

Appendix C
Biological Data Results
2008-2023

Compiled by the Town of Plymouth

Data Results Completed by David Worden (2008-2012), School of Marine Science and
Technology (2013-Current) Town's Consultant Limnologist/Biologist

<u>Location ID</u>	<u>Description</u>	<u>Macrophyte/ Phytoplankton</u>	<u>Macroinvertebrate/ Periphyton</u>
BM-1	Downstream of Russell Mill Pond, near hatchery		☒
BM-2	Downstream of Hayden Pond, near Sandwich Road		☒
BM-3	Near Forge Drive		☒
BM-4	Downstream of Sawmill Pond Dam *		☒
Russell Mill Pond		☒	
Hayden Pond		☒	
Howland Pond		☒	
Eel River Basin		☒	

*Sawmill Pond Dam removed in 2009/2010. Location following dam removal is downstream of footbridge

2006 Master List of Aquatic Macrophytes Observed in Ponds of the Eel River System
(No Significant Changes in 2008 from 2006/2007 List)

Species Name	Common Name	Occurance in Ponds			
<u>Submerged Plants</u>		<u>Russell Mill</u>	<u>Hayden</u>	<u>Howland</u>	<u>Eel River</u>
<i>Cabomba caroliniana</i>	Fanwort (non-native)		X		X
<i>Callitriche sp.</i>	Water-starwort	x			
<i>Ceratophyllum demersum</i>	Coontail	x		x	
<i>Elodea nuttallii</i>	Waterweed	X	X	x	X
<i>Nitell sp.</i>	macroalga			x	x
<i>Potamogeton sp.</i>	Pondweed	x	x	x	x
<i>Utricularia sp.</i>	Bladderwort	X	x		
<i>Vallisneria americana</i>	Tapegrass	x			
<u>Floating-Leaved Plants</u>					
<i>Nuphar variegata</i>	Yellow Waterlily	x	x		
<i>Nymphaea odorata</i>	White Waterlily	x		X	x
<u>Emergent Plants</u>					
<i>Alnus sp.</i>	Alder			x	
<i>Clethra alnifolia</i>	Sweet Pepperbush			x	x
<i>Decodon verticillatus</i>	Water-willow	x	x	x	x
<i>Impatiens capensis</i>	Jewelweed	x			
<i>Juncus sp.</i>	Rush		x		x
<i>Lythrum salicaria</i>	Purple Loosestrife	x			x
<i>Myosotis sp.</i>	Forget-me-not	x			
<i>Myrica gale</i>	Sweet Gale	x	x	x	x
<i>Phragmites australis</i>	Common Reed		x		x
<i>Pontederia cordata</i>	Pickereel-weed		x		x
<i>Sagittaria sp.</i>	Arrowhead	x	x		
<i>Scirpus cyperinus</i>	Wool-grass		x	x	
<i>Sparganium sp.</i>	Bur-reed		x	x	x
<i>Spiraea tomentosa</i>	Steeple-bush		x	x	x
<i>Typha latifolia</i>	Common Cattail		x	x	
*dominant species indicated in bold, capital X					

Results of Eel River Periphyton Sampling Conducted May 20, 2008

(Estimates of percent composition indicated as follows: **Abundant** = 60-100%, **Very Common** = 30-60%, **Common** = 5-30%, **Rare** <1%

BM-1 (hatchery) **BM-2** **BM-3a** **BM-4 (TNC)**

Periphyton Taxa

Bacillariophyceae (diatoms)

<i>Cocconeis</i>		A	R	
<i>Eunotia</i>	R	R	R	V
<i>Gomphonema</i>		R		
<i>Melosira</i>		R		
<i>Navicula</i>	V	R	A	V
<i>Nitzschia</i>	V	R	R	R
<i>Tabellaria</i>		R		

Chlorophyta (green algae, excluding desmids)

<i>Coleochaete</i>	R	R	O	C
<i>Oedogonium</i>		R		
<i>Zygnema</i>		R		

Cyanophyta (blue-green algae)

<i>Oscillatoria</i>				R
<i>Phormidium</i>	R		O	R

Desmidiaceae (desmids)

<i>Closterium</i>				R
<i>Cosmarium</i>				R

Protozoa

<i>Vorticella</i>		R		
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Bacteria

<i>unidentified</i>	V			
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*BM-4 slides supported many midge (Chironomidae) retreats

Results of Eel River Periphyton Sampling Conducted October 3, 2008

(Estimates of percent composition indicated as follows: **Abundant** = 60-100%,
Very Common = 30-60%, **Common** = 5-30%, **Rare** <1%

	<u>BM-1 (hatchery)</u>	<u>BM-2</u>	<u>BM-3a</u>	<u>BM-4 (TNC)</u>
<u>Periphyton Taxa</u>				
Bacillariophyceae (diatoms)				
<i>Cocconeis</i>		A	C	
<i>Cymbella</i>	R	R		
<i>Eunotia</i>	R	R	C	R
<i>Gomphonema</i>	R			
<i>Melosira</i>	R			R
<i>Navicula</i>	R	C	C	R
<i>Nitzschia</i>		R		R
<i>Synedra</i>	R		R	R
<i>Tabellaria</i>	C	R		
Chlorophyta (green algae, excluding desmids)				
<i>Coleochaete</i>	R	R	R	
<i>Oedogonium</i>				R
Cyanophyta (blue-green algae)				
<i>Oscillatoria</i>				R
<i>Phormidium</i>			V	
Protozoa				
<i>Carchesium</i>			R	R
<i>Platycola</i>			R	
<i>Rhipidodendron</i>				R
<i>Sphaerophyra</i>			R	
<i>Vorticella</i>			R	R
Bacteria				
<i>unidentified</i>	A		R	A

Results of Eel River Plankton Sampling Conducted May 20, 2008

(Estimates of percent composition indicated as follows: **Abundant** = 60-100%, **Very Common** = 30-60%, **Common** = 5-30%, **Rare** <1%

	<u>Russell Mill Pond</u>	<u>Hayden Pond</u>	<u>Howland Pond</u>	<u>Eel River Basin</u>
Phytoplankton Taxa				
Bacillariophyceae (diatoms)				
<i>Asterionella</i>	A	A	A	A
<i>Eunotia</i>			R	R
<i>Fragilaria</i>		R	R	R
<i>Melosira</i>	R	R	R	
<i>Navicula</i>	R	R	R	R
<i>Nitzschia</i>		R	R	R
<i>Rhizosolenia</i>	R	R	R	R
<i>Synedra</i>	R	R	R	
<i>Tabellaria</i>	R			
Chlorophyta (green algae, excluding desmids)				
<i>Eudorina</i>				R
<i>Mougeotia</i>		R		
<i>Pediastrum</i>			R	
<i>Scenedesmus</i>				R
<i>Spirogyra</i>			R	R
Chrysophyta (yellow-green algae, excluding diatoms)				
<i>Dinobryon</i>	R	R	R	R
<i>Mallomonas</i>			R	
<i>Rhizochrysis</i>	R			
<i>Synura</i>	R			
Cyanophyta (blue-green algae)				
<i>Anabaena</i>	R			
<i>Microcystis</i>	R			
Euglenophyta				
<i>Phacus</i>	R	R	R	R
Pyrrhophyta (dinoflagellates)				
<i>Peridinium</i>	R	R		

Eel River Field Measurements Recorded by DW on May 20, 2008

Station	Depth	Temp	SpC	DO	DO	pH
	<i>meters</i>	°C	<i>uS/cm</i>	<i>% Sat</i>	<i>mg/L</i>	<i>units</i>
BM4 (TNC/Sawmill tailrace)	0.2	10.4	79.3	97.2	10.9	5.6
BM1 (Fish Hatchery)	0.2	14.1	99.1	91.3	9.4	5.8
Hayden Pond	0.3	13.7	105.7	87.7	9.1	6
BM2 (Sandwich Road)	0.2	13.8	105.3	97.2	10.1	6.1
BM3A (Forge Road)	0.4	14.9	95.1	97.4	9.8	5.8
Howland Pond	1.1	14.7	93.5	131.4	13.3	6.8
Eel River Basin	0.5	15.1	108.8	98.5	9.9	6.1
Russell Mill Pond(secchi = 3.5ft)	0.2	15.1	98.8	115	11.6	6.1
	1	15.1	99.2	114.9	11.6	6.2
	2	15	99.3	114.9	11.6	6.3
	3	14.7	98.8	112.9	11.5	6.3
	4	12.9	103.9	49.5	5.2	5.7
	5	10.9	117.2	2.2	0.2	5.8
	5.4	10.6	136.7	1.9	0.2	6

Results of Eel River Plankton Sampling Conducted September 28,2008

(Estimates of percent composition indicated as follows: Abundant = 60-100%, Very Common = 30-60%, Common = 5-30%, Rare <1%

	<u>Russell Mill Pond</u>	<u>Hayden Pond</u>	<u>Howland Pond</u>	<u>Eel River Basin</u>
Phytoplankton Taxa				
Bacillariophyceae (diatoms)				
<i>Asterionella</i>	R	R	R	R
<i>Cymbella</i>		R		R
<i>Eunotia</i>			R	R
<i>Fragilaria</i>			R	R
<i>Gomphonema</i>		R		R
<i>Melosira</i>	R	R	R	R
<i>Nitzschia</i>	R	R	R	C
<i>Rhizosolenia</i>	R	R		R
<i>Synedra</i>	R	R		R
<i>Tabellaria</i>	A	A	A	A
Chlorophyta (green algae, excluding desmids)				
<i>Arthrodesmus</i>		R		
<i>Closterium</i>			R	R
<i>Coelastrum</i>				R
<i>Crucigenia</i>				R
<i>Eudorina</i>	R			
<i>Mougeotia</i>			R	R
<i>Oedogonium</i>				R
<i>Pandorina</i>		R		R
<i>Pediastrum</i>	R	R	R	R
<i>Scenedesmus</i>		R	R	R
<i>Sphaerocystis</i>			R	R
<i>Spondylosium</i>		R		
Chrysophyta (yellow-green algae, excluding diatoms)				
<i>Dinobryon</i>	R	R		R
<i>Mallomonas</i>			R	R
<i>Rhizochrysis</i>			R	
<i>Synura</i>	R	R	R	R
<i>Uroglenopsis</i>			R	
Cyanophyta (blue-green algae)				
<i>Anabaena</i>	R	R		R
<i>Microcystis</i>	R	R		
<i>Oscillatoria</i>				O
Pyrrhophyta (dinoflagellates)				
<i>Glenodinium</i>	R		R	R
Protozoa				
<i>Euglena</i>				R
<i>Phacus</i>				R
<i>Trachelomanas</i>	R	R	R	R

Eel River Field Measurements Recorded by DW on September 28, 2008

Station	Depth	Temp	SpC	DO	DO	pH
	<i>meters</i>	°C	<i>uS/cm</i>	<i>% Sat</i>	<i>mg/L</i>	<i>units</i>
Hayden Pond	0.4	16.5	100.7	82.7	8.1	5.6
Howland Pond	0.5	17.4	67.1	82	7.9	5.2
Eel River Basin	0.5	17.8	64.2	64.4	6.1	5.2
Russell Mill Pond(secchi = 4.5ft)	0.3	17.3	87.8	114.8	11	5.9
	1	16.4	92.9	111.8	10.9	6
	2	16	95.7	99.1	9.7	5.9
	3	15.8	88.8	86.1	8.5	5.7
	4	15	103.5	60.1	6.1	5.4
	5	14.3	110.5	30.7	3.1	5.3
	6	13.7	222.8	2	0.2	5.8
	6.6	13	390.7	1.3	0.1	6.1

Results of Macroinvertebrate Sampling of Eel River on September 20 & 21, 2008

INSECT TAXA	FFG*	BM-1 (fish hatchery)	BM-2 (Old Sandwich Rd)	BM-3A (Forges Rd)	BM-4 (TNC; mill tailrace)
Diptera (flies and midges)					
<i>Chironomidae</i>	V		2		1
<i>Simuliidae</i>	CF	1	13	7	8
Ephemeroptera (mayflies)					
<i>Baetis</i>	CG/SC		20	6	
<i>Stenonema</i>	SC/CG		7	2	14
Odonata (damselflies and dragonflies)					
<i>Argia</i>	P			1	
<i>Boyeria</i>	P				3
Plecoptera (stoneflies)					
<i>Leuctra</i>	SH				3
Trichoptera (caddisflies)					
<i>Cheumatopsyche</i>	CF	4	6		
<i>Hydropsyche</i>	CF	56	1	17	32
<i>Polycentropodidae</i>	CF			1	
<i>Pycnopsyche</i>	SH			1	
<i>Trienodes</i>	SH			1	
NON-INSECT TAXA					
Amphipoda (scuds)					
<i>Gammarus</i>	CG	3	41	24	1
<i>Hyaella</i>	CG			8	
Decapoda (crayfish)					
<i>unidentified (very small)</i>	SH		1	1	
Isopoda (aquatic sow bugs)					
<i>Caecidotea</i>	CG	3		11	32
Mollusca (snails and clams)					
<i>Physa</i>	SC	4			
<i>Pisidiidae (pea clams)</i>	CF	11		5	1
Oligochaetes (aquatic worms)					
<i>unidentified</i>	V				3
Turbellaria (flatworms)					
<i>Dugesia</i>	CG	2	1	4	
Total Specimens		84	92	89	98
Community Richness (Total Taxa)		8	9	14	10
Community Evenness (Scaled SD)		0.31	0.52	0.66	0.56
EPT Taxa		2	4	6	3
Percent Dominant Taxa		0.67	0.45	0.27	0.33
Dominant FFG *		CF	CG	CG	CF/CG

*Functional Feeding Groups: CF= Collector-filterer, CG=Collector-gatherer, SC=Scraper, SH=Shredder, P=Predator, V=Variable

Results of Macroinvertebrate Sampling of Eel River on September 26, 2009

INSECT TAXA	FFG*	BM-1 (fish hatchery)	BM-2 (Old Sandwich Rd)	BM-3A (Forges Rd)	BM-4 (TNC; mill tailrace)
Coleoptera (beetles)					
<i>Dytiscidae</i>				1	
Diptera (flies and midges)					
<i>Chironomidae</i>	V	3	1	3	1
<i>Simuliidae</i>	CF	1	4	9	32
<i>unidentified</i>					1
Ephemeroptera (mayflies)					
<i>Baetis</i>	CG/SC		31		
<i>Stenonema</i>	SC/CG			8	33
Odonata (damselflies and dragonflies)					
<i>Aeshna</i>	P		1		
<i>Argia</i>	P		1	1	
<i>Boyeria</i>	P				2
<i>Enallagma</i>	P		1	2	
Plecoptera (stoneflies)					
<i>Leuctra</i>	SH				1
Trichoptera (caddisflies)					
<i>Cheumatopsyche</i>	CF	2			
<i>Chimarra</i>	CF	1	1		3
<i>Hydropsyche</i>	CF	40	5		13
<i>Triaenodes</i>	SH		2	1	
NON-INSECT TAXA					
Amphipoda (scuds)					
<i>Gammarus</i>	CG	3	30	31	3
<i>Hyalella</i>	CG		6	6	
Isopoda (aquatic sow bugs)					
<i>Caecidotea</i>	CG	5	4	15	12
Mollusca (snails and clams)					
<i>Physa</i>	SC	3		1	
<i>Pisidiidae (pea clams)</i>	CF	31		1	
Turbellaria (flatworms)					
<i>Dugesia</i>	CG	8	1		
Total Specimens		97	88	79	101
Community Richness (Total Taxa)		10	13	12	10
Community Evenness (Scaled SD)		0.49	0.49	0.54	0.56
EPT Taxa		3	4	2	4
Percent Dominant Taxa		0.41	0.35	0.39	0.33
Dominant FFG *		CF	CG	CG	CF/CG

*Functional Feeding Groups: CF= Collector-filterer, CG=Collector-gatherer, SC=Scraper, SH=Shredder, P=Predator, V=Variable

Results of Eel River Periphyton Sampling Conducted May 10,2009

(Estimates of percent composition indicated as follows: **Abundant** = 60-100%, **Very Common** = 30-60%, **Common** = 5-30%, **Rare** <1%

BM-4 (TNC) **BM-1*(hatchery)** **BM-2** **BM-3a**

Periphyton Taxa

Bacillariophyceae (diatoms)

<i>Cocconeis</i>			C	C
<i>Eunotia</i>	V		R	R
<i>Gomphonema</i>	R	R		V
<i>Navicula</i>	O	V	V	C
<i>Nitzschia</i>		C		R
<i>Pinnularia</i>	R			
<i>Synedra</i>		C		

Chlorophyta (green algae, excluding desmids)

<i>Coleochaete</i>	O		C	R
<i>Leptosira</i>		C		
<i>Microthamnion</i>		C		
<i>Zygnema</i>				

Cyanophyta (blue-green algae)

<i>Oscillatoria</i>		C		
<i>Phormidium</i>		R		R

Desmidiaceae (desmids)

<i>Closterium</i>	R			R
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Bacteria

<i>unidentified</i>	A		C	C
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*slides at station BM-1 could not be located, so periphyton was collected from natural gravel and cobble substrates

Results of Eel River Periphyton Sampling Conducted May 10,2009

(Estimates of percent composition indicated as follows: **Abundant** = 60-100%,
Very Common = 30-60%, **Common** = 5-30%, **Rare** <1%

