



**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: ABOVE RT. 220	Longitude: 69 16 33.23 W
	Stream Order: 3

**Sample Information**

<b>Log Number:</b> 2465	Type of Sample: ROCK BAG	Date Deployed: 7/7/2016
Subsample Factor: X4	Replicates: 3	Date Retrieved: 8/3/2016

**Classification Attainment**

<b>Statutory Class:</b> A	<b>Final Determination:</b> B	Date: 5/12/2017
Model Result with $P \geq 0.6$ : B	<b>Reason for Determination: Best Professional Judgement</b>	
Date Last Calculated: 5/11/2017	Comments: Indeterminate for Class A (.46) not raised to Class A based on Total Abundance and Dominant Taxa present.	

**Model Probabilities**

<u>First Stage Model</u>		<u>C or Better Model</u>	
Class A	0.29	Class A, B, or C	1.00
Class B	0.66	Non-Attainment	0.00
<u>B or Better Model</u>		<u>A Model</u>	
Class A or B	1.00	Class A	0.46
Class C or Non-Attainment	0.00	Class B or C or Non-Attainment	0.54

**Model Variables**

01 Total Mean Abundance	2306.67	18 Relative Abundance Ephemeroptera	0.10
02 Generic Richness	59.00	19 EPT Generic Richness	24.00
03 Plecoptera Mean Abundance	4.00	21 Sum of Abundances: <i>Dicrotendipes</i> , <i>Micropsectra</i> , <i>Parachironomus</i> , <i>Helobdella</i>	1.46
04 Ephemeroptera Mean Abundance	226.67	23 Relative Generic Richness- Plecoptera	0.03
05 Shannon-Wiener Generic Diversity	3.40	25 Sum of Abundances: <i>Cheumatopsyche</i> , <i>Cricotopus</i> , <i>Tanytarsus</i> , <i>Ablabesmyia</i>	381.80
06 Hilsenhoff Biotic Index	4.22	26 Sum of Abundances: <i>Acroneuria</i> , <i>Maccaffertium</i> , <i>Stenonema</i>	139.33
07 Relative Abundance - Chironomidae	0.12	28 EP Generic Richness/14	0.71
08 Relative Generic Richness Diptera	0.44	30 Presence of Class A Indicator Taxa/7	0.43
09 <i>Hydropsyche</i> Abundance	465.90		
11 <i>Cheumatopsyche</i> Abundance	310.10		
12 EPT Generic Richness/ Diptera Generic Richness	0.92		
13 Relative Abundance - Oligochaeta	0.00		
15 Perlidae Mean Abundance (Family Functional Group)	1.33		
16 Tanypodinae Mean Abundance (Family Functional Group)	64.38		
17 Chironomini Abundance (Family Functional Group)	122.91		

**Five Most Dominant Taxa**

Rank	Taxon Name	Percent
1	<i>Helicopsyche</i>	33.29
2	<i>Hydropsyche</i>	20.20
3	<i>Cheumatopsyche</i>	13.44
4	<i>Maccaffertium</i>	6.04
5	<i>Oecetis</i>	3.29



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**Log Number: 2465**      Waterbody: Halfmoon Stream - Station 697      Date Retrieved: 8/3/2016

**Sample Collection and Processing Information**

Sampling Organization: BIOMONITORING UNIT

Taxonomist: MICHAEL WINNELL

**Waterbody Information - Deployment**

Temperature: 19.5 deg C  
 Dissolved Oxygen: 8.9 mg/l  
 Dissolved Oxygen Saturation: 97.7 %  
 Specific Conductance: 149.3 uS/cm  
 Velocity: 12.2 cm/s  
 pH: 7.63  
 Wetted Width: 16 m  
 Bankfull Width: 21 m  
 Depth: 26 cm

**Waterbody Information - Retrieval**

Temperature: 20 deg C  
 Dissolved Oxygen: 10.14 mg/l  
 Dissolved Oxygen Saturation: 111.4 %  
 Specific Conductance: 158.8 uS/cm  
 Velocity: 9.144 cm/s  
 pH: 7.69  
 Wetted Width: 8.1 m  
 Bankfull Width: 21 m  
 Depth: 20 cm

**Water Chemistry - 8/3/2016**

Nitrate+nitrite As N	0.83 mg/l	Total Phosphorus	13 ug/l
Total Kjeldahl Nitrogen	0.4 mg/l	Total Suspended Solids	1.6 mg/l
Dissolved Organic Carbon	1.9 mg/l	Total Dissolved Solids	82 mg/l
Orthophosphate As Phosphorus	1 ug/l		

**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	35 %
		Gravel	10 %
		Rubble/Cobble	40 %
		Sand	10 %

**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**

LOW WATER ON DEPLOYMENT.  
 LOW WATER ON RETRIEVAL.



