



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

**Station Information**

<b>Station Number:</b> 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**

<b>Log Number:</b> 2649	Type of Sample: ROCK BAG	Date Deployed: 7/11/2018
Subsample Factor: X4	Replicates: 3	Date Retrieved: 8/8/2018

**Classification Attainment**

<b>Statutory Class:</b> A	<b>Final Determination:</b> C	Date: 11/28/2018
Model Result with $P \geq 0.6$ : C	<b>Reason for Determination:</b> Model	
Date Last Calculated: 11/28/2018	Comments:	

**Model Probabilities**

<u>First Stage Model</u>		<u>C or Better Model</u>	
Class A	0.00	Class A, B, or C	1.00
Class B	0.05	Non-Attainment	0.00
<u>B or Better Model</u>		<u>A Model</u>	
Class A or B	0.03	Class A	0.01
Class C or Non-Attainment	0.97	Class B or C or Non-Attainment	0.99

**Model Variables**

01 Total Mean Abundance	1766.67	18 Relative Abundance Ephemeroptera	0.32
02 Generic Richness	65.00	19 EPT Generic Richness	23.00
03 Plecoptera Mean Abundance	0.00	21 Sum of Abundances: <i>Dicrotendipes</i> , <i>Micropsectra</i> , <i>Parachironomus</i> , <i>Helobdella</i>	14.43
04 Ephemeroptera Mean Abundance	565.33	23 Relative Generic Richness- Plecoptera	0.00
05 Shannon-Wiener Generic Diversity	4.75	25 Sum of Abundances: <i>Cheumatopsyche</i> , <i>Cricotopus</i> , <i>Tanytarsus</i> , <i>Ablabesmyia</i>	255.81
06 Hilsenhoff Biotic Index	5.49	26 Sum of Abundances: <i>Acroneuria</i> , <i>Maccaffertium</i> , <i>Stenonema</i>	140.86
07 Relative Abundance - Chironomidae	0.27	28 EP Generic Richness/14	0.71
08 Relative Generic Richness Diptera	0.38	30 Presence of Class A Indicator Taxa/7	0.14
09 <i>Hydropsyche</i> Abundance	64.31		
11 <i>Cheumatopsyche</i> Abundance	149.02		
12 EPT Generic Richness/ Diptera Generic Richness	0.92		
13 Relative Abundance - Oligochaeta	0.00		
15 Perlidae Mean Abundance (Family Functional Group)	0.00		
16 Tanypodinae Mean Abundance (Family Functional Group)	114.00		
17 Chironomini Abundance (Family Functional Group)	225.12		

**Five Most Dominant Taxa**

Rank	Taxon Name	Percent
1	<i>Cheumatopsyche</i>	8.44
2	Ephemerellidae	8.00
3	<i>Maccaffertium</i>	7.97
4	<i>Oecetis</i>	7.92
5	Leptophlebiidae	7.62



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**Sample Collection and Processing Information**

Sampling Organization: BIOMONITORING UNIT      Taxonomist: MICHAEL WINNELL

**Waterbody Information - Deployment**

Temperature:                      23.9 deg C  
Dissolved Oxygen:                11 mg/l  
Dissolved Oxygen Saturation:    129 %  
Specific Conductance:            138.3 uS/cm  
Velocity:                            12.192 cm/s  
pH:                                    8.29  
Wetted Width:                      5.6 m  
Bankfull Width:                    21 m  
Depth:                                32 cm

**Waterbody Information - Retrieval**

Temperature:                      28.8 deg C  
Dissolved Oxygen:                11.29 mg/l  
Dissolved Oxygen Saturation:    145.4 %  
Specific Conductance:            159.5 uS/cm  
Velocity:                            6.096 cm/s  
pH:                                    8.52  
Wetted Width:                      5.2 m  
Bankfull Width:                    21 m  
Depth:                                36 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

**Sample Comments**

WATER VERY LOW.