Periphyton Taxa	<u>BM-1 (Hatchery)</u>	<u>BM-2</u>	<u>BM-3a</u>	<u>BM-4 (TNC)</u>
Bacillariophyceae (diatoms)				
<i>Asterionella</i>	C	R		
<i>Cocconeis</i>		V		
<i>Cymbella</i>		R		
<i>Eunotia</i>	R	C	R	C
<i>Gomphonema</i>	R			
<i>Melosira</i>	R			
<i>Nitzschia</i>	V			R
<i>Rhizosolenia</i>	R	R		R
<i>Synedra</i>	V	R		
<i>Tabellaria</i>	R			
Chlorophyta (green algae, excluding desmids)				
<i>Coleochaete</i>		C		
<i>Scenedesmus</i>	R			
Cyanophyta (blue-green algae)				
<i>Phormidium</i>			R	
Protozoa				
<i>Carchesium</i>	R			
<i>Platycola</i>			R	
<i>Rhipidodendron</i>				R
<i>Sphaerophyra</i>				
<i>Vorticella</i>	R		R	R
Bacteria				
<i>unidentified</i>	R		A	A

Eel River Field Measurements Recorded by DW on September 7,2009						
Station	Depth	Temp	SpC	DO	DO	pH
	<i>meters</i>	°C	<i>uS/cm</i>	<i>% Sat</i>	<i>mg/L</i>	<i>units</i>
Hayden Pond	0.5	15.87	111.1	62.2	6.23	5.53
Howland Pond	1.4	16.36	105.3	70.5	7	5.41
Eel River Basin	0.9	17.46	117.1	69.9	6.78	5.59
Russell Mill Pond						
(secchi = 3.5feet / 1.1m)	0.3	18.66	100.8	113.9	10.78	5.62
	1	18.26	100.4	111.2	10.61	5.65
	2	17.86	104.8	77.6	7.47	5.41
	3	15.11	123.4	2.4	0.24	5.15
	4	14.63	123.6	18.9	1.95	5.14
	5	14.43	130	4.3	0.44	5.16
	6	14.22	138.7	3.1	0.32	5.24
	6.1	14.12	156.3	1.9	0.2	5.48

Results of Eel River Plankton Sampling Conducted September 7,2009

(Estimates of percent composition indicated as follows: **Abundant** = 60-100%,
Very Common = 30-60%, **Common** = 5-30%, **Rare** <1%

Russell Mill Pond **Hayden Pond** **Howland Pond** **Eel River Basin**

Phytoplankton Taxa

Bacillariophyceae (diatoms)

<i>Asterionella</i>	A	A	A	V
<i>Eunotia</i>		R		R
<i>Fragilaria</i>			R	R
<i>Melosira</i>	R	R		R
<i>Nitzschia</i>	R	R		

Chlorophyta (green algae, excluding desmids)

<i>Crucigenia</i>				R
<i>Eudorina</i>		R		
<i>Pandorina</i>		R		
<i>Pediastrum</i>		R		
<i>Scenedesmus</i>				
<i>Sphaerocystis</i>		R	R	R

Chrysophyta (yellow-green algae, excluding diatoms)

<i>Chrysospherella</i>	R			R
<i>Dinobryon</i>	R	R	R	C
<i>Mallomonas</i>	R	R	R	C
<i>Rhizochrysis</i>	R	R		R
<i>Synura</i>	R	R	R	R

Cyanophyta (blue-green algae)

<i>Oscillatoria</i>			R	
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Results of Eel River Plankton Sampling Conducted May 10 ,2009

(Estimates of percent composition indicated as follows: **Abundant** = 60-100%, **Very Common** = 30-60%, **Common** = 5-30%, **Rare** <1%

Russell Mill Pond **Hayden Pond** **Howland Pond** **Eel River Basin**

Phytoplankton Taxa

Bacillariophyceae (diatoms)

<i>Asterionella</i>	R	R		R
<i>Eunotia</i>			C	R
<i>Fragilaria</i>	R	R		R
<i>Melosira</i>	R	R	R	R
<i>Navicula</i>	R	R	R	R
<i>Nitzschia</i>			R	R
<i>Synedra</i>	R	R		R
<i>Tabellaria</i>	R		R	

Chlorophyta (green algae, excluding desmids)

<i>Closterium</i>		R	C	R
<i>Eudorina</i>			R	
<i>Micractinium</i>	R			
<i>Mougeotia</i>	R	R	R	
<i>Oedogonium</i>			R	
<i>Pediastrum</i>		R		R
<i>Pleurotaenium</i>			R	
<i>Spirogyra</i>			V	R

Chrysophyta (yellow-green algae, excluding diatoms)

<i>Chrysospherella</i>	R			R
<i>Dinobryon</i>			O	R
<i>Mallomonas</i>		R		
<i>Synura</i>	A	A	R	A

Cyanophyta (blue-green algae)

<i>Oscillatoria</i>		R	R	R
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Protozoa

<i>Phacus</i>			R	
<i>Trachelomonas</i>			C	R

Pyrrophyta (dinoflagellates)

<i>Peridinium</i>				R
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Eel River Field Measurements Recorded by DW on May 10, 2009

Station	Depth	Temp	SpC	DO	DO	pH
	<i>meters</i>	°C	<i>uS/cm</i>	<i>% Sat</i>	<i>mg/L</i>	<i>units</i>
BM-4 (TNC/Sawmill tailrace)	0.2	11.02	79.4	96.2	10.6	5.48
Russel Mill Pond	0.5	14.25	99.8	100.8	10.33	5.76
BM-1 (fish hatchery)	0.4	14.18	102	97.8	10.04	5.9
Hayden Pond	0.4	15.07	105.8	101.5	10.22	5.97
BM-2 (Sandwich Rd)	0.3	15.08	109.3	99.5	10.02	6.03
BM-3a (Forge Rd)	0.3	15.18	96.2	97.4	9.78	5.73
Howland Pond	1.2	15.75	97.7	101.9	10.11	5.72
Eel River Basin	0.9	16.6	113.9	83.2	8.11	5.78

Results of Macroinvertebrate Sampling of Eel River on September 5, 2010

INSECT TAXA	FFG*	BM-1 (fish hatchery)	BM-2 (Old Sandwich Rd)	BM-3A (Forges Rd)	BM-4 (TNC; mill tailrace)
Diptera (flies and midges)					
<i>Chironomidae</i>	V		3		2
<i>Simuliidae</i>	CF	7	18	73	6
<i>Tipulidae</i>	V				2
Ephemeroptera (mayflies)					
<i>Baetis</i>	CG/SC		55	12	
<i>Stenonema</i>	SC/CG	3	2	4	3
Megaloptera (alderflies)					
<i>Sialis</i>	P		1		
Odonata (damselflies and dragonflies)					
<i>Aeshna</i>	P		3	1	
<i>Argia</i>	P			1	
<i>Calopteryx</i>	P		1		
<i>Zygoptera</i>	P		2	1	
Trichoptera (caddisflies)					
<i>Limniphilus</i>	SH	1	1		
<i>Oecetis</i>	V		2		
<i>Hydropsychidae</i>	CF	61		7	13
NON-INSECT TAXA					
Amphipoda (scuds)					
<i>Gammarus/Hyaella</i>	CG	22	17	9	2
Isopoda (aquatic sow bugs)					
<i>Caecidotea</i>	CG	4			10
Hirudinea (leeches)					
<i>Helobdella stagnalis</i>	P	1			1
unidentified	P	1			1
Mollusca (snails and clams)					
<i>Pisidiidae (pea clams)</i>	CF	2			
Oligochaetes (aquatic worms)					
unidentified	V		1		
Turbellaria (flatworms)					
<i>Dugesia</i>	CG	1			
Total Specimens		103	106	108	40
Community Richness (Total Taxa)		10	12	8	9
Community Evenness (Scaled SD)		0.36	0.42	0.31	0.58
EPT Taxa		3	4	3	2
Percent Dominant Taxa		0.59	0.52	0.68	0.33
Dominant FFG *		CF	CG/SC	CF	CF

*Functional Feeding Groups: CF= Collector-filterer, CG=Collector-gatherer, SC=Scraper, SH=Shredder, P=Predator, V=Variable

Results of Eel River Periphyton Sampling Conducted May 25,2010

(Estimates of percent composition indicated as follows: **Abundant** = 60-100%, **Very Common** = 30-60%, **Common** = 5-30%, **Rare** <1%

BM-4 (TNC) **BM-1*(hatchery)** **BM-2** **BM-3a**

Periphyton Taxa

Bacillariophyceae (diatoms)	No Sample ⁽¹⁾			
<i>Asterionella</i>	R			
<i>Cocconeis</i>			V	V
<i>Eunotia</i>	V		C	C
<i>Navicula</i>	R			R
<i>Nitzschia</i>	R			
Chlorophyta (green algae, excluding desmids)				
<i>Coleochaete</i>	C		R	R
Cyanophyta (blue-green algae)				
<i>Anabaena</i>			R	
Bacteria				
<i>unidentified</i>	V ⁽²⁾		V	V

(1) Slides were not deployed at station BM-4 due to river restoration/dam removal activities

(2) Basal discs of "iron" bacteria (likely *Leptothrix*) were present on slides at BM-1

Results of Eel River Periphyton Sampling Conducted September 25, 2010

(Estimates of percent composition indicated as follows: Abundant = 60-100%,
Very Common = 30-60%, Common = 5-30%, Rare <1%

<u>Periphyton Taxa</u>	<u>BM-1 (Hatchery)</u>	<u>BM-2</u>	<u>BM-3a</u>	<u>BM-4 (TNC)</u>
Bacillariophyceae (diatoms)				
<i>Asterionella</i>	R			
<i>Cocconeis</i>	V	V	V	
<i>Cymbella</i>		R		R
<i>Eunotia</i>	V	V	V	V
<i>Gomphonema</i>		R		
<i>Navicula</i>	R	R	R	R
<i>Nitzschia</i>	R	R		
<i>Pinnularia</i>	R			
<i>Synedra</i>			R	
<i>Tabellaria</i>	R			
Chlorophyta (green algae, excluding desmids)				
<i>Closterium</i>				R
<i>Coleochaete</i>	R	R	R	R
Cyanophyta (blue-green algae)				
<i>Lyngbya</i>		R		
<i>Phormidium</i>				R
Protozoa				
<i>Platycola</i>			R	
<i>Rhipidodendron</i>				R
<i>Vorticella</i>		R	R	R
Bacteria				
<i>unidentified</i>				V

Eel River Field Measurements Recorded by DW on May 21, 2010						
Station	Depth	Temp	SpC	DO	DO	pH
	<i>meters</i>	°C	<i>uS/cm</i>	<i>% Sat</i>	<i>mg/L</i>	<i>units</i>
Hayden Pond	0.4	15.58	106.2	74.7	7.48	5.51
Howland Pond	0.6	15.56	106.3	77.7	7.78	5.5
Eel River Basin	0.6	17.32	110	70.5	6.8	5.55
Russell Mill Pond	0.3	16.88	95.7	112.6	10.96	5.54
(Secchi = 5ft/1.5m)	1	16.43	95.5	108.7	10.69	5.5
	2	14.3	102.3	79.7	8.2	5.33
	3	12.42	110	26.8	2.87	5.13
	4	11.81	107.8	4.4	0.48	5.04
	5	11.46	113.7	1.7	0.18	5.19
	6	11.08	130.8	1.5	0.16	5.48
	6.3	10.94	146.3	1.4	0.15	5.66

Eel River Field Measurements Recorded by DW on September 24, 2010

Station	Depth	Temp	SpC	DO	DO	pH
	<i>meters</i>	<i>°C</i>	<i>uS/cm</i>	<i>% Sat</i>	<i>mg/L</i>	<i>units</i>
Hayden Pond	0.4	16.32	109.3	66.6	6.56	5.71
Howland Pond	1.2	17.62	111.6	64.7	6.2	5.16
Eel River Basin	1.2	18.29	116.3	68.2	6.45	5.81
Russell Mill Pond	0.2	18.2	102	120.1	11.38	6.27
(Secchi = 5.5ft/1.7m)	1	18.07	101.5	120.9	11.48	6.3
	2	17.95	101.8	120.3	11.46	6.31
	2.5	17.91	101.3	118.5	11.3	6.2
	3	14.95	120.1	41.9	4.25	5.45
	4	13.77	169.6	2.8	0.29	5.55
	5	12.9	204.5	2	0.22	5.39
	6	11.99	251.1	1.8	0.2	5.44
	6.3	11.85	293.6	1.7	0.19	5.62

Results of Eel River Plankton Sampling Conducted May 21 ,2010

(Estimates of percent composition indicated as follows: **Abundant** = 60-100%,
Very Common = 30-60%, **Common** = 5-30%, **Rare** <1%

	<u>Russell Mill Pond</u>	<u>Hayden Pond</u>	<u>Howland Pond</u>	<u>Eel River Basin</u>
<u>Phytoplankton Taxa</u>				
Bacillariophyceae (diatoms)				
<i>Asterionella</i>	V	V	A	V
<i>Fragilaria</i>		R		
<i>Melosira</i>	R	R	R	R
<i>Nitzschia</i>	R		R	R
<i>Rhizosolenia</i>	R	R		R
<i>Surirella</i>			R	
<i>Synedra</i>		R	R	R
Chlorophyta (green algae, excluding desmids)				
<i>Closterium</i>		R		
<i>Closteriopsis</i>		R		
<i>Dictyosphaerium</i>	R	R		R
<i>Oocystis</i>		R		
<i>Spaerocystis</i>	R			
Chrysophyta (yellow-green algae, excluding diatoms)				
<i>Dinobryon</i>	C	C	R	C
<i>Mallomonas</i>	R	R		R
<i>Synura</i>	V	V		V
Cyanophyta (blue-green algae)				
<i>Oscillatoria</i>			R	R

Results of Eel River Plankton Sampling Conducted September 24, 2010

(Estimates of percent composition indicated as follows: **Abundant** = 60-100%, **Very Common** = 30-60%, **Common** = 5-30%, **Rare** <1%

Russell Mill Pond **Hayden Pond** **Howland Pond** **Eel River Basin**

Phytoplankton Taxa

Bacillariophyceae (diatoms)

<i>Asterionella</i>	R		R	R
<i>Cymbella</i>				R
<i>Fragilaria</i>			O	R
<i>Melosira</i>	R	V	V	R
<i>Navicula</i>		R	R	
<i>Nitzschia</i>		C	O	V
<i>Rhizosolenia</i>	R			
<i>Synedra</i>	R	R	R	R
<i>Tabellaria</i>	C	R	C	R

Chlorophyta (green algae)

<i>Ankistrodesmus</i>			R	
<i>Botryococcus</i>				R
<i>Closterium</i>			R	
<i>Crucigenia</i>			R	
<i>Eudorina</i>	R	R		
<i>Kirchneriella</i>				R
<i>Micrasterias</i>			R	
<i>Mougeotia</i>			V	C
<i>Pandorina</i>	R			
<i>Pediastrum</i>		R	R	R
<i>Rhizoclonium</i>		R		
<i>Scenedesmus</i>		R	R	
<i>Spirogyra</i>		R	R	R
<i>Spondylosium</i>	R			
<i>Staurostrum</i>			R	
<i>Zygnema</i>		V	R	

Chrysophyta (yellow-green algae, excluding diatoms)

<i>Chrysosphaerella</i>	R	R		
<i>Dinobryon</i>	A	V	R	
<i>Mallomonas</i>	R			
<i>Synura</i>			R	R
<i>Uroglenopsis</i>				R

Cyanophyta (blue-green algae)

<i>Anabaena</i>	R	R	R	R
<i>Microcystis</i>				R
<i>Oscillatoria</i>				R

Protozoa

<i>Climacostomum</i>	C	R		C
<i>Phacus</i>	R			
<i>Trachelomonas</i>	R			

Master List of Aquatic Macrophytes Observed in Ponds of the Eel River System
(No Significant Changes in 2010 from 2006-2009 List, see report for further info)

Species Name	Common Name	Occurance in Ponds			
<u>Submerged Plants</u>		<u>Russell Mill</u>	<u>Hayden</u>	<u>Howland</u>	<u>Eel River</u>
<i>Cabomba caroliniana</i>	Fanwort (non-native)		X		X
<i>Callitriche sp.</i>	Water-starwort	X	x		
<i>Ceratophyllum demersum</i>	Coontail	x		x	x
<i>Elecharis sp</i>	Spike-rush	x		x	
<i>Elodea nuttallii</i>	Waterweed	X	X	x	x
<i>Ludwigia palustris</i>	Water-purslane	x			
<i>Myriophyllum humile</i>	Water-milfoil	x		x	
<i>Najas flesilis</i>	Naiad			x	
<i>Potamogeton sp.</i>	Pondweed	x	x	x	x
<i>Utricularia sp.</i>	Bladderwort	X	x	x	x
<u>Floating-Leaved Plants</u>					
<i>Nuphar variegata</i>	Yellow Waterlily	x	x		
<i>Nymphaea odorata</i>	White Waterlily			X	x
<u>Emergent Plants</u>					
<i>Bidens sp.</i>	Beggar-ticks			x	
<i>Decodon verticillatus</i>	Water-willow		x	x	x
<i>Gratiola aurea</i>	Golden-pert			x	
<i>Iris pseudacorus</i>	Yellow Iris (alien)	x			
<i>Juncus sp.</i>	Rush	x	x		
<i>Lythrum salicaria</i>	Purple Loosestrife (alien)			x	x
<i>Myosotis sp.</i>	Forget-me-not				x
<i>Phragmites australis</i>	Common Reed		x		x
<i>Pontederia cordata</i>	Pickereel-weed	x	x	x	
<i>Sparganium sp.</i>	Bur-reed	x	x	x	x
<i>Sagittaria sp.</i>	Arrowhead			x	
<i>Typha latifolia</i>	Common Cattail		x	x	
*dominant species indicated in bold, capital X					

