>Neureclipsis</i>	09020603008	2.67	2.67	7	CF	0.2	0.2
<i>Nyctiophylax</i>	09020603009	1.33	1.33	5	PR	0.1	0.1
<i>Polycentropus</i>	09020603010	34.67	34.67	6	PR	2.5	2.5
<i>Cheumatopsyche</i>	09020604015	140.00	140.00	5	CF	10.1	10.1
<i>Hydropsyche</i>	09020604016	1.33	230.67	4	CF	0.1	16.7
<i>Hydropsyche bronta</i>	09020604016029	5.33			--	0.4	
<i>Hydropsyche morosa</i>	09020604016030	2.67			--	0.2	
<i>Hydropsyche sparna</i>	09020604016032	1.33			--	0.1	
<i>Hydropsyche scalaris species group</i>	09020604016048	220.00			--	15.9	
<i>Rhyacophila</i>	09020605019	1.33	8.00	2	PR	0.1	0.6



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		Actual	Adjusted			Actual	Adjusted
<i>Rhyacophila minora</i>	09020605019063	6.67			PR	0.5	
<i>Hydroptila</i>	09020607026	1.33	1.33	6	P	0.1	0.1
<i>Mayatrichia</i>	09020607033	1.33	1.33		SC	0.1	0.1
<i>Pycnopsyche</i>	09020610049	1.33	1.33	4	SH	0.1	0.1
<i>Lepidostoma</i>	09020611064	2.67	2.67	1	SH	0.2	0.2
<i>Psilotreta</i>	09020614068		1.33	0	SC		0.1
<i>Psilotreta labida</i>	09020614068133	1.33			--	0.1	
<i>Molanna</i>	09020615069	2.67	2.67	6	SC	0.2	0.2
<i>Helicopsyche</i>	09020616070	185.33	185.33	3	SC	13.4	13.4
<i>Mystacides</i>	09020618075		5.33	4	CG		0.4
<i>Mystacides sepulchralis</i>	09020618075147	5.33			--	0.4	
<i>Oecetis</i>	09020618078	13.33	42.67	8	PR	1.0	3.1
<i>Oecetis avara</i>	09020618078153	20.00			--	1.4	
<i>Oecetis persimilis</i>	09020618078157	9.33			--	0.7	
<i>Nigronia</i>	09020701003		2.67	0	PR		0.2
<i>Nigronia serricornis</i>	09020701003003	2.67			--	0.2	
<i>Sialis</i>	09020702004	1.33	1.33	4	PR	0.1	0.1
<i>Antocha</i>	09021001004	1.33	1.33	3	CG	0.1	0.1
Chironomidae	09021011	1.33			--	0.1	
<i>Ablabesmyia</i>	09021011001	2.67	2.68	8	PR	0.2	0.2
<i>Larsia</i>	09021011009	1.33	1.34	6	PR	0.1	0.1
<i>Nilotanytus</i>	09021011012		2.68	6	PR		0.2
<i>Nilotanytus fimbriatus</i>	09021011012027	2.67			--	0.2	
<i>Thienemannimyia</i>	09021011020		45.50	3	PR		3.3
<i>Thienemannimyia group</i>	09021011020041	45.33			--	3.3	
<i>Corynoneura</i>	09021011036	1.33	1.34	7	CG	0.1	0.1
<i>Cricotopus</i>	09021011037	1.33	9.37	7	SH	0.1	0.7
<i>Cricotopus bicinctus</i>	09021011037057	8.00			--	0.6	
<i>Nanocladius</i>	09021011049	2.67	2.68	3	CG	0.2	0.2
<i>Parametriocnemus</i>	09021011053	1.33	1.34	5	CG	0.1	0.1
<i>Thienemanniella</i>	09021011062	4.00	4.01	6	CG	0.3	0.3
<i>Tvetenia</i>	09021011065		10.70	5	CG		0.8
<i>Tvetenia vitracies</i>	09021011065113	10.67			--	0.8	
<i>Cladotanytarsus</i>	09021011068	1.33	1.34	7	CG	0.1	0.1
<i>Rheotanytarsus</i>	09021011072		190.01	6	CF		13.7
<i>Rheotanytarsus exiguus group</i>	09021011072127	189.33			CF	13.7	
<i>Stempellinella</i>	09021011074	10.67	10.70	2	--	0.8	0.8
<i>Tanytarsus</i>	09021011076	1.33	1.34	6	CF	0.1	0.1



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<i>Pseudochironomus</i>	09021011078	2.67	2.68	5	CG	0.2	0.2
<i>Dicrotendipes</i>	09021011085	1.33	1.34	8	CG	0.1	0.1
<i>Microtendipes</i>	09021011094		42.82	6	CF		3.1
<i>Microtendipes pedellus group</i>	09021011094166	12.00			--	0.9	
<i>Microtendipes rydalensis group</i>	09021011094168	30.67			--	2.2	
<i>Nilothauma</i>	09021011095	6.67	6.69	2	--	0.5	0.5
<i>Phaenopsectra</i>	09021011101	8.00	8.03	7	SC	0.6	0.6
<i>Polypedilum</i>	09021011102		26.76	6	SH		1.9
<i>Polypedilum aviceps</i>	09021011102181	22.67			--	1.6	
<i>Polypedilum scalaenum group</i>	09021011102189	4.00			--	0.3	
<i>Atherix</i>	09021015055	2.67	2.67	2	PR	0.2	0.2
<i>Hemerodromia</i>	09021016057	1.33	1.33	3	PR	0.1	0.1
<i>Dineutus</i>	09021104032	1.33	1.33	2	--	0.1	0.1
<i>Psephenus</i>	09021108058		5.33	4	SC		0.4
<i>Psephenus herricki</i>	09021108058028	5.33			--	0.4	
<i>Dubiraphia</i>	09021113064	5.33	5.33	6	--	0.4	0.4
<i>Microcylloepus</i>	09021113066		2.67	3	--		0.2
<i>Microcylloepus pusillus</i>	09021113066041	2.67			--	0.2	
<i>Optioservus</i>	09021113067	2.67	2.67	3	SC	0.2	0.2
<i>Promoresia</i>	09021113069		5.33		--		0.4
<i>Promoresia elegans</i>	09021113069051	1.33			--	0.1	
<i>Promoresia tardella</i>	09021113069052	4.00			--	0.3	
<i>Stenelmis</i>	09021113070	22.67	22.67	5	SC	1.6	1.6
Sphaeriidae	10020201	2.67	2.67		CF	0.2	0.2