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Subsample Factor: X4

Replicates: 3

Calculated: 5/11/2017

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		24.00		--		1.0
<i>Girardia tigrina</i>	03010102002001	24.00			--	1.0	
Perlodidae	09020207	2.67	2.67		--	0.1	0.1
<i>Agnatina</i>	09020209050		1.33	2	PR		0.1
<i>Agnatina capitata</i>	09020209050152	1.33		2	PR	0.1	
<i>Boyeria</i>	09020301004		1.33	2	PR		0.1
<i>Boyeria vinosa</i>	09020301004012	1.33			--	0.1	
<i>Baetis</i>	09020401001	1.33	1.33	4	CG	0.1	0.1
<i>Acerpenna</i>	09020401007	8.00	17.33	5	CG	0.3	0.8
<i>Acerpenna pygmaea</i>	09020401007011	9.33			--	0.4	
Heptageniidae	09020402	73.33			--	3.2	
<i>Stenacron</i>	09020402014	12.00	22.00	7	SC	0.5	1.0
<i>Maccaffertium</i>	09020402015	32.00	139.33	4	SC	1.4	6.0
<i>Maccaffertium luteum</i>	09020402015049	44.00			--	1.9	
Leptophlebiidae	09020406	25.33	25.33		--	1.1	1.1
Ephemerellidae	09020410	12.00	12.00		--	0.5	0.5
<i>Serratella</i>	09020410037		2.67	2	CG		0.1
<i>Serratella deficiens (Teloganopsis deficiens)</i>	09020410037121	1.33			--	0.1	
<i>Serratella serratoides</i>	09020410037124	1.33			--	0.1	
<i>Tricorythodes</i>	09020411038	6.67	6.67	4	CG	0.3	0.3
Trichoptera	090206				--		
Polycentropodidae	09020603				--		
<i>Cernotina</i>	09020603006	6.67	6.67		PR	0.3	0.3
<i>Polycentropus</i>	09020603010	12.00	12.00	6	PR	0.5	0.5
<i>Plectrocnemia</i>	09020603012	1.33	1.33	6	PR	0.1	0.1
Hydropsychidae	09020604	92.00			--	4.0	
<i>Cheumatopsyche</i>	09020604015	273.33	310.10	5	CF	11.8	13.4
<i>Hydropsyche</i>	09020604016	306.67	465.90	4	CF	13.3	20.2
<i>Hydropsyche bronta</i>	09020604016029	6.67			--	0.3	
<i>Hydropsyche morosa</i>	09020604016030	1.33			--	0.1	
<i>Hydropsyche placoda</i>	09020604016059	96.00			--	4.2	
Hydroptilidae	09020607				--		
<i>Hydroptila</i>	09020607026	1.33	1.33	6	P	0.1	0.1
<i>Brachycentrus</i>	09020609043		1.33	0	CF		0.1
<i>Brachycentrus appalachia</i>	09020609043096	1.33			--	0.1	
<i>Pycnopsyche</i>	09020610049	2.67	2.67	4	SH	0.1	0.1