Results of Macroinvertebrate Sampling of Eel River on October 2, 2011

INSECT TAXA	FFG*	BM-1 (fish hatchery)	BM-2 (Old Sandwich Rd)	BM-3A (Forges Rd)	BM-4 (TNC; footbridge)
Coleoptera (beetles)					
<i>Stenelmis</i>	SC/CG				
Diptera (flies and midges)					
<i>Chironomidae</i>	V				12
<i>Simuliidae</i>	CF		14	15	10
<i>Tipulidae</i>	V				1
Ephemeroptera (mayflies)					
<i>Baetis</i>	CG/SC		3		
<i>Stenonema</i>	SC/CG		8		16
Hemiptera (true bugs)					
<i>Ranatra</i>	P	1			
Odonata (damselflies and dragonflies)					
<i>Boyeria</i>	P		1		
<i>Calopteryx</i>	P	1		2	1
Trichoptera (caddisflies)					
<i>Chimarra</i>	CF				
<i>Hydropsychidae</i>	CF	44	23	15	40
NON-INSECT TAXA					
Amphipoda (scuds)					
<i>Gammarus</i>	CG	27	45	16	15
Isopoda (aquatic sow bugs)					
<i>Caecidotea</i>	CG		4	13	4
Mollusca (snails and clams)					
<i>Physa</i>	SC	2			
<i>Pisidiidae</i> (pea clams)	CF	9			
Oligochaetes (aquatic worms)					
unidentified	V				3
Turbellaria (flatworms)					
<i>Dugesia</i>	CG		1		
Total Specimens		84	99	61	102
Community Richness (Total Taxa)		6	8	5	9
Community Evenness (Scaled SD)		0.44	0.53	0.77	0.61
EPT Taxa		1	3	1	2
Percent Dominant Taxa		0.52	0.45	0.26	0.39
Dominant FFG *		CF	CG	CF	CF

*Functional Feeding Groups: CF= Collector-filterer, CG=Collector-gatherer, SC=Scraper, SH=Shredder, P=Predator, V=Variable

Results of Eel River Periphyton Sampling Conducted May 30,2011

(Estimates of percent composition indicated as follows: **Abundant** = 60-100%, **Very Common** = 30-60%, **Common** = 5-30%, **Rare** <1%

(1) **BM-4 (TNC)** **BM-1 (Hatchery)** **BM-2 (Sandwich Rd)** **BM-3a (Forges Rd)**

Periphyton Taxa

Bacillariophyceae (diatoms)

<i>Asterionella</i> (2)	R	R	
<i>Cocconeis</i>	R	C	V
<i>Cymbella</i>	R	R	
<i>Eunotia</i>	V	C	V
<i>Navicula</i>	V	R	R
<i>Nitzschia</i>	R		
<i>Pinnularia</i>	R		

Chlorophyta (green algae, excluding desmids)

<i>Chaetophora</i>	on natural substrates		
<i>Coleochaete</i>	R	V	R
<i>Vaucheria</i>	on natural substrates		

Cyanophyta (blue-green algae)

<i>Oscillatoria</i>		R	
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Protozoa

<i>Platycola</i>		R	
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Bacteria

<i>unidentified</i>	C	C	C
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(1) Slides mmissing at BM-4 station. Results are for macroscopic filaments collected from natural substrates (gravel and cobble).

(2) This diatom is usually planktonic, but occasionally appears enmeshed among periphyton when high densities are discharged from eutrophic Russell Mill Pond located upstream.

Results of Eel River Periphyton Sampling Conducted October 2, 2011

(Estimates of percent composition indicated as follows: **Abundant** = 60-100%, **Very Common** = 30-60%, **Common** = 5-30%, **Rare** <1%

	<u>BM-4 (TNC)</u>	<u>BM-1 (Hatchery)</u>	<u>BM-2 (Sandwich Rd)</u>	<u>BM-3a (Forges Rd)</u>
<u>Periphyton Taxa</u>				
<i>Asterionella</i>		O		
<i>Cymbella</i>			O	R
<i>Eunotia</i>		O		V
<i>Gomphonema</i>		R		R
<i>Navicula</i>		R	C	V
<i>Nitzschia</i>			A	C
<i>Synedra</i>		O	C	O
<i>Tabellaria</i>		O		
Chlorophyta (green algae, excluding desmids)				
<i>Coleochaete</i>		R		
<i>Mougeotia</i>				R
<i>Spirogyra</i>	V			
<i>Vaucheria</i>	V			
Cyanophyta (blue-green algae)				
<i>Anabaena</i>		R		
<i>Phormidium</i>		R		
Protozoa				
<i>Vorticella</i>			C	R
Bacteria				
<i>unidentified</i>		A (1)		
(1) Slides at BM-1 were rusty-red with coatings of iron bacteria and precipitates.				

Eel River Field Measurements Recorded by DW on May 7, 2011

Station	Depth	Temp	SpC	DO	DO	pH
	<i>meters</i>	<i>°C</i>	<i>uS/cm</i>	<i>% Sat</i>	<i>mg/L</i>	<i>units</i>
Hayden Pond	0.3	14.01	121.6	79.4	8.16	6.26
Howland Pond	1.1	14.12	119.2	87.8	9.01	6.08
Eel River Basin	1	15.05	134.5	93.5	9.4	6.48
Russell Mill Pond	0.2	15.81	109.1	107.7	10.65	6.4
(Secchi = 7ft/2.1m)	1	15.73	108.9	107.8	10.68	6.42
	2	15.55	108.4	107.5	10.69	6.44
	3	14.85	111	91.9	9.28	6.19
	4	13.09	119.8	51.7	5.43	6
	5	11.2	111.6	24.3	2.66	5.98
	6	10.4	135.8	0	0	6.35
	6.1	10.49	250.5	0	0	6.56

Eel River Field Measurements Recorded by DW on September 11, 2011

Station	Depth	Temp	SpC	DO	DO	pH
	<i>meters</i>	°C	<i>uS/cm</i>	<i>% Sat</i>	<i>mg/L</i>	<i>units</i>
Hayden Pond	0.4	16.3	NS	66.4	6.5	NS
Howland Pond	1	17.3	NS	72.4	6.9	NS
Eel River Basin	1	18.8	NS	62.8	5.8	NS
Russell Mill Pond	0.2	18.8	NS	104.4	9.7	NS
(Secchi = 4.4ft/1.3m)	1	17.8	NS	79	7.5	NS
	2	16.6	NS	6.2	0.6	NS
	3	15.9	NS	3.5	0.3	NS
	4	15.5	NS	3.2	0.3	NS
	5	13.6	NS	3	0.3	NS
	6	12.5	NS	3	0.3	NS

Results of Eel River Plankton Sampling Conducted May 7 ,2011

(Estimates of percent composition indicated as follows: **Abundant** = 60-100%,
Very Common = 30-60%, **Common** = 5-30%, **Rare** <1%

	<u>Russell Mill Pond</u>	<u>Hayden Pond</u>	<u>Howland Pond</u>	<u>Eel River Basin</u>
<u>Phytoplankton Taxa</u>				
Bacillariophyceae (diatoms)				
<i>Asterionella</i>	A	A	O	V
<i>Attheya</i>	R			
<i>Cyclotella</i>	R	R	R	
<i>Eunotia</i>	R		R	
<i>Fragilaria</i>	R	R	R	R
<i>Gyrosigma</i>				R
<i>Melosira</i>	R	R	R	C
<i>Navicula</i>	R	R	R	R
<i>Nitzschia</i>	R	R	R	R
<i>Pinnularia</i>				R
<i>Rhizosolenia</i>	R	R		R
<i>Synedra</i>	R	R	C	R
<i>Tabellaria</i>	R	R	V	R
Chlorophyta (green algae)				
<i>Closterium</i>			R	R
<i>Dictyosphaerium</i>		R		
<i>Mougeotia</i>			R	
<i>Pediastrum</i>				R
<i>Scenedesmus</i>		R		
<i>Spaerocystis</i>	R	R		
<i>Staurastrum</i>				R
Chrysophyta (yellow-green algae, excluding diatoms)				
<i>Chrysosphaerella</i>			O	
<i>Dinobryon</i>	R	R	V	C
<i>Mallomonas</i>	R	R		R
<i>Synura</i>			R	R
Cyanophyta (blue-green algae)				
<i>Anabaena</i>	R			
<i>Oscillatoria</i>		R		C
Pyrrhophyta (dinoflagellates)				
<i>Peridinium</i>	R		R	R
Protozoa				
<i>Climacostomum</i>	R			
<i>Euglena</i>	R			R
<i>Phacus</i>	R			
<i>Trachelmonas</i>				R
unidentified flagellate	R			

Results of Eel River Plankton Sampling Conducted September 11 ,2011

(Estimates of percent composition indicated as follows: Abundant = 60-100%, Very Common = 30-60%, Common = 5-30%, Rare <1%

	<u>Russell Mill Pond</u>	<u>Hayden Pond</u>	<u>Howland Pond</u>	<u>Eel River Basin</u>
<u>Phytoplankton Taxa</u>				
Bacillariophyceae (diatoms)				
<i>Asterionella</i>	C	V	C	C
<i>Cyclotella</i>	R	R		
<i>Cymbella</i>		R		
<i>Eunotia</i>			R	
<i>Fragilaria</i>			R	R
<i>Gomphonema</i>		R		
<i>Gyrosigma</i>				R
<i>Melosira</i>	R	R	C	R
<i>Navicula</i>			R	
<i>Nitzschia</i>	R	R		
<i>Tabellaria</i>	V	V	V	A
Chlorophyta (green algae)				
<i>Ankistrodesmus</i>				R
<i>Closterium</i>			R	
<i>Desmidium</i>			R	
<i>Eudorina</i>	R	R	R	
<i>Kirchneriella</i>		R		
<i>Mougeotia</i>			R	
<i>Nephrocytium</i>			R	
<i>Pandorina</i>		R		
<i>Pediastrum</i>	R	R	R	R
<i>Pleurotaenium</i>			R	
<i>Scenedesmus</i>				R
<i>Spirogyra</i>			R	
Chrysophyta (yellow-green algae, excluding diatoms)				
<i>Chrysosphaerella</i>	R	R		R
<i>Dinobryon</i>		R		
<i>Synura</i>			V	
<i>Uroglenopsis</i>	R			
Cyanophyta (blue-green algae)				
<i>Anabaena</i>	R	C	R	R
<i>Aphanocapsa</i>	R			
<i>Dactylococcopsis</i>	R			
<i>Oscillatoria</i>	V		R	
Pyrrhophyta (dinoflagellates)				
<i>Ceratium</i>		R		
Protozoa				
<i>Climacostomum</i>	C	C		R
<i>Euglena</i>	R	R	R	
<i>Trachelmonas</i>			R	

Results of Macroinvertebrate Sampling of Eel River on September 23, 2012

INSECT TAXA	FFG*	BM-1 (fish hatchery)	BM-2 (Old Sandwich Rd)	BM-3A (Forges Rd)	BM-4 (TNC; footbridge)
Coleoptera (beetles)					
<i>Stenelmis</i>	SC/CG				
Diptera (flies and midges)					
<i>Chironomidae</i>	V				14
<i>Simuliidae</i>	CF	7		11	16
<i>Tipulidae</i>	V				2
Ephemeroptera (mayflies)					
<i>Baetis</i>	CG/SC		38	22	11
<i>Stenonema</i>	SC/CG		5	8	15
Odonata (damselflies and dragonflies)					
<i>Boyeria</i>	P		2		3
<i>Calopteryx</i>	P		1	2	1
Trichoptera (caddisflies)					
<i>Chimarra</i>	CF				
<i>Oecetis</i>				2	
<i>Hydropsyche</i>	CF	31	1	12	27
NON-INSECT TAXA					
Decapoda (crayfish)					
unidentified	SH		3	1	
Amphipoda (scuds)					
<i>Gammarus</i>	CG	14	43	27	7
Isopoda (aquatic sow bugs)					
<i>Caecidotea</i>	CG	6		1	2
Mollusca (snails and clams)					
<i>Helisoma</i>		3			
<i>Physa</i>	SC	1		3	
<i>Pisidiidae</i> (pea clams)	CF	40			
Turbellaria (flatworms)					
<i>Dugesia</i>	CG			1	
Total Specimens		102	93	90	98
Community Richness (Total Taxa)		7	7	11	10
Community Evenness (Scaled SD)		0.58	0.42	0.62	0.7
EPT Taxa		1	3	4	3
Percent Dominant Taxa		0.39	0.46	0.3	0.28
Dominant FFG *		CF	CG	CG	CF
*Functional Feeding Groups: CF= Collector-filterer, CG=Collector-gatherer, SC=Scraper, SH=Shredder, P=Predator, V=Variable					

Eel River Field Measurements Recorded by DW on May 12,2012

Station	Depth	Temp	DO	DO
	<i>meters</i>	°C	% Sat	mg/L
Hayden Pond	0.4	13.6	87.5	9.1
Howland Pond	0.5	14	75	7.7
Eel River Basin	0.5	14.4	83.7	8.5
Russell Mill Pond	0.2	15	119.9	12.1
(Secchi = 2.5FT / 0.76M)	1	14.9	119.9	12.1
	2	14.8	119.6	12.1
	3	14.7	118.6	12
	4	12.2	12.3	1.3
	5	11.8	1.5	0.2
	6	11.2	1.4	0.2

Results of Eel River Plankton Sampling Conducted May 12, 2012

(Estimates of percent composition indicated as follows: **Abundant** = 60-100%, **Very Common** = 30-60%, **Common** = 5-30%, **Rare** <1%

		<u>Russell Mill Pond</u>	<u>Hayden Pond</u>	<u>Howland Pond</u>	<u>Eel River Basin</u>
<u>Phytoplankton Taxa</u>					
Bacillariophyceae (diatoms)					
	<i>Asterionella</i>	A	A	C	A
	<i>Cymbella</i>		R	R	
	<i>Eunotia</i>	R			
	<i>Melosira</i>	R	R		
	<i>Navicula</i>		R		R
	<i>Nitzschia</i>		R	R	R
	<i>Rhizosolenia</i>	R			R
	<i>Synedra</i>				R
	<i>Tabellaria</i>	R	R	C	R
Chlorophyta (green algae)					
	<i>Crucigenia</i>		R		
	<i>Mougeotia</i>			O	
	<i>Pleurotaenium</i>				R
	<i>Staurastrum</i>			R	
Chrysophyta (yellow-green algae, excluding diatoms)					
	<i>Chrysosphaerella</i>				
	<i>Dinobryon</i>		R	V	R
	<i>Mallomonas</i>			R	
	<i>Synura</i>			R	
Cyanophyta (blue-green algae)					
	<i>Anabaena</i>		R		
	<i>Oscillatoria</i>		R		
Protozoa					
	<i>Phacus</i>	R			
	<i>Trachelmonas</i>	R			

Eel River Field Measurements Recorded by DW on September 15 & 16, 2012

Station	Depth	Temp	DO	DO
	<i>meters</i>	°C	% Sat	mg/L
Hayden Pond (9/15)	0.4	18.6	68.2	6.4
Howland Pond (9/15)	0.3	19.4	46.4	4.3
	1	19.4	43.7	4
Eel River Basin (9/15)	0.3	20.6	79	7.1
	1	20.5	80	7.2
Russell Mill Pond (9/16)	0.2	19.3	108.5	10
(Secchi = 5FT / 1.52M)	1	19	107.8	10
	1.5	18.8	102.4	9.5
	2	17.5	51.4	5
	3	16	3.4	0.3
	4	15.4	2.8	0.3
	5	14.2	2.7	0.3
	6	13.1	2.8	0.3

Results of Eel River Plankton Sampling Conducted September 15 & 16 2012

(Estimates of percent composition indicated as follows: Abundant = 60-100%, Very Common = 30-60%, Common = 5-30%, Rare <1%

	<u>Russell Mill Pond</u>	<u>Hayden Pond</u>	<u>Howland Pond</u>	<u>Eel River Basin</u>
<u>Phytoplankton Taxa</u>				
Bacillariophyceae (diatoms)				
<i>Asterionella</i>			R	C
<i>Cymbella</i>			R	
<i>Eunotia</i>		R	C	R
<i>Fragilaria</i>		R	V	
<i>Melosira</i>			R	R
<i>Navicula</i>		R	R	
<i>Nitzschia</i>		R	O	R
<i>Synedra</i>	R		R	V
<i>Tabellaria</i>	A	A	C	V
Chlorophyta (green algae)				
<i>Ankistrodesmus</i>			R	
<i>Arthrodesmus</i>	R			
<i>Closterium</i>			R	R
<i>Crucigenia</i>			R	
<i>Mougeotia</i>			O	
<i>Oocystis</i>	R			
<i>Pediastrum</i>	R	R	R	
<i>Scenedesmus</i>			R	
<i>Sphareocystis</i>			R	
<i>Spirogyra</i>		R		
Chrysophyta (yellow-green algae, excluding diatoms)				
<i>Chrysosphaerella</i>	R			
<i>Dinobryon</i>	R			
<i>Mallomonas</i>	R			
<i>Synura</i>			R	
Cyanophyta (blue-green algae)				
<i>Anabaena</i>	O	R		
<i>Aphanocapsa</i>	R			
<i>Gomphosphaeria</i>	R			
<i>Oscillatoria</i>	C			
Pyrrhophyta (dinoflagellates)				
<i>Ceratium</i>	R			
Protozoa				
<i>Climacostomum</i>	O			
<i>Eulena</i>	O	R		
<i>Phacus</i>	R		R	
<i>Trachelomonas</i>	O			

Results of Eel River Periphyton Sampling Conducted September 23, 2012

(Estimates of percent composition indicated as follows: **Abundant** = 60-100%, **Very Common** = 30-60%, **Common** = 5-30%, **Rare** <1%

Sample Identification (glass slides incubated as artificial substrates except BM-4 see note 1

BM-4 (TNC) **BM-1 (Hatchery)** **BM-2 (Sandwich Rd)** **BM-3a (Forges Rd)**

Periphyton Taxa

Bacillariophyceae (diatoms)

<i>Cocconeis</i>		C	V	
<i>Cymbella</i>	R	R		V
<i>Eunotia</i>	C	C	V	C
<i>Gomphonema</i>				
<i>Navicula</i>	C	C	R	R
<i>Pinnularia</i>	R	R		
<i>Synedra</i>	C		R	R
<i>Tabellaria</i> (2)	C	C		