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Replicates: 3

Calculated: 11/28/2018

Taxon	Maine Taxonomic Code	Count (Mean of Samplers)		Hilsenhoff Biotic Index	Functional Feeding Group	Relative Abundance %	
		Actual	Adjusted			Actual	Adjusted
<i>Hydra</i>	02010101001	5.33	5.33		PR	0.3	0.3
<i>Girardia</i>	03010102002		21.33		--		1.2
<i>Girardia tigrina</i>	03010102002001	21.33			--	1.2	
Nematoda	05	2.67	2.67		--	0.2	0.2
<i>Calopteryx</i>	09020307043	1.33	1.33	5	PR	0.1	0.1
<i>Argia</i>	09020309048	1.33	1.33	7	PR	0.1	0.1
Baetidae	09020401	1.33			--	0.1	
<i>Acerpenna</i>	09020401007	4.00	12.92	5	CG	0.2	0.7
<i>Acerpenna pygmaea</i>	09020401007011	8.00			--	0.5	
<i>Proclleon</i>	09020401010	5.33	5.74		CG	0.3	0.3
Heptageniidae	09020402	73.33			--	4.2	
<i>Stenacron</i>	09020402014	66.67	96.48	7	SC	3.8	5.5
<i>Maccaffertium</i>	09020402015	36.00	140.86	4	SC	2.0	8.0
<i>Maccaffertium luteum</i>	09020402015049	60.00			--	3.4	
<i>Maccaffertium modestum</i>	09020402015051	1.33			--	0.1	
<i>Isonychia</i>	09020404018	1.33	1.33	2	CF	0.1	0.1
Leptophlebiidae	09020406	134.67	134.67		--	7.6	7.6
Ephemerellidae	09020410	141.33	141.33		--	8.0	8.0
<i>Serratella</i>	09020410037		1.33	2	CG		0.1
<i>Serratella deficiens (Teloganopsis deficiens)</i>	09020410037121	1.33			--	0.1	
<i>Tricorythodes</i>	09020411038	1.33	1.33	4	CG	0.1	0.1
<i>Caenis</i>	09020412040	21.33	29.33	7	CG	1.2	1.7
<i>Caenis anceps</i>	09020412040136	8.00			--	0.5	
Polycentropodidae	09020603	4.00			--	0.2	
<i>Cernotina</i>	09020603006	38.67	41.24		PR	2.2	2.3
<i>Polycentropus</i>	09020603010	20.00	21.33	6	PR	1.1	1.2
<i>Plectrocnemia</i>	09020603012	1.33	1.42	6	PR	0.1	0.1
Hydropsychidae	09020604	32.00			--	1.8	
<i>Cheumatopsyche</i>	09020604015	126.67	149.02	5	CF	7.2	8.4
<i>Hydropsyche</i>	09020604016	40.00	64.31	4	CF	2.3	3.6
<i>Hydropsyche bronta</i>	09020604016029	1.33			--	0.1	
<i>Hydropsyche placoda</i>	09020604016059	13.33			--	0.8	
Hydroptilidae	09020607	1.33	1.33		--	0.1	0.1
<i>Hydroptila</i>	09020607026	36.00	36.00	6	P	2.0	2.0
<i>Pycnopsyche</i>	09020610049	4.00	4.00	4	SH	0.2	0.2
<i>Lepidostoma</i>	09020611064	1.33	1.33	1	SH	0.1	0.1
<i>Helicopsyche</i>	09020616070		125.33	3	SC		7.1



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Subsample Factor: X4

Replicates: 3

Calculated: 11/28/2018

Taxon	Maine Taxonomic Code	Count (Mean of Samplers)		Hilsenhoff Biotic Index	Functional Feeding Group	Relative Abundance %	
		Actual	Adjusted			Actual	Adjusted
<i>Helicopsyche borealis</i>	09020616070137	125.33			--	7.1	
Leptoceridae	09020618	2.67			--	0.2	
<i>Mystacides</i>	09020618075		5.43	4	CG		0.3
<i>Mystacides sepulchralis</i>	09020618075147	5.33			--	0.3	
<i>Oecetis</i>	09020618078	25.33	139.90	8	PR	1.4	7.9
<i>Oecetis avara</i>	09020618078153	74.67			--	4.2	
<i>Oecetis inconspicua complex</i>	09020618078156	9.33			--	0.5	
<i>Oecetis persimilis</i>	09020618078157	28.00			--	1.6	
<i>Apatania</i>	09020619061		1.33		SC		0.1
<i>Apatania incerta</i>	09020619061001	1.33			--	0.1	
<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
Chironomidae	09021011	36.00			--	2.0	
<i>Ablabesmyia</i>	09021011001		23.09	8	PR		1.3
<i>Ablabesmyia mallochi</i>	09021011001004	21.33			--	1.2	
<i>Conchapelopia</i>	09021011004	34.67	37.52	6	PR	2.0	2.1
<i>Labrundinia</i>	09021011008		7.22	7	PR		0.4
<i>Labrundinia pilosella</i>	09021011008022	6.67			--	0.4	
<i>Meropelopia</i>	09021011010	5.33	5.77		--	0.3	0.3
<i>Nilotanypus</i>	09021011012		17.32	6	PR		1.0
<i>Nilotanypus fimbriatus</i>	09021011012027	16.00			--	0.9	
<i>Paramerina</i>	09021011013	1.33	1.44		--	0.1	0.1
<i>Pentaneura</i>	09021011014		2.89	6	PR		0.2
<i>Pentaneura inconspicua</i>	09021011014028	2.67			--	0.2	
<i>Rheopelopia</i>	09021011017	14.67	15.87		PR	0.8	0.9
<i>Zavreliomyia</i>	09021011022	2.67	2.89	8	PR	0.2	0.2
<i>Corynoneura</i>	09021011036	1.33	1.44	7	CG	0.1	0.1
<i>Cricotopus</i>	09021011037	2.67	14.43	7	SH	0.2	0.8
<i>Cricotopus bicinctus</i>	09021011037057	10.67			--	0.6	
<i>Nanocladius</i>	09021011049	2.67	7.22	3	CG	0.2	0.4
<i>Nanocladius distinctus</i>	09021011049087	2.67			--	0.2	
<i>Nanocladius spiniplenus</i>	09021011049090	1.33			--	0.1	
<i>Orthocladius</i>	09021011050		1.44	6	CG		0.1
<i>Orthocladius carlatus</i>	09021011050093	1.33			--	0.1	
<i>Parametriocnemus</i>	09021011053	8.00	8.66	5	CG	0.5	0.5
<i>Rheocricotopus</i>	09021011057		2.89	6	CG		0.2
<i>Rheocricotopus robacki</i>	09021011057105	2.67			--	0.2	