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		Actual	Adjusted			Actual	Adjusted
<i>Lepidostoma</i>	09020611064	4.00	4.00	1	SH	0.2	0.2
<i>Psilotreta</i>	09020614068		8.00	0	SC		0.3
<i>Psilotreta indecisa</i>	09020614068132	4.00			--	0.2	
<i>Psilotreta labida</i>	09020614068133	4.00			--	0.2	
<i>Helicopsyche</i>	09020616070		768.00	3	SC		33.3
<i>Helicopsyche borealis</i>	09020616070137	768.00			--	33.3	
<i>Mystacides</i>	09020618075		16.00	4	CG		0.7
<i>Mystacides sepulchralis</i>	09020618075147	16.00			--	0.7	
<i>Oecetis</i>	09020618078	12.00	76.00	8	PR	0.5	3.3
<i>Oecetis avara</i>	09020618078153	53.33			--	2.3	
<i>Oecetis persimilis</i>	09020618078157	10.67			--	0.5	
<i>Apatania</i>	09020619061	5.33	5.33		SC	0.2	0.2
<i>Tipula</i>	09021001002	1.33	1.33	4	SH	0.1	0.1
<i>Antocha</i>	09021001004	2.67	2.67	3	CG	0.1	0.1
Chironomidae	09021011	25.33			--	1.1	
<i>Ablabesmyia</i>	09021011001	1.33	32.19	8	PR	0.1	1.4
<i>Ablabesmyia mallochi</i>	09021011001004	28.00			--	1.2	
<i>Conchapelopia</i>	09021011004	1.33	1.46	6	PR	0.1	0.1
<i>Nilotanytus</i>	09021011012	1.33	1.46	6	PR	0.1	0.1
<i>Pentaneura</i>	09021011014		1.46	6	PR		0.1
<i>Pentaneura inconspicua</i>	09021011014028	1.33			--	0.1	
<i>Rheopelopia</i>	09021011017	12.00	27.80		PR	0.5	1.2
<i>Rheopelopia acra group</i>	09021011017036	13.33			--	0.6	
<i>Pagastia</i>	09021011025		1.46	1	--		0.1
<i>Pagastia orthogonia</i>	09021011025001	1.33			--	0.1	
<i>Corynoneura</i>	09021011036	1.33	1.46	7	CG	0.1	0.1
<i>Cricotopus</i>	09021011037	10.67	30.73	7	SH	0.5	1.3
<i>Cricotopus bicinctus</i>	09021011037057	17.33			--	0.8	
<i>Nanocladius</i>	09021011049		2.93	3	CG		0.1
<i>Nanocladius distinctus</i>	09021011049087	2.67			--	0.1	
<i>Parakiefferiella</i>	09021011052	1.33	1.46		CG	0.1	0.1
<i>Psectrocladius</i>	09021011056		1.46	8	CG		0.1
<i>Psectrocladius simulans</i>	09021011056110	1.33			--	0.1	
<i>Thienemanniella</i>	09021011062		1.46	6	CG		0.1
<i>Thienemanniella xena</i>	09021011062110	1.33			--	0.1	
<i>Tvetenia</i>	09021011065		8.78	5	CG		0.4
<i>Tvetenia vitracies</i>	09021011065113	8.00			--	0.3	
<i>Rheotanytarsus</i>	09021011072		38.04	6	CF		1.6



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<i>Rheotanytarsus exiguus group</i>	09021011072127	34.67			CF	1.5	
<i>Stempellinella</i>	09021011074		1.46	2	--		0.1
<i>Stempellinella fimbriata</i>	09021011074002	1.33			--	0.1	
<i>Tanytarsus</i>	09021011076	2.67	8.78	6	CF	0.1	0.4
<i>Tanytarsus buckleyi</i>	09021011076139	5.33			CF	0.2	
<i>Dicrotendipes</i>	09021011085		1.46	8	CG		0.1
<i>Dicrotendipes neomodestus</i>	09021011085152	1.33			--	0.1	
<i>Microtendipes</i>	09021011094		74.63	6	CF		3.2
<i>Microtendipes pedellus group</i>	09021011094166	17.33			--	0.8	
<i>Microtendipes rydalensis group</i>	09021011094168	50.67			--	2.2	
<i>Nilothauma</i>	09021011095	14.67	16.10	2	--	0.6	0.7
<i>Paratendipes</i>	09021011100		1.46	8	CG		0.1
<i>Paratendipes albimanus group</i>	09021011100176	1.33			--	0.1	
<i>Phaenopsectra</i>	09021011101		14.63	7	SC		0.6
<i>Phaenopsectra obediens</i>	09021011101182	13.33			SC	0.6	
<i>Polypedilum</i>	09021011102		14.63	6	SH		0.6
<i>Polypedilum aviceps</i>	09021011102181	8.00			--	0.3	
<i>Polypedilum flavum</i>	09021011102182	2.67			--	0.1	
<i>Polypedilum scalaenum group</i>	09021011102189	2.67			--	0.1	
<i>Atherix</i>	09021015055	1.33	1.33	2	PR	0.1	0.1
<i>Hemerodromia</i>	09021016057	2.67	2.67	3	PR	0.1	0.1
<i>Dineutus</i>	09021104032	2.67	2.67	2	--	0.1	0.1
<i>Microcyloepus</i>	09021113066	1.33	1.33	3	--	0.1	0.1
<i>Optioservus</i>	09021113067	1.33	2.67	3	SC	0.1	0.1
<i>Optioservus ovalis</i>	09021113067046	1.33			--	0.1	
<i>Promoresia</i>	09021113069	1.33	9.33		--	0.1	0.4
<i>Promoresia elegans</i>	09021113069051	2.67			--	0.1	
<i>Promoresia tardella</i>	09021113069052	5.33			--	0.2	
<i>Stenelmis</i>	09021113070	4.00	60.00	5	SC	0.2	2.6
<i>Stenelmis crenata</i>	09021113070055	56.00			--	2.4	
<i>Physa</i>	10010202027	1.33	1.33		SC	0.1	0.1