Chlorophyta (green algae, excluding desmids)

<i>Closterium</i>				R
<i>Coleochaete</i>	R	R		
<i>Mougeotia</i>				C
<i>Oedogonium</i>				R
<i>Pleurotaneium</i>				R

Cyanophyta (blue-green algae)

<i>Oscillatoria</i>	R	0		
<i>Phormidium</i>	R	R		

Protozoa

<i>Platycola</i>				
<i>Rhipidodendron</i>		R		
<i>Vorticella</i>		R	R	

(1) Slides at BM-4 were missing, periphyton was scraped off PVC standpipe supporting staff gauge

(2) This diatom is usually planktonic, but occasionally appears enmeshed among periphyton when high densities are discharged from Russell Mill Pond located upstream

Results of Macroinvertebrate Sampling of Eel River on September 10, 2013							
INSECT TAXA	FFG*	BM-1 (fish hatchery)	BM-2 (Old Sandwich Rd)	BM-3A (Forges Rd)	BM-4 (TNC; footbridge)	HEAD 2 (Bog 4/Preserve)	HEAD 4 (Bog 1,ds Long Pond Rd)
Coleoptera (beetles)							
<i>Stenelmis</i>	SC/CG					3	
<i>Haliphus</i>	SH	1		3			
<i>Uvarus</i>	P						
<i>Dytiscidae</i>	P					5	
Diptera (flies and midges)							
<i>Chironomidae</i>	V	15	14	32	13	12	2
<i>Simuliidae</i>	CF	1				15	4
<i>Tipulidae</i>	V						
Ephemeroptera (mayflies)							
<i>Baetis</i>	CG/SC					5	
<i>Stenonema</i>	SC/CG		2	1	4		23
Hemiptera (true bugs)							
<i>Ranatra</i>	P						
<i>Belostoma</i>	P					1	
<i>Hesperocorixa</i>						1	
Odonata (damselflies and dragonflies)							
<i>Boyeria</i>	P			1		2	5
<i>Calopteryx</i>	P				3	1	9
<i>Ischnura</i>	P			1			9
Trichoptera (caddisflies)							
<i>Chimarra</i>	CF			1		2	
<i>Hydropsyche</i>	CF	8	5	7	5	5	17
<i>Oecetis</i>	SC	2		6		1	
NON-INSECT TAXA							
Amphipoda (scuds)							
<i>Gammarus</i>	CG	16	48	22	35	25	13
<i>Hyalella</i>	CG	8	35	3	20	5	
Decapoda (crayfish)							
unidentified	SH						
Isopoda (aquatic sow bugs)							
<i>Caecidotea</i>	CG			3	5	3	
Mollusca (snails and clams)							
<i>Helisoma</i>			4	2	2		
<i>Physa</i>	SC	13			4		7
<i>Pisidiidae (pea clams)</i>	CF	39	11	5			
Oligochaetes (aquatic worms)							
unidentified	V	1					
Turbellaria (flatworms)							
<i>Dugesia</i>	CG		1	3		3	
Total Specimens		104	120	90	91	89	89
Community Richness (Total Taxa)		10	8	14	9	16	9
Community Evenness (Scaled SD)		0.74	0.71	0.74	0.77	0.71	0.83
EPT Taxa		1	2	4	2	4	2
Percent Dominant Taxa		0.38	0.4	0.36	0.38	0.28	0.26
Dominant FFG *		CF	CG	CG	CG	CG	P/SC/CG
*Functional Feeding Groups: CF= Collector-filterer, CG=Collector-gatherer, SC=Scraper, SH=Shredder, P=Predator, V=Variable							

Eel River Field Measurements Recorded by UMASS on May 28 & June 5, 2013									
Station	Secchi Depth	Total Depth	Sample Depth	Temp	DO	DO	pH	Alkalinity	Conductivity
	<i>meters</i>	<i>meters</i>	<i>meters</i>	°C	% Sat	mg/L	unit	mg/L CaCO ₃	mS
Hayden Pond (5/28/2013)	0.4	0.5	0.25	23	99	8.4	6.71	11.5	0.1576
Howland Pond (5/28/2013)	0.7	0.7	0.5	19.1	98	9.2	6.69	10.9	0.1331
Eel River Basin (6/5/2013)	0.85	1.5	1	21.9	72.4	6.4	6.65	15.9	0.381
Russell Mill Pond (6/5/2013)	0.8	5.25	0.15	20.3	122.1	11.2	6.75	10.9	0.1227
			1	18.3	105	10	6.53	10.9	0.1115
			2	16.2	65.5	6	6.4	11.4	0.1427
			3	14.2	35	3.4	6.31	13.7	0.1379
			4	13.2	0	0	6.25	12.7	0.1517

Results of Eel River Macrophyte Survey Conducted May and June 2013

Species Name	Common Name	Occurance in Ponds			
		Russell Mill	Hayden	Howland	Eel River
		5/30/2013	5/30/2013	5/28/2013	6/5/2013
Submerged Plants					
<i>Cabomba caroliniana</i>	Fanwort (non-native)	x	X		x
<i>Callitriche sp.</i>	Water-starwort	X	X		
<i>Ceratophyllum demersum</i>	Coontail	x			
<i>Elodea nuttallii</i>	Waterweed	x			x
<i>Ludwigia palustris</i>	Water-purslane	x	x	X	X
<i>Myriophyllum humile</i>	Water-milfoil	X	x	X	
<i>Najas flesilis</i>	Naiad			x	
<i>Potamogeton sp.</i>	Pondweed				x
<i>Utricularia sp.</i>	Bladderwort				
		x			
Floating-Leaved Plants					
<i>Nuphar variegata</i>	Yellow Waterlily	x		x	x
<i>Nymphaea odorata</i>	White Waterlily	x	x		
Emergent Plants					
<i>Alnus incana</i>	Speckled Alder			x	
<i>Clethra alnifolia</i>	Sweet Pepperbush	x	x		x
<i>Colocasia sp.</i>	Elephant-ear				x
<i>Decodon verticillatus</i>	Water-Willow			x	x
<i>Dennstaedtia punctilobula</i>	Hay-Scented Fern				x
<i>Digitaria sanguinalis</i>	Hairy Crabgrass			x	
<i>Elaeagnus umbellata</i>	Autumn Olive			x	
<i>Impatiens capensis</i>	Jewelweed	X			
<i>Iris pseudacorus</i>	Yellow Iris	X	x		x
<i>Juncus sp.</i>	Rush	X	x	x	x
<i>Lonicera sp.</i>	Honeysuckle	x		x	
<i>Lysimachia terrestris</i>	Swamp Candle				x
<i>Myosotis sp.</i>	Forget-Me-Not	x			x
<i>Myricaceae gale</i>	Bayberry		X	X	X
<i>Onoclea sensibilis</i>	Sensitive Fern	x			x
<i>Phragmites australis</i>	Common Reed		x		X
<i>Pontederia cordata</i>	Pickrel-Weed	x	x	x	x
<i>Rhus glabra</i>	Smooth Sumac				x
<i>Rosa multiflora</i>	Multiflora Rose				x
<i>Rubus idaeus</i>	Raspberry	x			
<i>Rumex crispus</i>	Curly Dock	x			X
<i>Sambucus sp.</i>	Elderberry				x
<i>Scirpus cyperinus</i>	Woolgrass	x	x		x
<i>Setaria pumila</i>	Yellow Foxtail			x	
<i>Sparganium sp.</i>	Bur-Reed	x	x	x	x
<i>Sphagnum sp.</i>	Sphagnum Moss	x			
<i>Toxicodendron radicans</i>	Poison Ivy				X
<i>Typha latifolia</i>	Common Cattail	x	x	X	X
<i>Viburnum dentatum</i>	Arrowwood				x
<i>Vitis labrusca</i>	Fox Grape			x	x
*dominant species indicated in bold, capital X					

Compiled by the Town of Plymouth

Data collected by Town Consultant, David Worden, Limnologist/Biologist

Results of Eel River Plankton Sampling Conducted May 30 & June 5, 2013				
(Estimates of percent composition indicated as follows: Abundant = 60-100%, Very Common = 30-60%, Common = 5-30%, Occasional = 1-5%, Rare <1%				
Phytoplankton Taxa	Russell Mill Pond	Hayden Pond	Howland Pond	Eel River Basin
Bacillariophyceae (diatoms)				
<i>Asterionella</i>	A	R	O	V
<i>Cymbella</i>		R	R	
<i>Fragilaria</i>		R		R
<i>Gyrosigma</i>				C
<i>Melosira</i>	V	C	R	
<i>Navicula</i>	R	C		
<i>Nitzschia</i>		R	R	R
<i>Pinnularia</i>	C	V		R
<i>Synedra</i>		R		R
<i>Tabellaria</i>	V	C	O	R
Chlorophyta (green algae)				
<i>Closterium</i>		R		C
<i>Mougeotia</i>		C		C
<i>Pediastrum</i>				C
<i>Scenedesmus</i>				R
<i>Spirogyra</i>		R		
<i>Staurastrum</i>	R			R
Chrysophyta (yellow-green algae, excluding diatoms)				
<i>Chrysosphaerella</i>	R			R
<i>Dinobryon</i>		R		R
<i>Mallomonas</i>				
Cyanophyta (blue-green algae)				
<i>Gomphosphaeria</i>				R
Other				
<i>Invert Eggs</i>		R		

Results of Eel River Plankton Sampling Conducted September 25,2013				
(Estimates of percent composition indicated as follows: Abundant = 60-100%, Very Common = 30-60%, Common = 5-30%, Occasional =1-5%, Rare <1%				
Phytoplankton Taxa	Russell Mill Pond	Hayden Pond	Howland Pond	Eel River Basin
Bacillariophyceae (diatoms)				
<i>Asterionella</i>	V	C		V
<i>Cymbella</i>		R	R	
<i>Fragilaria</i>	C		R	R
<i>Fragilariopsis</i>			C	R
<i>Leptocylindrus</i>		C		C
<i>Melosira</i>	C		C	R
<i>Navicula</i>			R	O
<i>Nitzschia</i>	R			
<i>Pinnularia</i>	C	R		C
<i>Synedra</i>			R	
<i>Tabellaria</i>	V	C	C	
Chlorophyta (green algae)				
<i>Closterium</i>	R			R
<i>Mougeotia</i>	V			C
<i>Oocystis</i>	R			
<i>Pediastrum</i>	R	C		R
<i>Staurastrum</i>	R			
Chrysophyta (yellow-green algae, excluding diatoms)				
<i>Dinobryon</i>	V	C		R
Cyanophyta (blue-green algae)				
<i>Gomphosphaeria</i>			R	
Pyrrhophyta (dinoflagellates)				
<i>Ceratium</i>		R		
Other				
<i>Royifer</i>	R			

Results of Eel River Periphyton Sampling Conducted May 29, 2013

(Estimates of percent composition indicated as follows: Abundant = 60-100%,
Very Common = 30-60%, Common = 5-30%, Occasional = 1-5%, Rare <1%

	<u>Head 2 (Bog 4 Preserve)</u>	<u>Head 4 (ds Long Pond Rd)</u>	<u>BM-1 (Hatchery)</u>	<u>BM-2 (Sandwich Rd)</u>	<u>BM-3a (Forges Rd)</u>	<u>BM-4 (TNC)</u>
Periphyton Taxa						
Bacillariophyceae (diatoms)						
<i>Asterionella</i>			V	O		
<i>Cymbella</i>			R			O
<i>Eunotia</i>			R		C	
<i>Fragilaria</i>		R				R
<i>Fragilariopsis</i>	R					
<i>Melorsira</i>	R			R		
<i>Navicula</i>	O	R				R
<i>Nitzschia</i>			R		R	
<i>Pinnularia</i>		R				
<i>Synedra</i>	R		C	R	O	
<i>Tabellaria</i>	C	O	V			R
Chlorophyta (green algae)						
<i>Chaetophora</i>		R				
<i>Mougeotia</i>	O		O			
<i>Oedogonium</i>	R					
<i>Spirogyra</i>	R			R		
Chrysophyta (yellow-green algae, excluding diatoms)						
<i>Dinobryon</i>			R		R	
Cyanophyta (blue-green algae)						
<i>Anabaena</i>		R				R
<i>Oscillatoria</i>	R	C				
<i>Phormidium</i>	C					

Results of Eel River Periphyton Sampling Conducted September 10, 2013

(Estimates of percent composition indicated as follows: Abundant = 60-100%,
Very Common = 30-60%, Common = 5-30%, Occasional = 1-5%, Rare <1%

	<u>Head 2 (Bog 4 Preserve)</u>	<u>Head 4 (ds Long Pond Rd)</u>	<u>BM-1 (Hatchery)</u>	<u>BM-2 (Sandwich Rd)</u>	<u>BM-3a (Forges Rd)</u>	<u>BM-4 (TNC)</u>
Periphyton Taxa						
Bacillariophyceae (diatoms)						
Asterionella			C	R		
Cymbella			C			C
Eunotia	O		R			
Navicula			R			
Pinnularia						R
Synedra	R					R
Tabellaria		R	C			C
Chlorophyta (green algae)						
Closterium						R
Mougeotia		R	O			
Phormidium				R		

Note: BM-1 Slides were rusty with iron deposits, BM-2 Slides were moderately colonized by macroinvert larvae, BM-3 Slides were very clean, few insect larvae attached

Results of Macroinvertebrate Sampling of Eel River on August 26,2014							
INSECT TAXA	FFG*	BM-1 (fish hatchery)	BM-2 (Old Sandwich Rd)	BM-3A (Forges Rd)	BM-4 (TNC; footbridge)	HEAD 2 (Bog 4/Preserve)	HEAD 4 (Bog 1,ds Long Pond Rd)
Coleoptera (beetles)							
<i>Stenelmis</i>	SC/CG					2	
<i>Haliphus</i>	SH						
<i>Uvarus</i>	P						
<i>Dytiscidae</i>	P						
unidentified	P	1				2	
Diptera (flies and midges)							
<i>Chironomidae</i>	V	3	17	32	20	14	8
<i>Simuliidae</i>	CF				57		3
<i>Tipulidae</i>	V						
Ephemeroptera (mayflies)							
<i>Baetis</i>	CG/SC	4			3	10	6
<i>Stenonema</i>	SC/CG				3		
Hemiptera (true bugs)							
<i>Ranatra</i>	P						
<i>Belostoma</i>	P						
<i>Hesperocorixa</i>							
Odonata (damselflies and dragonflies)							
<i>Boyeria</i>	P				3		3
<i>Calopteryx</i>	P						
<i>Ischnura</i>	P			6			4
Trichoptera (caddisflies)							
<i>Chimarra</i>	CF						
<i>Hydropsyche</i>	CF	33	20	4	2	4	23
<i>Oecetis</i>	SC						
NON-INSECT TAXA							
Amphipoda (scuds)							
<i>Gammarus</i>	CG	28	46	20	10	58	
<i>Hyalella</i>	CG	32		10	4	8	
Decapoda (crayfish)							
unidentified	SH						1
Isopoda (aquatic sow bugs)							
<i>Caecidotea</i>	CG		1				
Mollusca (snails and clams)							
<i>Helisoma</i>							17
<i>Physa</i>	SC	2				1	
<i>Pisidiidae (pea clams)</i>	CF	60		4		6	
Oligochaetes (aquatic worms)							
unidentified	V	4					
Turbellaria (flatworms)							
<i>Dugesia</i>	CG						
Total Specimens		167	84	76	102	105	65
Community Richness (Total Taxa)		9	4	6	8	9	8
Community Evenness (Scaled SD)		0.75	0.76	0.83	0.67	0.68	0.83
EPT Taxa		2	1	2	3	2	3
Percent Dominant Taxa		0.36	0.55	0.42	0.56	0.55	0.26
Dominant FFG *		CF/CG	CG/V	CG/V	CF	CG	CF
*Functional Feeding Groups: CF= Collector-filterer, CG=Collector-gatherer, SC=Scraper, SH=Shredder, P=Predator, V=Variable							

Eel River Field Measurements Recorded by UMASS on May 20,2014								
Station	Secchi Depth	Total Depth	Sample Depth	Temp	DO	DO	pH	Alkalinity
	<i>meters</i>	<i>meters</i>	<i>meters</i>	°C	% Sat	mg/L	unit	mg/L CaCO3
Hayden Pond	0.95	0.95	0.5	19.6	109.1	10.1	7.26	14
Howland Pond	0.85	0.85	0.4	21.1	127.8	11.7	6.87	12.6
Eel River Basin	1	1	0.5	20.2	84.6	7.7	6.93	17.6
Russell Mill Pond	1.65	4.75	0.5	105.8	18.7	9.8	6.81	12.1
			1	105.6	18.2	10.3	6.8	11.8
			2	88.1	16.9	8.5	6.51	11.7
			3	71	15.3	6.6	6.38	12.8
			4	27.6	14	2.7	6.38	15.2