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<i>Cladotanytarsus</i>	09021011068	2.67	2.89	7	CG	0.2	0.2
<i>Rheotanytarsus</i>	09021011072		17.32	6	CF		1.0
<i>Rheotanytarsus exiguus group</i>	09021011072127	5.33			CF	0.3	
<i>Rheotanytarsus pellucidus</i>	09021011072128	10.67			CF	0.6	
<i>Stempellinella</i>	09021011074		8.66	2	--		0.5
<i>Stempellinella fimbriata</i>	09021011074002	8.00			--	0.5	
<i>Tanytarsus</i>	09021011076	50.67	69.27	6	CF	2.9	3.9
<i>Tanytarsus buckleyi</i>	09021011076139	13.33			CF	0.8	
<i>Cryptochironomus</i>	09021011082			8	PR		
<i>Dicrotendipes</i>	09021011085		14.43	8	CG		0.8
<i>Dicrotendipes neomodestus</i>	09021011085152	13.33			--	0.8	
<i>Microtendipes</i>	09021011094		115.45	6	CF		6.5
<i>Microtendipes pedellus group</i>	09021011094166	21.33			--	1.2	
<i>Microtendipes rydalensis group</i>	09021011094168	85.33			--	4.8	
<i>Nilothauma</i>	09021011095	18.67	20.20	2	--	1.1	1.1
<i>Phaenopsectra</i>	09021011101		49.07	7	SC		2.8
<i>Phaenopsectra obediens</i>	09021011101182	45.33			SC	2.6	
<i>Polypedilum</i>	09021011102		25.98	6	SH		1.5
<i>Polypedilum aviceps</i>	09021011102181	8.00			--	0.5	
<i>Polypedilum flavum</i>	09021011102182	5.33			--	0.3	
<i>Polypedilum scalaenum group</i>	09021011102189	8.00			--	0.5	
<i>Polypedilum illinoense</i>	09021011102204	2.67			--	0.2	
<i>Hemerodromia</i>	09021016057	1.33	1.33	3	PR	0.1	0.1
<i>Dineutus</i>	09021104032	8.00	8.00	2	--	0.5	0.5
<i>Psephenus</i>	09021108058		6.67	4	SC		0.4
<i>Psephenus herricki</i>	09021108058028	6.67			--	0.4	
<i>Ectopria</i>	09021109059	2.67	2.67	5	SC	0.2	0.2
<i>Dubiraphia</i>	09021113064		8.00	6	--		0.5
<i>Dubiraphia minima</i>	09021113064036	5.33			--	0.3	
<i>Dubiraphia quadrinotata</i>	09021113064037	2.67			--	0.2	
<i>Optioservus</i>	09021113067	2.67	2.67	3	SC	0.2	0.2
<i>Promoesia</i>	09021113069		6.67		--		0.4
<i>Promoesia elegans</i>	09021113069051	2.67			--	0.2	
<i>Promoesia tardella</i>	09021113069052	4.00			--	0.2	
<i>Stenelmis</i>	09021113070	18.67	57.33	5	SC	1.1	3.2
<i>Stenelmis crenata</i>	09021113070055	38.67			--	2.2	
<i>Physa</i>	10010202027	4.00	4.00		SC	0.2	0.2
<i>Helisoma</i>	10010203030		1.33		SC		0.1



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<i>Helisoma trivolvis</i>	10010203030061	1.33			--	0.1	
Sphaeriidae	10020201	1.33	1.33		CF	0.1	0.1