Results of Eel River Macrophyte Survey Conducted May 20, 2014

Species Name	Common Name	Occurance in Ponds			
		<u>Russell Mill</u>	<u>Hayden</u>	<u>Howland</u>	<u>Eel River</u>
<u>Submerged Plants</u>					
<i>Cabomba caroliniana</i>	Fanwort (non-native)		X	x	
<i>Callitriche sp.</i>	Water-starwort	x	x	x	x
<i>Ceratophyllum demersum</i>	Coontail	x	x		
<i>Ludwigia palustris</i>	Water-purslane	x	x	X	X
<i>Myriophyllum humile</i>	Water-milfoil	x	X	x	
<i>Najas flesilis</i>	Naiad	x			
<u>Floating-Leaved Plants</u>					
<i>Nuphar variegata</i>	Yellow Waterlily	x	x	x	x
<i>Nymphaea odorata</i>	White Waterlily	x			
<u>Emergent Plants</u>					
<i>Alnus incana</i>	Speckled Alder	x		x	x
<i>Clethra alnifolia</i>	Sweet Pepperbush	x	x	x	x
<i>Elaeagnus umbellata</i>	Autumn Olive	x		x	
<i>Fallopia japonica</i>	Japanese Knotweed	x			x
<i>Impatiens capensis</i>	Jewelweed	X			
<i>Iris pseudacorus</i>	Yellow Iris	X	x	x	x
<i>Juncus sp.</i>	Rush	X	x	x	x
<i>Lonicera sp.</i>	Honeysuckle	x	x	x	x
<i>Lysimachia terrestris</i>	Swamp Candle	x			x
<i>Myosotis sp.</i>	Forget-Me-Not	x			
<i>Myricaceae gale</i>	Bayberry	x	X	X	X
<i>Onoclea sensibilis</i>	Sensitive Fern	x		x	X
<i>Phragmites australis</i>	Common Reed		x		
<i>Pontederia cordata</i>	Pickerel-Weed	x	x	x	x
<i>Rosa multiflora</i>	Multiflora Rose	x			
<i>Rumex crispus</i>	Curly Dock	X	x		x
<i>Scirpus cyperinus</i>	Woolgrass	x			
<i>Symplocarpus foetidus</i>	Skunk Cabbage		x	x	x
<i>Sparganium sp.</i>	Bur-Reed	x	x	x	x
<i>Toxicodendron radicans</i>	Poison Ivy				x
<i>Typha latifolia</i>	Common Cattail	x	x	X	X
<i>Rubus idaeus</i>	Raspberry	x			
<i>Vitis labrusca</i>	Fox Grape				x
*dominant species indicated in bold, capital X					

Results of Eel River Plankton Sampling Conducted May 20 & 27, 2014				
(Estimates of percent composition indicated as follows: Abundant = 60-100%, Very Common = 30-60%, Common = 5-30%, Occasional= 1-5%, Rare <1%				
	<u>Russell Mill Pond</u>	<u>Hayden Pond</u>	<u>Howland Pond</u>	<u>Eel River Basin</u>
Phytoplankton Taxa				
Bacillariophyceae (diatoms)				
<i>Asterionella</i>	O	V	O	
<i>Cymbella</i>		O	O	
<i>Fragilaria</i>			O	
<i>Fragilariopsis</i>		O		A
<i>Guinardia</i>				A
<i>Leprocylindrus</i>				A
<i>Melosira</i>	C	O	O	
<i>Navicula</i>	O			
<i>Nitzschia</i>	O		V	O
<i>Pinnularia</i>	O		R	
<i>Synedra</i>	O			
<i>Tabellaria</i>	O	O		O
Chlorophyta (green algae)				
<i>Closterium</i>			R	
<i>Mougeotia</i>		V		
<i>Oocystis</i>		V		
<i>Oedogonium</i>			O	
<i>Pediastrum</i>	O		O	
<i>Scenedesmus</i>				
<i>Spirogyra</i>		O		
<i>Staurastrum</i>	V		O	O
Chrysophyta (yellow-green algae, excluding diatoms)				
<i>Dinobryon</i>		O	A	O
Cyanophyta (blue-green algae)				
Other				
<i>Tintinnids</i>	V	O	O	C

Results of Eel River Plankton Sampling Conducted August 26, 2014				
(Estimates of percent composition indicated as follows: Abundant = 60-100%, Very Common = 30-60%, Common = 5-30%, Occasional = 1-5%, Rare <1%				
Phytoplankton Taxa	Russell Mill Pond	Hayden Pond	Howland Pond	Eel River Basin
Bacillariophyceae (diatoms)				
<i>Asterionella</i>		O	O	O
<i>Cymbella</i>				
<i>Fragilaria</i>				A
<i>Fragilariopsis</i>	C			C
<i>Leprocylindrus</i>	C			A
<i>Melosira</i>		V	C	
<i>Navicula</i>			O	
<i>Nitzschia</i>			O	O
<i>Pinnularia</i>		O		
<i>Synedra</i>				
<i>Tabellaria</i>	A	O	O	C
Chlorophyta (green algae)				
<i>Closterium</i>			O	
<i>Mougeotia</i>		V	C	A
<i>Oocystis</i>				
<i>Pediastrum</i>	C			O
<i>Spirogyra</i>		O		
Chrysophyta (yellow-green algae, excluding diatoms)				
<i>Dinobryon</i>	C	C		A
Cyanophyta (blue-green algae)				
<i>Anabaena</i>	R			
Pyrrhophyta (dinoflagellates)				
<i>Ceratium</i>				
Other				
<i>Tintinnids</i>	C			

Results of Eel River Periphyton Sampling Conducted June 9, 2014

(Estimates of percent composition indicated as follows: Abundant = 60-100%,
Very Common = 30-60%, Common = 5-30%, Occasional = 1-5%, Rare <1%

	Head 2 (Bog 4 Preserve)	Head 4 (ds Long Pond Rd)	BM-1 (Hatchery)	BM-2 (Sandwich Rd)	BM-3a (Forges Rd)	BM-4 (TNC)
Periphyton Taxa						
Bacillariophyceae (diatoms)						
<i>Asterionella</i>			O	O		
<i>Cymbella</i>						
<i>Eunotia</i>						
<i>Fragilaria</i>						
<i>Fragilariopsis</i>						
<i>Melosira</i>	O	R	R	R		
<i>Navicula</i>	R		O			
<i>Nitzschia</i>			R			
<i>Pinnularia</i>		R				R
<i>Synedra</i>	R		R	R	R	R
<i>Tabellaria</i>	V	R				R
Chlorophyta (green algae)						
<i>Chaetophora</i>						
<i>Closterium</i>						R
<i>Mougeotia</i>	V					
<i>Oedogonium</i>						
<i>Spirogyra</i>	R	O				
<i>Staurastrum</i>			R			
Chrysophyta (yellow-green algae, exluding diatoms)						
<i>Dinobryan</i>			O	O	R	
Cyanophyta (blue-green algae)						
<i>Anabaena</i>						
<i>Oscillatoria</i>						
<i>Phormidium</i>						

Note: Head 2 slide was loaded with epiphytic algae and lots of insect larvae attached, BM-1 some insect larvae attached

Results of Eel River Periphyton Sampling Conducted September 25, 2014

(Estimates of percent composition indicated as follows: Abundant = 60-100%,
Very Common = 30-60%, Common = 5-30%, Occasional = 1-5%, Rare <1%

	Head 2 (Bog 4 Preserve)	Head 4 (ds Long Pond Rd)	BM-1 (Hatchery)	BM-2 (Sandwich Rd)	BM-3a (Forges Rd)	BM-4 (TNC)
Periphyton Taxa						
Bacillariophyceae (diatoms)						
<i>Asterionella</i>			VC			
<i>Cymbella</i>		R	R			R
<i>Eunotia</i>						
<i>Fragilaria</i>		R				R
<i>Fragilariopsis</i>						
<i>Melorsia</i>	O					
<i>Navicula</i>	R		R			
<i>Nitzschia</i>						
<i>Pinnularia</i>						R
<i>Synedra</i>		R	VC	R		R
<i>Tabellaria</i>	O		VC	A		
Chlorophyta (green algae)						
<i>Chaetophora</i>						
<i>Closterium</i>						
<i>Mougeotia</i>	R	R				
<i>Oedogonium</i>						
<i>Spirogyra</i>	O					
<i>Staurastrum</i>						
Chrysophyta (yellow-green algae, exluding diatoms)						
<i>Dinobryan</i>						
Cyanophyta (blue-green algae)						
<i>Anabaena</i>						
<i>Oscillatoria</i>						
<i>Phormidium</i>						

Note: Head 2 slide was loaded with epiphytic algae and lots of insect larvae attached, BM-1 some insect larvae attached

Results of Macroinvertebrate Sampling of Eel River on September 4, 2015							
INSECT TAXA	FFG*	BM-1 (fish hatchery)	BM-2 (Old Sandwich Rd)	BM-3A (Forges Rd)	BM-4 (TNC; footbridge)	HEAD 2 (Bog 4/Preserve)	HEAD 4 (Bog 1,ds Long Pond Rd)
Coleoptera (beetles)							
<i>Stenelmis</i>	SC/CG	12	6		2	30	
<i>Haliphus</i>	SH			4			
<i>Uvarus</i>	P						
<i>Dytiscidae</i>	P						
unidentified	P		3			6	
Diptera (flies and midges)							
<i>Chironomidae</i>	V	14	6		26		
<i>Simuliidae</i>	CF	14	17		4		
<i>Tipulidae</i>	V						
Ephemeroptera (mayflies)							
<i>Baetis</i>	CG/SC					4	
<i>Stenonema</i>	SC/CG						
Hemiptera (true bugs)							
<i>Ranatra</i>	P				4		
<i>Belostoma</i>	P						
<i>Hesperocorixa</i>	P						
<i>Gerrid</i>	P	2					
Odonata (damselflies and dragonflies)							
<i>Boyeria</i>	P	4	4	2			6
<i>Calopteryx</i>	P			6	2		
<i>Ischnura</i>	P		7		4		
Trichoptera (caddisflies)							
<i>Chimarra</i>	CF						
<i>Hydropsyche</i>	CF	6					
<i>Oecetis</i>	SC		5		4		
NON-INSECT TAXA							
Amphipoda (scuds)							
<i>Gammarus</i>	CG	26	6	50	20	66	
<i>Hyalella</i>	CG			20			
Decopoda (crayfish)							
unidentified	SH	2			2		4
Isopoda (aquatic sow bugs)							
<i>Caecidotea</i>	CG	2		6			
Mollusca (snails and clams)							
<i>Helisoma</i>			8			15	6
<i>Physa</i>	SC						35
<i>Pisidiidae</i> (pea clams)	CF			2			
Oligochaetes (aquatic worms)							
unidentified	V		1	4			
Turbellaria (flatworms)							
<i>Dugesia</i>	CG		1		2	3	
Total Specimens		83	63	94	70	124	51
Community Richness (Total Taxa)		10	10	8	10	6	4
Community Evenness (Scaled SD)		0.83	0.92	0.7	0.78	0.72	0.69
EPT Taxa		2	2	1	2	0	1
Percent Dominant Taxa		0.31	0.27	0.53	0.37	0.53	0.69
Dominant FFG *		CG	CG/PV	CG	CG	CG	n/a
*Functional Feeding Groups: CF= Collector-filterer, CG=Collector-gatherer, SC=Scraper, SH=Shredder, P=Predator, V=Variable							

Eel River Field Measurements Recorded by UMASS on May 20,2015								
Station	Secchi Depth	Total Depth	Sample Depth	Temp	DO	DO	pH	Alkalinity
	<i>meters</i>	<i>meters</i>	<i>meters</i>	°C	% Sat	mg/L	unit	mg/L CaCO3
Hayden Pond	1.1	1.1	0.65	18.3	100	9.4	6.76	21.1
Howland Pond	0.7	0.7	0.35	20.5	117	10.5	6.88	20.9
Eel River Basin	1.4	1.4	0.7	19.2	99	9.1	6.85	27.1
Russell Mill Pond	1.6	3.5	0.5	18.5	97	9.1	6.69	18.6
			1	18.4	102	9.6	6.63	18.6
			2	17.2	108	10.4	6.59	18.7
			3	15.6	64	6.3	6.36	19.1
			4	14.9	58	5.9	6.34	18.7

Results of Eel River Macrophyte Survey Conducted May 2015

Species Name	Common Name	Occurance in Ponds			
		<u>Russell Mill</u>	<u>Hayden</u>	<u>Howland</u>	<u>Eel River</u>
Submerged Plants					
<i>Cabomba caroliniana</i>	Fanwort (non-native)				
<i>Callitriche sp.</i>	Water-starwort	X	x		
<i>Ceratophyllum demersum</i>	Coontail	X			
<i>Ludwigia palustris</i>	Water-purslane	x	x	X	X
<i>Myriophyllum humile</i>	Water-milfoil	x	X	x	
<i>Lemna minor</i>	Common Duckweed	x	X	x	
<i>Hyrilla verticillata</i>	Water-weed		x		
<i>Najas flesilis</i>	Naiad				
Floating-Leaved Plants					
<i>Nuphar variegata</i>	Yellow Waterlily	x	x	X	
<i>Nymphaea odorata</i>	White Waterlily	x	x		
Emergent Plants					
<i>Alnus incana</i>	Speckled Alder				
<i>Clethra alnifolia</i>	Sweet Pepperbush				
<i>Elaeagnus umbellata</i>	Autumn Olive				
<i>Fallopia japonica</i>	Japanese Knotweed				
<i>Glysera sp.</i>	Mannagrass				
<i>Impatiens capensis</i>	Jewelweed				
<i>Iris pseudacorus</i>	Yellow Iris	x			
<i>Juncus sp.</i>	Rush	x		x	
<i>Lonicera sp.</i>	Honeysuckle	x	x		
<i>Lysimachia terrestris</i>	Swamp Candle				
<i>Myosotis sp.</i>	Forget-Me-Not				
<i>Myricaceae gale</i>	Bayberry	x	x		
<i>Onoclea sensibilis</i>	Sensitive Fern				x
<i>Phragmites australis</i>	Common Reed	X	x		X
<i>Pontederia cordata</i>	Pickereel-Weed	x	x	X	x
<i>Rosa multiflora</i>	Multiflora Rose				
<i>Rumex crispus</i>	Curly Dock	x	x		
<i>Scirpus cyperinus</i>	Woolgrass				
<i>Schoenoplectus americanus</i>	Three Square		x		
<i>Symplocarpus foetidus</i>	Skunk Cabbage				
<i>Sparganium sp.</i>	Bur-Reed	x	x		
<i>Toxicodendron radicans</i>	Poison Ivy				
<i>Typha latifolia</i>	Common Cattail	X		X	x
<i>Rubus idaeus</i>	Raspberry				
<i>Vitis labrusca</i>	Fox Grape				
*dominant species indicated in bold, capital X					

Results of Eel River Plankton Sampling Conducted May 20 & 27, 2014				
(Estimates of percent composition indicated as follows: Abundant = 60-100%, Very Common = 30-60%, Common = 5-30%, Occasional= 1-5%, Rare <1%				
	Russell Mill Pond	Hayden Pond	Howland Pond	Eel River Basin
Phytoplankton Taxa				
Bacillariophyceae (diatoms)				
<i>Asterionella</i>		VC	C	C
<i>Cymbella</i>	C			
<i>Fragilaria</i>	C	O	R	
<i>Fragilariopsis</i>	C			
<i>Gomphonema</i>		O	VC	
<i>Guinardia</i>				
<i>Gyrosigma</i>		O		
<i>Leprocylindrus</i>				
<i>Melosira</i>	C		C	
<i>Navicula</i>		O		R
<i>Nitzschia</i>		O		
<i>Pinnularia</i>		O	C	
<i>Pieurosigma</i>				R
<i>Rhizosolenia</i>				R
<i>Synedra</i>		O	R	
<i>Tabellaria</i>		O		
Chlorophyta (green algae)				
<i>Chlorogonium</i>				R
<i>Closterium</i>		O		
<i>Crucigenia</i>				
<i>Mougeotia</i>	C	O		C
<i>Oocystis</i>				
<i>Oedogonium</i>		R	R	
<i>Pediastrum</i>		O		
<i>Scenedesmus</i>				
<i>Spirogyra</i>		R		
<i>Staurastrum</i>		R		
Chrysophyta (yellow-green algae, excluding diatoms)				
<i>Chrysophaerella</i>				
<i>Dinobryon</i>				
<i>Mallomonas</i>				
Cyanophyta (blue-green algae)				
<i>Gomphosphaeria</i>				
Other				
<i>Tintinnids</i>		VC	VC	
<i>Rotifer</i>		R		
<i>Invert Eggs</i>				

Results of Eel River Plankton Sampling Conducted September 4, 2015				
(Estimates of percent composition indicated as follows: Abundant = 60-100%, Very Common = 30-60%, Common = 5-30%, Occasional = 1-5%, Rare <1%				
	Russell Mill Pond	Hayden Pond	Howland Pond	Eel River Basin
Phytoplankton Taxa				
Bacillariophyceae (diatoms)				
<i>Asterionella</i>	O	C	R	O
<i>Cymbella</i>		O		
<i>Fragilaria</i>			O	C
<i>Fragilariopsis</i>			O	
<i>Gomphonema</i>				
<i>Guinardia</i>				
<i>Gyrosigma</i>				
<i>Leprocylindrus</i>				
<i>Melosira</i>				
<i>Navicula</i>			VC	O
<i>Nitzschia</i>				O
<i>Pinnularia</i>		O		
<i>Pleurosigma</i>				R
<i>Rhizosolenia</i>				
<i>Synedra</i>	O			O
<i>Tabellaria</i>	VC	C	O	O
Chlorophyta (green algae)				
<i>Chlorogonium</i>				
<i>Closterium</i>				O
<i>Crucigenia</i>			O	
<i>Desmodemus</i>				
<i>Mougeotia</i>	O	O		
<i>Oocystis</i>				
<i>Oedogonium</i>				O
<i>Pediastrum</i>		O		O
<i>Scenedesmus</i>				
<i>Spirogyra</i>		O	O	O
<i>Staurastrum</i>			O	
Chrysophyta (yellow-green algae, excluding diatoms)				
<i>Chrysosphaerella</i>				
<i>Dinobryon</i>	VC	O	C	
<i>Mallomonas</i>				
Cyanophyta (blue-green algae)				
<i>Gomphosphaeria</i>				
<i>Anabaena</i>		O	O	
<i>Phormidium</i>		C		
Other				
<i>Invert Eggs</i>				
<i>Ceratium</i>				
<i>Rotifer</i>	O			O
<i>Tintinnids</i>	O			

Results of Eel River Periphyton Sampling Conducted May 21, 2015

(Estimates of percent composition indicated as follows: Abundant = 60-100%,
Very Common = 30-60%, Common = 5-30%, Occasional = 1-5%, Rare <1%

	<u>Head 2 (Bog 4 Preserve)</u>	<u>*Head 4 (ds Long Pond Rd)</u>	<u>BM-1 (Hatchery)</u>	<u>BM-2 (Sandwich Rd)</u>	<u>**BM-3a (Forges Rd)</u>	<u>BM-4 (TNC)</u>
Periphyton Taxa						
Bacillariophyceae (diatoms)						
<i>Asterionella</i>			O	O		
<i>Cymbella</i>	O	O	O	O		
<i>Eunotia</i>						
<i>Fragilaria</i>					O	
<i>Fragilariopsis</i>						
<i>Melorsia</i>					C	
<i>Navicula</i>				R		
<i>Nitzschia</i>						
<i>Pinnularia</i>	O	R	R		C	R
<i>Synedra</i>	O				O	O
<i>Tabellaria</i>	O				O	O
Chlorophyta (green algae)						
<i>Chaetophora</i>						
<i>Cladophora</i>	R					
<i>Closterium</i>						R
<i>Desmodesmus</i>			R	R		
<i>Mougeotia</i>	O	R				
<i>Oedogonium</i>						
<i>Spirogyra</i>						
<i>Staurastrum</i>						
Chrysophyta (yellow-green algae, excluding diatoms)						
<i>Dinobryan</i>				O	O	
Cyanophyta (blue-green algae)						
<i>Anabaena</i>						
<i>Oscillatoria</i>						R
<i>Phormidium</i>						

* Slide has some insect larvae attached, **Slide very desnsely covered with epiphytes

Results of Eel River Periphyton Sampling Conducted September 9,2015

(Estimates of percent composition indicated as follows: Abundant = 60-100%,
Very Common = 30-60%, Common = 5-30%, Occasional = 1-5%, Rare <1%

	**Head 2 (Bog 4 Preserve)	*Head 4 (ds Long Pond Rd)	BM-1 (Hatchery)	BM-2 (Sandwich Rd)	BM-3a (Forges Rd)	BM-4 (TNC)
Periphyton Taxa						
Bacillariophyceae (diatoms)						
<i>Asterionella</i>			C	R		
<i>Cymbella</i>			R	R		
<i>Diatoma</i>		VC		R	C	VC
<i>Eunotia</i>						
<i>Fragilaria</i>						R
<i>Fragilariopsis</i>						
<i>Melorsia</i>			R			
<i>Navicula</i>						
<i>Nitzschia</i>						
<i>Pinnularia</i>			R			
<i>Synedra</i>		R				R
<i>Tabellaria</i>	R		R	R		C
Chlorophyta (green algae)						
<i>Chaetophora</i>						
<i>Cladophora</i>						
<i>Closterium</i>						
<i>Mougeotia</i>						
<i>Oedogonium</i>						
<i>Spirogyra</i>	R					
<i>Staurastrum</i>						
Chrysophyta (yellow-green algae, excluding diatoms)						
<i>Dinobryan</i>						
Cyanophyta (blue-green algae)						
<i>Anabaena</i>						
<i>Oscillatoria</i>						
<i>Phormidium</i>						
Other						
<i>dinoflagellate</i>	R					

* Insect Larvae on slide, ** Some rust colored epiphytes on slide

Results of Eel River Plankton Sampling Conducted May 31 & June 6, 2016				
(Estimates of percent composition indicated as follows: Abundant = 60-100%, Very Common = 30-60%, Common = 5-30%, Occasional= 1-5%, Rare <1%				
	<u>Russell Mill Pond</u>	<u>Hayden Pond</u>	<u>Howland Pond</u>	<u>Eel River Basin</u>
<u>Phytoplankton Taxa</u>				
Bacillariophyceae (diatoms)				
<i>Asterionella</i>	A	VC		VC
<i>Cymbella</i>	R		O	
<i>Fragilaria</i>			O	
<i>Fragilariopsis</i>	R		O	
<i>Guinardia</i>				
<i>Gyrosigma</i>				
<i>Leprocylindrus</i>				C
<i>Melosira</i>		O		
<i>Navicula</i>	O			
<i>Nitzschia</i>	R			
<i>Pinnularia</i>		O		
<i>Synedra</i>	C		O	
<i>Tabellaria</i>	R			
Chlorophyta (green algae)				
<i>Closterium</i>		O		C
<i>Crucigenia</i>				
<i>Mougeotia</i>	O			
<i>Oocystis</i>				
<i>Oedogonium</i>				
<i>Pediastrum</i>		R		O
<i>Scenedesmus</i>				
<i>Spirogyra</i>		O	O	O
<i>Staurostrum</i>	R			O
Chrysophyta (yellow-green algae, excluding diatoms)				
<i>Chrysosphaerella</i>				
<i>Dinobryon</i>			VC	
<i>Mallomonas</i>				
Cyanophyta (blue-green algae)				
<i>Oscillatoria</i>			O	
<i>Anabaena</i>				R
<i>Gomphosphaeria</i>				
Other				
<i>Tintinnids</i>	O		O	
<i>Rotifer</i>	C	O		
<i>Invert Eggs</i>				

Results of Eel River Plankton Sampling Conducted September 30, 2016				
(Estimates of percent composition indicated as follows: Abundant = 60-100%, Very Common = 30-60%, Common = 5-30%, Occasional = 1-5%, Rare <1%				
	<u>Russell Mill Pond</u>	<u>Hayden Pond</u>	<u>Howland Pond</u>	<u>Eel River Basin</u>
Phytoplankton Taxa				
Bacillariophyceae (diatoms)				
<i>Asterionella</i>	C	O	VC	O
<i>Cymbella</i>				
<i>Fragilaria</i>				
<i>Fragilariopsis</i>				
<i>Leprocylindrus</i>				
<i>Melosira</i>			O	
<i>Navicula</i>	R			
<i>Nitzschia</i>				
<i>Pinnularia</i>				
<i>Pieurosigma</i>	C			
<i>Rhizosolenia</i>				O
<i>Synedra</i>				
<i>Tabellaria</i>		O	O	
Chlorophyta (green algae)				
<i>Closterium</i>				
<i>Mougeotia</i>	C	O	C	
<i>Oocystis</i>				
<i>Pediastrum</i>				
<i>Spirogyra</i>	R		O	
<i>Staurastrum</i>				
Chrysophyta (yellow-green algae, excluding diatoms)				
<i>Dinobryon</i>	C	C	VC	
Cyanophyta (blue-green algae)				
<i>Anabaena</i>				
Pyrrhophyta (dinoflagellates)				
<i>Cerartium</i>	O	O	O	O
Other				
<i>Rotifer</i>	R			
<i>Tintinnids</i>	C	O	C	

Eel River Field Measurements Recorded by UMASS on May-June 2016								
Station	Secchi Depth	Total Depth	Sample Depth	Temp	DO	DO	pH	Alkalinity
	<i>meters</i>	<i>meters</i>	<i>meters</i>	°C	% Sat	mg/L	unit	mg/L CaCO ₃
Hayden Pond	0.5	1.2	0.6	21.1	94	8.3	5.68	19.57
Howland Pond	0.45	0.45	0.25	22.8	124	10.7	5.98	22.56
Eel River Basin	0.7	1.65	0.8	22	82	7.2	5.91	23.87
Russell Mill Pond	1.2	3.5	0.5	20.8	100	8.9	6.29	18.65
			1	20.1	97	8.8	5.62	16.77
			2	19	95	8.9	5.76	19.13
			3	14.8	40	4	6.46	24.99

Results of Eel River Periphyton Sampling Conducted June
 (Estimates of percent composition indicated as follows:
 Abundant = 60-100%, Very Common = 30-60%, Common
 = 5-30%, Occasional = 1-5%, Rare <1%

	**Head 2 (Bog 4 Preserve)	BM-1 (Hatchery)	BM-2 (Sandwich Rd)	BM-3a (Forges Rd)	BM-4 (TNC)
Periphyton Taxa					
Bacillariophyceae (diatoms)					
<i>Asterionella</i>	O	VC	C		
<i>Cymbella</i>		O	O		
<i>Eunotia</i>					
<i>Fragilaria</i>					
<i>Fragilariopsis</i>					
<i>Melorsia</i>			O		
<i>Navicula</i>				O	
<i>Nitzschia</i>					
<i>Pinnularia</i>					O
<i>Synedra</i>				C	O
<i>Tabellaria</i>					
Chlorophyta (green algae)					
<i>Chaetophora</i>					
<i>Closterium</i>					
<i>Mougeotia</i>		O	O		
<i>Oedogonium</i>			O		
<i>Spirogyra</i>					
<i>Staurastrum</i>					
Chrysophyta (yellow-green algae, exluding diatoms)					
<i>Dinobryan</i>	O				
Cyanophyta (blue-green algae)					
<i>Anabaena</i>					
<i>Oscillatoria</i>					
<i>Phormidium</i>					
Other					
<i>dinoflagellate</i>				R	

* Insect Larvae on slide, ** Some rust colored epiphytes on slide

Results of Eel River Periphyton Sampling Conducted October 7, 2016

(Estimates of percent composition indicated as follows: Abundant = 60-100%,
Very Common = 30-60%, Common = 5-30%, Occasional = 1-5%, Rare <1%

	<u>Head 2 (Bog 4 Preserve)</u>	<u>*Head 4 (ds Long Pond Rd)</u>	<u>**BM-1 (Hatchery)</u>	<u>***BM-2 (Sandwich Rd)</u>	<u>BM-3a (Forges Rd)</u>	<u>BM-4 (TNC)</u>
Periphyton Taxa						
Bacillariophyceae (diatoms)						
<i>Asterionella</i>	R					no organisms
<i>Cymbella</i>	O	C		O		
<i>Diatomoa</i>						
<i>Eunotia</i>						
<i>Fragilaria</i>						
<i>Fragilariopsis</i>	O	O			O	
<i>Melorsia</i>						
<i>Navicula</i>					O	
<i>Nitzschia</i>						
<i>Pinnularia</i>			O		R	
<i>Synedra</i>						
<i>Tabellaria</i>						
Chlorophyta (green algae)						
<i>Chaetophora</i>						
<i>Cladophora</i>						
<i>Closterium</i>						
<i>Mougeotia</i>						
<i>Oedogonium</i>			O			
<i>Spirogyra</i>						
<i>Staurastrum</i>						
Chrysophyta (yellow-green algae, excluding diatoms)						
<i>Dinobryan</i>	O			O		
Cyanophyta (blue-green algae)						
<i>Anabaena</i>						
<i>Oscillatoria</i>						
<i>Phormidium</i>						
Other						
<i>dinoflagellate</i>			O			
<i>Prorocentrales</i>	R (alive)					

* slide covered in algae, ** slide and jar covered in rust film, *** slide covered in insect larvae

Results of Macroinvertebrate Sampling of Eel River on September 31, 2016							
INSECT TAXA	FFG*	BM-1 (fish hatchery)	BM-2 (Old Sandwich Rd)	BM-3A (Forges Rd)	BM-4 (TNC; footbridge)	HEAD 2 (Bog 4/Preserve)	HEAD 4 (Bog 1,ds Long Pond Rd)
Coleoptera (beetles)							
<i>Stenelmis</i>	SC/CG	7	3			10	
<i>Haliphus</i>	SH						
<i>Uvarus</i>	P						
<i>Dytiscidae</i>	P						
unidentified	P		2				
Diptera (flies and midges)							
<i>Chironomidae</i>	V	5	17	3	16	5	2
<i>Simuliidae</i>	CF	3	5				
<i>Tipulidae</i>	V						
Ephemeroptera (mayflies)							
<i>Baetis</i>	CG/SC	1					
<i>Stenonema</i>	SC/CG	3					
Hemiptera (true bugs)							
<i>Ranatra</i>	P						
<i>Belostoma</i>	P						
<i>Hesperocorixa</i>	P						
<i>Gerrid</i>	P						
Odonata (damselflies and dragonflies)							
<i>Boyeria</i>	P				4		2
<i>Calopteryx</i>	P	2		3	7		7
<i>Ischnura</i>	P	2	4				
Trichoptera (caddisflies)							
<i>Chimarra</i>	CF						
<i>Hydropsyche</i>	CF						
<i>Oecetis</i>	SC						
NON-INSECT TAXA							
Amphipoda (scuds)							
<i>Gammarus</i>	CG	28	7	27	20	74	10
<i>Hyaella</i>	CG			17			
Decapoda (crayfish)							
unidentified	SH						
Isopoda (aquatic sow bugs)							
<i>Caecidotea</i>	CG	3					4
Mollusca (snails and clams)							
<i>Helisoma</i>					5		16
<i>Physa</i>	SC				1		10
<i>Pisidiidae (pea clams)</i>	CF					1	
Oligochaetes (aquatic worms)							
unidentified	V						
Turbellaria (flatworms)							
<i>Dugesia</i>	CG	2					
Total Specimens		56	38	50	53	90	51
Community Richness (Total Taxa)		10	6	4	6	4	7
Community Evenness (Scaled SD)		0.75	0.85	0.75	0.83	0.44	0.89
EPT Taxa		2	1	0	0	0	0
Percent Dominant Taxa		0.5	0.13	0.54	0.3	0.82	0.2
Dominant FFG *		CG	CG/V	CG	CG	CG	SC/P
*Functional Feeding Groups: CF= Collector-filterer, CG=Collector-gatherer, SC=Scraper, SH=Shredder, P=Predator, V=Variable							

Results of Eel River Macrophyte Survey Conducted May & June 2016

Species Name	Common Name	Occurance in Ponds			
		<u>Russell Mill</u>	<u>Hayden</u>	<u>Howland</u>	<u>Eel River</u>
<u>Submerged Plants</u>					
<i>Cabomba caroliniana</i>	Fanwort (non-native)				
<i>Callitriche sp.</i>	Water-starwort	X		x	
<i>Ceratophyllum demersum</i>	Coontail	X			
<i>Elotia sp.</i>	Pondweed		X		
<i>Ludwigia palustris</i>	Water-purslane	x	x	X	X
<i>Myriophyllum humile</i>	Water-milfoil	x	X	X	
<i>Lemna minor</i>	Common Duckweed	x			
<i>Hyrilla verticillata</i>	Water-weed	x			
<i>Utricularia macrorhiza</i>	Bladderwort			x	
<i>Najas flesilis</i>	Naiad	x		X	x
<u>Floating-Leaved Plants</u>					
<i>Nuphar variegata</i>	Yellow Waterlily	x	X	X	
<i>Nymphaea odorata</i>	White Waterlily	x			
<i>Vallisneria americana</i>	Wild Celery				
<u>Emergent Plants</u>					
<i>Alnus incana</i>	Speckled Alder				
<i>Clethra alnifolia</i>	Sweet Pepperbush				
<i>Cyperus sp.</i>	Sedge			x	
<i>Elaeagnus umbellata</i>	Autumn Olive				
<i>Fallopia japonica</i>	Japanese Knotweed				
<i>Glysera sp.</i>	Mannagrass				
<i>Impatiens capensis</i>	Jewelweed				
<i>Iris pseudacorus</i>	Yellow Iris	x			x
<i>Juncus sp.</i>	Rush	x	x	x	x
<i>Justicia americana</i>	Water Willow	x	x	x	x
<i>Lonicera sp.</i>	Honeysuckle	x			
<i>Lysimachia terrestris</i>	Swamp Candle				
<i>Myosotis sp.</i>	Forget-Me-Not	x			
<i>Myricaceae gale</i>	Bayberry	x			x
<i>Onoclea sensibilis</i>	Sensitive Fern				
<i>Phragmites australis</i>	Common Reed	X	x	x	X
<i>Pontederia cordata</i>	Pickereel-Weed	x	x	x	
<i>Rosa multiflora</i>	Multiflora Rose				
<i>Rumex crispus</i>	Curly Dock	x	x		
<i>Scirpus cyperinus</i>	Woolgrass				
<i>Schoenoplectus americanus</i>	Three Square				
<i>Solanum sp.</i>	Nightshade		x		x
<i>Symplocarpus foetidus</i>	Skunk Cabbage	x			
<i>Sparganium sp.</i>	Bur-Reed	x	x		
<i>Toxicodendron radicans</i>	Poison Ivy				x
<i>Typha latifolia</i>	Common Cattail	X	x	X	X
<i>Rubus idaeus</i>	Raspberry				
<i>Vitis labrusca</i>	Fox Grape				
*dominant species indicated in bold, capital X					

Results of Eel River Plankton Sampling Conducted June 1, 2017				
(Estimates of percent composition indicated as follows: A bundant = 60-100%, V ery Common = 30-60%, C ommon = 5-30%, O ccasional= 1-5%, R are <1%				
	<u>Russell Mill Pond</u>	<u>Hayden Pond</u>	<u>Howland Pond</u>	<u>Eel River Basin</u>
Phytoplankton Taxa				
Bacillariophyceae (diatoms)				
<i>Asterionella</i>	A	VC	VC	A
<i>Cymbella</i>			R	R
<i>Fragilaria</i>			O	
<i>Fragilariopsis</i>				
<i>Guinardia</i>				
<i>Gyrosigma</i>				
<i>Leprocylindrus</i>				O
<i>Melosira</i>		O		
<i>Navicula</i>	R		O	
<i>Nitzschia</i>				
<i>Pinnularia</i>		O	R	R
<i>Pieurosigma</i>				O
<i>Synedra</i>	R	O		R
<i>Tabellaria</i>	C	O	R	C
Chlorophyta (green algae)				
<i>Closterium</i>				
<i>Crucigenia</i>				
<i>Mougeotia</i>	R	O		
<i>Oocystis</i>				
<i>Oedogonium</i>				
<i>Pediastrum</i>				
<i>Scenedesmus</i>			R	
<i>Spirogyra</i>		R		
<i>Staurastrum</i>				
Chrysophyta (yellow-green algae, excluding diatoms)				
<i>Chrysosphaerella</i>				
<i>Dinobryon</i>				
<i>Mallomonas</i>				
Cyanophyta (blue-green algae)				
<i>Oscillatoria</i>				
<i>Anabaena</i>				R
<i>Gomphosphaeria</i>				
Other				
<i>Tintinnids</i>		VC		VC
<i>Rotifer</i>		R		
<i>Invert Eggs</i>				

Results of Eel River Plankton Sampling Conducted August 23,2017				
(Estimates of percent composition indicated as follows: Abundant = 60-100%, Very Common = 30-60%, Common = 5-30%, Occasional = 1-5%, Rare <1%				
	Russell Mill Pond	Hayden Pond	Howland Pond	Eel River Basin
Phytoplankton Taxa				
Bacillariophyceae (diatoms)				
<i>Asterionella</i>	R	O	O	C
<i>Cymbella</i>	R	R		
<i>Diadomesis</i>				O
<i>Fragilaria</i>				VC
<i>Fragilariopsis</i>				VC
<i>Guindardia</i>				O
<i>Leprocylindrus</i>				
<i>Melosira</i>				
<i>Navicula</i>		R		
<i>Nitzschia</i>				
<i>Pinnularia</i>				R
<i>Pieurosigma</i>				
<i>Rhizosolenia</i>				
<i>Synedra</i>	R	R		
<i>Tabellaria</i>	R			
Chlorophyta (green algae)				
<i>Closterium</i>				
<i>Mougeotia</i>				
<i>Oocystis</i>				
<i>Pediastrum</i>				
<i>Spirogyra</i>				
<i>Staurastrum</i>			O	
Chrysophyta (yellow-green algae, excluding diatoms)				
<i>Dinobryon</i>				
Cyanophyta (blue-green algae)				
<i>Anabaena</i>				
Pyrrhophyta (dinoflagellates)				
<i>Cerartium</i>				
Other				
<i>Rotifer</i>	R	R	O	
<i>Tintinnids</i>		R		

Eel River Field Measurements Recorded by UMASS on June 1, 2017								
Station	Secchi Depth	Total Depth	Sample Depth	Temp	DO	DO	pH	Alkalinity
	<i>meters</i>	<i>meters</i>	<i>meters</i>	°C	% Sat	mg/L	unit	mg/L CaCO ₃
Hayden Pond	0.5	0.5	0.3	20.2	130	12.6	7.17	17.2
Howland Pond	0.8	0.8	0.5	20.1	132	10.6	6.94	20.9
Eel River Basin	20	1	1	19.7	108.5	10.3	7.01	23.4
Russell Mill Pond	1.6	3	0.5	17.8	111.4	11.2	6.75	16.6
			1	17.5	116.5	10.9	6.6	15.5
			2	14.8	92.5	9.6	6.53	15.3
			2.5	14.6	75.7	7	6.27	18.5

Results of Eel River Periphyton Sampling Conducted June 2, 2017
 (Estimates of percent composition indicated as follows:
 Abundant = 60-100%, Very Common = 30-60%, Common
 = 5-30%, Occasional = 1-5%, Rare <1%

	<u>Head 2 (Bog 4)</u>	<u>BM-1 (Hatchery)*</u>	<u>BM-2</u>	<u>BM-3a (Forges Rd)</u>	<u>BM-4 (TNC)</u>
Periphyton Taxa	Preserve)		(Sandwich Rd)		
Bacillariophyceae (diatoms)					
<i>Asterionella</i>		C	R	no organisms	
<i>Cymbella</i>	R	O			R
<i>Eunotia</i>					
<i>Fragilaria</i>					
<i>Fragilariopsis</i>					
<i>Melorsia</i>					
<i>Navicula</i>					
<i>Nitzschia</i>					
<i>Pinnularia</i>		O			
<i>Synedra</i>					
<i>Tabellaria</i>	R	C	R		O
Chlorophyta (green algae)					
<i>Chaetophora</i>					
<i>Closterium</i>					
<i>Mougeotia</i>					
<i>Oedogonium</i>					
<i>Spirogyra</i>	O				
<i>Staurastrum</i>					
Chrysophyta (yellow-green algae, excluding diatoms)					
<i>Dinobryan</i>					
Cyanophyta (blue-green algae)					
<i>Anabaena</i>					
<i>Oscillatoria</i>					
<i>Phormidium</i>					
Other					
<i>dinoflagellate</i>					

* slide covered with red algae

Results of Eel River Periphyton Sampling Conducted October 7, 2017

(Estimates of percent composition indicated as follows: Abundant = 60-100%,
Very Common = 30-60%, Common = 5-30%, Occasional = 1-5%, Rare <1%

	<u>Head 2 (Bog 4 Preserve)</u>	<u>Head 4 (ds Long Pond Rd)</u>	<u>*BM-1 (Hatchery)</u>	<u>BM-2 (Sandwich Rd)</u>	<u>BM-3a (Forges Rd)</u>	<u>BM-4 (TNC)</u>
Periphyton Taxa	slide missing					
Bacillariophyceae (diatoms)						
<i>Asterionella</i>			R			no organisms
<i>Cymbella</i>		O	O	O		
<i>Diatomoa</i>						
<i>Eunotia</i>						
<i>Fragilaria</i>						
<i>Fragilariopsis</i>						
<i>Melosira</i>		O	R			
<i>Navicula</i>				R		
<i>Nitzschia</i>						
<i>Pinnularia</i>			R		R	
<i>Pluerosigma</i>			C			
<i>Synedra</i>						
<i>Tabellaria</i>		R	C		R	
Chlorophyta (green algae)						
<i>Chaetophora</i>						
<i>Cladophora</i>						
<i>Closterium</i>		R				
<i>Mougeotia</i>				O		
<i>Oedogonium</i>						
<i>Spirogyra</i>						
<i>Staurastrum</i>						
Chrysophyta (yellow-green algae, excluding diatoms)						
<i>Dinobryan</i>				R		
Cyanophyta (blue-green algae)						
<i>Anabaena</i>			R			
<i>Oscillatoria</i>						
<i>Phormidium</i>						
Other						
<i>dinoflagellate</i>						
<i>Prorocentrales</i>						

*slide and jar covered in rust colored film

Results of Macroinvertebrate Sampling of Eel River on August 23, 2017							
INSECT TAXA	FFG*	BM-1 (fish hatchery)	BM-2 (Old Sandwich Rd)	BM-3A (Forges Rd)	BM-4 (TNC; footbridge)	HEAD 2 (Bog 4/Preserve)	HEAD 4 (Bog 1,ds Long Pond Rd)
Coleoptera (beetles)							
<i>Stenelmis</i>	SC/CG		4			27	1
<i>Haliphus</i>	SH		3				
<i>Uvarus</i>	P						
<i>Dytiscidae</i>	P						
unidentified	P						
Diptera (flies and midges)							
<i>Chironomidae</i>	V		11		15		2
<i>Simuliidae</i>	CF	3			17		
<i>Tipulidae</i>	V						
Ephemeroptera (mayflies)							
<i>Baetis</i>	CG/SC						2
<i>Stenonema</i>	SC/CG						
Hemiptera (true bugs)							
<i>Ranatra</i>	P						
<i>Belostoma</i>	P						
<i>Hesperocorixa</i>	P						
<i>Gerrid</i>	P						
Odonata (damselflies and dragonflies)							
<i>Boyeria</i>	P				7	1	
<i>Calopteryx</i>	P						
<i>Ischnura</i>	P				1		18
Trichoptera (caddisflies)							
<i>Chimarra</i>	CF						
<i>Hydropsyche</i>	CF	14					
<i>Oecetis</i>	SC						
NON-INSECT TAXA							
Amphipoda (scuds)							
<i>Gammarus</i>	CG	49	4			60	
<i>Hyalella</i>	CG	15	57	42	12	12	24
Decapoda (crayfish)							
unidentified	SH				1		2
Isopoda (aquatic sow bugs)							
<i>Caecidotea</i>	CG	2			2		
Mollusca (snails and clams)							
<i>Helisoma</i>		3				2	3
<i>Physa</i>	SC				2		
<i>Pisidiidae</i> (pea clams)	CF			3		1	
Oligochaetes (aquatic worms)							
unidentified	V						
Turbellaria (flatworms)							
<i>Dugesia</i>	CG					1	
Total Specimens		86	79	45	57	104	52
Community Richness (Total Taxa)		6	5	2	8	7	7
Community Evenness (Scaled SD)		0.69	0.58	0.35	0.81	0.58	0.69
EPT Taxa		1	0	0	0	0	0
Percent Dominant Taxa		0.57	0.72	0.93	0.3	0.58	0.46
Dominant FFG *		CG	CG	CG	CF/V	CG	CG/P
*Functional Feeding Groups: CF= Collector-filterer, CG=Collector-gatherer, SC=Scraper, SH=Shredder, P=Predator, V=Variable							

Results of Eel River Macrophyte Survey Conducted May 2017

Species Name	Common Name	Occurance in Ponds			
		Russell Mill	Hayden	Howland	Eel River Basin
Submerged Plants					
<i>Cabomba caroliniana</i>	Fanwort (non-native)				
<i>Callitriche sp.</i>	Water-starwort	X	x	x	
<i>Ceratophyllum demersum</i>	Coontail	X			
<i>Elotia sp.</i>	Pondweed				
<i>Ludwigia palustris</i>	Water-purslane	x		X	X
<i>Myriophyllum humile</i>	Water-milfoil	x	x	X	
<i>Lemna minor</i>	Common Duckweed	x			x
<i>Hyrilla verticillata</i>	Water-weed	x	X		
<i>Utricularia macrorhiza</i>	Bladderwort			x	
<i>Rupia maritima</i>	Widgeon Grass		x		
<i>Najas flesilis</i>	Naiad	x		x	x
Floating-Leaved Plants					
<i>Nuphar variegata</i>	Yellow Waterlily	x	X	X	
<i>Nymphaea odorata</i>	White Waterlily	x		x	
<i>Vallisneria americana</i>	Wild Celery			x	
Emergent Plants					
<i>Alnus incana</i>	Speckled Alder				
<i>Clethra alnifolia</i>	Sweet Pepperbush				
<i>Cyperus sp.</i>	Sedge			x	
<i>Elaeagnus umbellata</i>	Autumn Olive				
<i>Fallopia japonica</i>	Japanese Knotweed				
<i>Glysera sp.</i>	Mannagrass				
<i>Impatiens capensis</i>	Jewelweed				
<i>Iris pseudacorus</i>	Yellow Iris	x			x
<i>Juncus sp.</i>	Rush	x	x	x	x
<i>Justicia americana</i>	Water Willow	X		x	
<i>Lonicera sp.</i>	Honeysuckle	x			
<i>Lysimachia terrestris</i>	Swamp Candle				
<i>Myosotis sp.</i>	Forget-Me-Not	x			
<i>Myricaceae gale</i>	Bayberry	x	x	x	x
<i>Onoclea sensibilis</i>	Sensitive Fern				
<i>Phragmites australis</i>	Common Reed	X	x	x	X
<i>Pontederia cordata</i>	Pickereel-Weed	x	x	x	
<i>Rosa multiflora</i>	Multiflora Rose	x	x		x
<i>Rumex crispus</i>	Curly Dock				
<i>Scirpus cyperinus</i>	Woolgrass				
<i>Schoenoplectus americanus</i>	Three Square				
<i>Solanum sp.</i>	Nightshade				
<i>Symplocarpus foetidus</i>	Skunk Cabbage	x			
<i>Sparganium sp.</i>	Bur-Reed	x			
<i>Toxicodendron radicans</i>	Poison Ivy				x
<i>Typha latifolia</i>	Common Cattail	X	x	X	X

<i>Rubus idaeus</i>	Raspberry				
<i>Vitis labrusca</i>	Fox Grape				
*dominant species indicated in bold, capital X					

Results of Eel River Plankton Sampling Conducted June 13,2018				
(Estimates of percent composition indicated as follows: A bundant = 60-100%, V ery Common = 30-60%, C ommon = 5-30%, O ccasional= 1-5%, R are <1%				
	<u>Russell Mill Pond</u>	<u>Hayden Pond</u>	<u>Howland Pond</u>	<u>Eel River Basin</u>
Phytoplankton Taxa				
Bacillariophyceae (diatoms)				
<i>Asterionella</i>	A	A	VC	VC
<i>Cymbella</i>	R	O	O	O
<i>Diadomesis</i>		VC		
<i>Fragilaria</i>	C	VC	C	
<i>Fragilariopsis</i>				
<i>Guinardia</i>				
<i>Gyrosigma</i>	O	O	O	O
<i>Leprocylindrus</i>				O
<i>Melosira</i>		O	O	
<i>Navicula</i>			O	O
<i>Nitzschia</i>			O	
<i>Pinnularia</i>	O	O	O	O
<i>Pieurosigma</i>				C
<i>Rhizosolenia</i>	O			
<i>Synedra</i>	O	O	O	O
<i>Tabellaria</i>	A	A	VC	
Chlorophyta (green algae)				
<i>Closterium</i>			O	O
<i>Crucigenia</i>				
<i>Mougeotia</i>	VC	C		O
<i>Oocystis</i>				
<i>Oedogonium</i>	O			
<i>Pediastrum</i>	C			O
<i>Scenedesmus</i>			O	
<i>Spirogyra</i>		O	O	
<i>Staurostrum</i>				
Chrysophyta (yellow-green algae, excluding diatoms)				
<i>Chrysosphaerella</i>				
<i>Dinobryon</i>	A	A	O	VC
<i>Mallomonas</i>				
Cyanophyta (blue-green algae)				
<i>Oscillatoria</i>	O	R	O	
<i>Anabaena</i>				
<i>Gomphosphaeria</i>				
Other				
<i>Ceratium</i>		R	O	
<i>Tintinnids</i>	O			
<i>Rotifer</i>	O	R		

Results of Eel River Plankton Sampling Conducted September 27,2018				
(Estimates of percent composition indicated as follows: Abundant = 60-100%, Very Common = 30-60%, Common = 5-30%, Occasional = 1-5%, Rare <1%				
	Russell Mill Pond	Hayden Pond	Howland Pond	Eel River Basin
Phytoplankton Taxa				
Bacillariophyceae (diatoms)				
<i>Asterionella</i>	VC	VC	VC	VC
<i>Cymbella</i>	O	O		O
<i>Diadomesis</i>				
<i>Fragilaria</i>	O	O	O	
<i>Fragilariopsis</i>				
<i>Guindardia</i>				
<i>Gyrosigma</i>	O			
<i>Leprocylindrus</i>				
<i>Melosira</i>				
<i>Navicula</i>				O
<i>Nitzschia</i>		C	O	
<i>Pinnularia</i>	O	O		
<i>Pieurosigma</i>				O
<i>Rhizosolenia</i>				
<i>Synedra</i>		O		O
<i>Tabellaria</i>	C	C	C	C
Chlorophyta (green algae)				
<i>Closterium</i>				
<i>Mougeotia</i>	VC	C	C	
<i>Oocystis</i>				
<i>Pediastrum</i>			O	
<i>Spirogyra</i>			VC	
<i>Staurastrum</i>				
Chrysophyta (yellow-green algae, excluding diatoms)				
<i>Dinobryon</i>				
Cyanophyta (blue-green algae)				
<i>Anabaena</i>				
Pyrrophyta (dinoflagellates)				
<i>Ceratium</i>		O		
Other				
<i>Rotifer</i>	O			O
<i>Tintinnids</i>				

Eel River Field Measurements Recorded by UMASS on June 13, 2018								
Station	Secchi Depth	Total Depth	Sample Depth	Temp	DO	DO	pH	Alkalinity
	<i>meters</i>	<i>meters</i>	<i>meters</i>	°C	% Sat	mg/L	unit	mg/L CaCO ₃
Hayden Pond	0.25	0.5	0.25	18.7	127.4	11.7	6.83	21.4
Howland Pond	0.5	0.5	0.25	18.7	134.1	14	7.21	22.3
Eel River Basin	1.15	1.5	0.75	19.1	128	12	6.75	23.9
Russell Mill Pond	1.4	3.5	0.5	18.4	103	9.6	6.66	29.4
			1	18.2	103.9	9	6.47	18.1
			2	17.7	100.9	10.3	6.21	17.9
			2.75	17.7	111.3	11	6.09	21.1

Results of Eel River Periphyton Sampling Conducted June 6, 2018

(Estimates of percent composition indicated as follows: Abundant = 60-100%,
Very Common = 30-60%, Common = 5-30%, Occasional = 1-5%, Rare <1%

	Head 2 (Bog 4 Preserve)	Head 4 (Bog 1 Preserve)	BM-1 (Hatchery)*	BM-2 (Sandwich Rd)	BM-3a (Forges Rd)	BM-4 (TNC)
Periphyton Taxa	Slides were missing		Slides were missing		Slides were missing	Slides were missing
Bacillariophyceae (diatoms)						
<i>Asterionella</i>						
<i>Cymbella</i>		O		VC		
<i>Eunotia</i>						
<i>Fragilaria</i>				O		
<i>Fragilariopsis</i>						
<i>Melosira</i>						
<i>Navicula</i>		O		C		
<i>Nitzschia</i>						
<i>Pinnularia</i>		C		C		
<i>Rhizosolenia</i>		O				
<i>Synedra</i>				C		
<i>Tabellaria</i>		A		A		
Chlorophyta (green algae)						
<i>Chaetophora</i>						
<i>Closterium</i>		O				
<i>Mougeotia</i>		O				
<i>Oedogonium</i>				O		
<i>Spirogyra</i>						
<i>Staurastrum</i>						
Chrysophyta (yellow-green algae, excluding diatoms)						
<i>Dinobryan</i>						
Cyanophyta (blue-green algae)						
<i>Anabaena</i>						
<i>Oscillatoria</i>						
<i>Phormidium</i>						
Other						
<i>dinoflagellate</i>						

Results of Eel River Periphyton Sampling Conducted October 15, 2018

(Estimates of percent composition indicated as follows: Abundant = 60-100%,
Very Common = 30-60%, Common = 5-30%, Occasional = 1-5%, Rare <1%

	Head 2 (Bog 4 Preserve)	Head 4 (ds Long Pond Rd)	*BM-1 (Hatchery)	BM-2 (Sandwich Rd)	BM-3a (Forges Rd)	BM-4 (TNC)
Periphyton Taxa				SLIDES MISSING		
Bacillariophyceae (diatoms)						
<i>Asterionella</i>		C	O			
<i>Cymbella</i>	VC	VC	O			
<i>Diatomoa</i>						
<i>Eunotia</i>						
<i>Fragilaria</i>		VC	O			O
<i>Fragilariopsis</i>						O
<i>Gomphonema</i>			R			
<i>Melorsia</i>						
<i>Navicula</i>		C	O		O	
<i>Nitzschia</i>	O		VC			
<i>Pinnularia</i>		O	C		O	O
<i>Pluerosigma</i>						
<i>Rhizosolenia</i>	C					
<i>Synedra</i>	O					
<i>Tabellaria</i>	A	C	VC		O	O
Chlorophyta (green algae)						
<i>Chaetophora</i>						
<i>Cladophora</i>						
<i>Closterium</i>			O			
<i>Mougeotia</i>		VC			O	
<i>Oedogonium</i>						
<i>Spirogyra</i>						
<i>Staurastrum</i>						
Chrysophyta (yellow-green algae, excluding diatoms)						
<i>Dinobryan</i>	O					
Cyanophyta (blue-green algae)						
<i>Anabaena</i>						
<i>Oscillatoria</i>						
<i>Phormidium</i>						
Other						
<i>dinoflagellate</i>						
<i>Prorocentrales</i>						

Results of Macroinvertebrate Sampling of Eel River on October 15, 2018							
INSECT TAXA	FFG*	BM-1 (fish hatchery)	BM-2 (Old Sandwich Rd)	BM-3A (Forges Rd)	BM-4 (TNC; footbridge)	HEAD 2 (Bog 4/Preserve)	HEAD 4 (Bog 1,ds Long Pond Rd)
Coleoptera (beetles)							
<i>Stenelmis</i>	SC/CG	39	11		15	30	
<i>Haliplus</i>	SH	4					
<i>Uvarus</i>	P						
<i>Dytiscidae</i>	P						
unidentified	P						
Diptera (flies and midges)							
<i>Chironomidae</i>	V		35	9			
<i>Simuliidae</i>	CF		3				
<i>Tipulidae</i>	V						
Ephemeroptera (mayflies)							
<i>Baetis</i>	CG/SC						
<i>Stenonema</i>	SC/CG						
Hemiptera (true bugs)							
<i>Ranatra</i>	P						
<i>Belostoma</i>	P						
<i>Hesperocorixa</i>	P						
<i>Gerrid</i>	P						
Odonata (damselflies and dragonflies)							
<i>Boyeria</i>	P	1	1				3
<i>Calopteryx</i>	P					2	
<i>Ischnura</i>	P					5	
Trichoptera (caddisflies)							
<i>Chimarra</i>	CF						
<i>Hydropsyche</i>	CF	2					
<i>Oecetis</i>	SC						
NON-INSECT TAXA							
Amphipoda (scuds)							
<i>Gammarus</i>	CG	25	15	5	30	61	25
<i>Hyalella</i>	CG	8	4	25	5	8	6
Decapoda (crayfish)							
unidentified	SH						
Isopoda (aquatic sow bugs)			3				
<i>Caecidotea</i>	CG				2	1	
Mollusca (snails and clams)							
<i>Helisoma</i>							2
<i>Physa</i>	SC						
<i>Pisidiidae</i> (pea clams)	CF	18	3			2	
Oligochaetes (aquatic worms)							
unidentified	V					1	
Turbellaria (flatworms)							
<i>Dugesia</i>	CG				3	1	
Total Specimens		100	72	42	53	110	36
Community Richness (Total Taxa)		8	7	4	5	8	4
Community Evenness (Scaled SD)		0.76	0.74	0.78	0.68	0.6	0.66
EPT Taxa		1	0	0	0	0	0
Percent Dominant Taxa		0.25	0.06	0.6	0	0.55	0.17
Dominant FFG *		CF	CG	CG	CG	CG	CG
*Functional Feeding Groups: CF= Collector-filterer, CG=Collector-gatherer, SC=Scraper, SH=Shredder, P=Predator, V=Variable							

Results of Eel River Macrophyte Survey Conducted June 2018

Species Name	Common Name	Occurance in Ponds			
		<u>Russell Mill</u>	<u>Hayden</u>	<u>Howland</u>	<u>Eel River Basin</u>
<u>Submerged Plants</u>					
<i>Cabomba caroliniana</i>	Fanwort (non-native)				
<i>Callitriche sp.</i>	Water-starwort	X			
<i>Ceratophyllum demersum</i>	Coontail	X	x		
<i>Elotia sp.</i>	Pondweed				
<i>Ludwigia palustris</i>	Water-purslane		x	X	X
<i>Myriophyllum humile</i>	Water-milfoil			x	
<i>Lemna minor</i>	Common Duckweed				
<i>Hyrilla verticillata</i>	Water-weed	x			
<i>Utricularia macrorhiza</i>	Bladderwort				
<i>Rupia maritima</i>	Widgeon Grass				
<i>Najas flesilis</i>	Naiad	x		x	
<u>Floating-Leaved Plants</u>					
<i>Nuphar variegata</i>	Yellow Waterlily	x	x	x	
<i>Nymphaea odorata</i>	White Waterlily				
<i>Vallisneria americana</i>	Wild Celery				
<i>Nymphoides cordata</i>	Little Floating Heart	x			
<i>Nelumbo lutea</i>	American Lotus			x	
<u>Emergent Plants</u>					
<i>Alnus incana</i>	Speckled Alder				
<i>Clethra alnifolia</i>	Sweet Pepperbush				
<i>Cyperus sp.</i>	Sedge		X		x
<i>Elaeagnus umbellata</i>	Autumn Olive				
<i>Fallopia japonica</i>	Japanese Knotweed				
<i>Glysera sp.</i>	Mannagrass				
<i>Impatiens capensis</i>	Jewelweed				
<i>Iris pseudacorus</i>	Yellow Iris	x			x
<i>Juncus sp.</i>	Rush	x	x	x	x
<i>Justicia americana</i>	Water Willow				
<i>Lonicera sp.</i>	Honeysuckle				
<i>Lysimachia terrestris</i>	Swamp Candle				
<i>Myosotis sp.</i>	Forget-Me-Not	x			
<i>Myricaceae gale</i>	Bayberry	x	x	x	x
<i>Onoclea sensibilis</i>	Sensitive Fern				x
<i>Phragmites australis</i>	Common Reed	X			X
<i>Pontederia cordata</i>	Pickereel-Weed	x	x		x
<i>Rosa multiflora</i>	Multiflora Rose				
<i>Rumex crispus</i>	Curly Dock	x			
<i>Scirpus cyperinus</i>	Woolgrass				
<i>Schoenoplectus americanus</i>	Three Square				
<i>Solanum sp.</i>	Nightshade			x	
<i>Symplocarpus foetidus</i>	Skunk Cabbage				
<i>Sparqanium sp.</i>	Bur-Reed				

<i>Toxicodendron radicans</i>	Poison Ivy				x
<i>Typha latifolia</i>	Common Cattail	X	x	X	X
<i>Rubus idaeus</i>	Raspberry				
<i>Vitis labrusca</i>	Fox Grape				
*dominant species indicated in bold, capital X					

Results of Eel River Plankton Sampling Conducted May 19, 2019				
(Estimates of percent composition indicated as follows: Abundant = 60-100%, Very Common = 30-60%, Common = 5-30%, Occasional= 1-5%, Rare <1%				
	<u>Russell Mill Pond</u>	<u>Hayden Pond</u>	<u>Howland Pond</u>	<u>Eel River Basin</u>
Phytoplankton Taxa				
Bacillariophyceae (diatoms)				
<i>Asterionella</i>	A	A	A	C
<i>Cymbella</i>		O		O
<i>Diadomesis</i>				
<i>Fragilaria</i>		O		
<i>Fragilariopsis</i>				
<i>Guinardia</i>				
<i>Gyrosigma</i>				
<i>Leprocylindrus</i>				O
<i>Melosira</i>	O		O	
<i>Navicula</i>				O
<i>Nitzschia</i>				
<i>Pinnularia</i>	O	O	O	
<i>Pieurosigma</i>				O
<i>Rhizosolenia</i>				
<i>Synedra</i>	O	O	O	
<i>Tabellaria</i>		O		
Chlorophyta (green algae)				
<i>Closterium</i>				
<i>Crucigenia</i>				
<i>Mougeotia</i>		O	O	
<i>Oocystis</i>				
<i>Oedogonium</i>				
<i>Pediastrum</i>				
<i>Scenedesmus</i>				
<i>Spirogyra</i>		O	A	O
<i>Staurostrum</i>	R	R		R
Chrysophyta (yellow-green algae, excluding diatoms)				
<i>Chrysosphaerella</i>				
<i>Dinobryon</i>	C	VC	VC	O
<i>Mallomonas</i>				
Cyanophyta (blue-green algae)				
<i>Oscillatoria</i>				
<i>Anabaena</i>		R		
<i>Gomphosphaeria</i>				
Other				
<i>Ceratium</i>				
<i>Tintinnids</i>	A	VC	A	O
<i>Rotifer</i>	R	R		
<i>Invert eggs</i>				

Results of Eel River Plankton Sampling Conducted September 19,2019				
(Estimates of percent composition indicated as follows: Abundant = 60-100%, Very Common = 30-60%, Common = 5-30%, Occasional= 1-5%, Rare <1%				
	<u>Russell Mill Pond</u>	<u>Hayden Pond</u>	<u>Howland Pond</u>	<u>Eel River Basin</u>
Phytoplankton Taxa				
Bacillariophyceae (diatoms)				
<i>Asterionella</i>	VC	C	O	O
<i>Cymbella</i>	O		O	
<i>Diadomesis</i>				
<i>Fragilaria</i>			O	O
<i>Fragilariopsis</i>				O
<i>Guinardia</i>				
<i>Gyrosigma</i>				
<i>Leprocylindrus</i>				O
<i>Melosira</i>	O	O	C	C
<i>Navicula</i>			O	
<i>Nitzschia</i>				
<i>Pinnularia</i>			C	O
<i>Pieurosigma</i>		O	O	O
<i>Rhizosolenia</i>				
<i>Synedra</i>	O	O		
<i>Tabellaria</i>	O			
Chlorophyta (green algae)				
<i>Closterium</i>	O			
<i>Crucigenia</i>				
<i>Mougeotia</i>			C	C
<i>Oocystis</i>				
<i>Oedogonium</i>				
<i>Pediastrum</i>				
<i>Scenedesmus</i>				
<i>Spirogyra</i>		O		C
<i>Staurostrum</i>	R			
Chrysophyta (yellow-green algae, excluding diatoms)				
<i>Chrysosphaerella</i>				
<i>Dinobryon</i>	VC	VC	O	
<i>Mallomonas</i>				
Cyanophyta (blue-green algae)				
<i>Oscillatoria</i>				
<i>Anabaena</i>				
<i>Gomphosphaeria</i>				
Other				
<i>Ceratium</i>				
<i>Tintinnids</i>				
<i>Rotifer</i>				

Eel River Field Measurements Recorded by UMASS on May 29, 2019								
Station	Secchi Depth	Total Depth	Sample Depth	Temp	DO	DO	pH	Alkalinity
	<i>meters</i>	<i>meters</i>	<i>meters</i>	°C	% Sat	mg/L	unit	mg/L CaCO ₃
Hayden Pond	0.5	1	0.5	16.4	90.6	8.86	6.36	19.1
Howland Pond	0.3	0.75	0.5	16.9	120	11.7	6.29	20.2
Eel River Basin	1.4	1.7	1	16.8	92.9	8.96	6.34	22.9
Russell Mill Pond	1.7	3	0.5	17.1	94.6	9.2	6.31	25.3
			1	16.8	91.4	9.3	6.46	17.6
			1	15.8	67.4	6.65	6.13	18.1
			2.5	15.4	15.4	4.21	6.14	19.6

Results of Eel River Periphyton Sampling Conducted May 2019

(Estimates of percent composition indicated as follows: Abundant = 60-100%,
Very Common = 30-60%, Common = 5-30%, Occasional = 1-5%, Rare <1%

	Head 2 (Bog 4 Preserve)	Head 4 (Bog 1 Preserve)	BM-1 (Hatchery)*	BM-2 (Sandwich Rd)	BM-3a (Forges Rd)	BM-4 (TNC)
Periphyton Taxa	Slides were missing					
Bacillariophyceae (diatoms)						
<i>Asterionella</i>			VC	O		
<i>Cymbella</i>			O	C	O	C
<i>Eunotia</i>						
<i>Fragilaria</i>		C	C	O	C	
<i>Fragilariopsis</i>						
<i>Melosira</i>				O	O	
<i>Navicula</i>						
<i>Nitzschia</i>						
<i>Pinnularia</i>		C	C			
<i>Rhizosolenia</i>						
<i>Synedra</i>						
<i>Tabellaria</i>			O	O	O	VC
Chlorophyta (green algae)						
<i>Chaetophora</i>						
<i>Closterium</i>					O	
<i>Mougeotia</i>			C			
<i>Oedogonium</i>						
<i>Spirogyra</i>						
<i>Staurastrum</i>						
Chrysophyta (yellow-green algae, excluding diatoms)						
<i>Dinobryon</i>						
Cyanophyta (blue-green algae)						
<i>Anabaena</i>						
<i>Oscillatoria</i>						
<i>Phormidium</i>						
Other						
<i>dinoflagellate</i>						

Results of Eel River Periphyton Sampling Conducted October 2019

(Estimates of percent composition indicated as follows: Abundant = 60-100%,
Very Common = 30-60%, Common = 5-30%, Occasional = 1-5%, Rare <1%

	Head 2 (Bog 4 Preserve)	Head 4 (Bog 1 Preserve)	BM-1 (Hatchery)*	BM-2 (Sandwich Rd)	BM-3a (Forges Rd)	BM-4 (TNC)
Periphyton Taxa	Slides were missing		Slides were missing		Slides were missing	
Bacillariophyceae (diatoms)						
<i>Asterionella</i>						
<i>Cymbella</i>		C		O		
<i>Eunotia</i>						
<i>Fragilaria</i>		C		O		
<i>Fragilariopsis</i>						
<i>Melorsia</i>				O		
<i>Navicula</i>				O		
<i>Nitzschia</i>						
<i>Pinnularia</i>		C				O
<i>Rhizosolenia</i>						
<i>Synedra</i>						
<i>Tabellaria</i>		O				O
Chlorophyta (green algae)						
<i>Chaetophora</i>						
<i>Closterium</i>						
<i>Mougeotia</i>						
<i>Oedogonium</i>						
<i>Spirogyra</i>						
<i>Staurastrum</i>						
Chrysophyta (yellow-green algae, excluding diatoms)						
<i>Dinobryan</i>						
Cyanophyta (blue-green algae)						
<i>Anabaena</i>						
<i>Oscillatoria</i>						
<i>Phormidium</i>						
Other						
<i>dinoflagellate</i>						

Results of Macroinvertebrate Sampling of Eel River on							
INSECT TAXA	FFG*	BM-1 (fish hatchery)	BM-2 (Old Sandwich Rd)	BM-3A (Forges Rd)	BM-4 (TNC; footbridge)	HEAD 2 (Bog 4/Preserve)	HEAD 4 (Bog 1,ds Long Pond Rd)
Coleoptera (beetles)							
<i>Stenelmis</i>	SC/CG	12			2	21	1
<i>Haliplus</i>	SH	1					
<i>Uvarus</i>	P						
<i>Dytiscidae</i>	P						
unidentified	P						
Diptera (flies and midges)							
<i>Chironomidae</i>	V		16	17	3		4
<i>Simuliidae</i>	CF	3			10		
<i>Tipulidae</i>	V						
Ephemeroptera (mayflies)							
<i>Baetis</i>	CG/SC						
<i>Stenonema</i>	SC/CG						
Hemiptera (true bugs)							
<i>Ranatra</i>	P						
<i>Belostoma</i>	P						
<i>Hesperocorixa</i>	P						
<i>Gerrid</i>	P						
Odonata (damselflies and dragonflies)							
<i>Boyeria</i>	P	4	1			2	2
<i>Calopteryx</i>	P					1	
<i>Ischnura</i>	P					4	10
Trichoptera (caddisflies)							
<i>Chimarra</i>	CF						
<i>Hydropsyche</i>	CF	7					
<i>Oecetis</i>	SC						
NON-INSECT TAXA							
Amphipoda (scuds)							
<i>Gammarus</i>	CG	63	34	18	43	73	35
<i>Hyalella</i>	CG	8	9	38	14	5	4
Decapoda (crayfish)							
unidentified	SH		1				
Isopoda (aquatic sow bugs)							
<i>Caecidotea</i>	CG					3	
Mollusca (snails and clams)							
<i>Helisoma</i>		2					5
<i>Physa</i>	SC						
<i>Pisidiidae</i> (pea clams)	CF	7	3				
Oligochaetes (aquatic worms)							
unidentified	V						
Turbellaria (flatworms)							
<i>Dugesia</i>	CG			1			
Total Specimens		107	64	74	72	109	61
Community Richness (Total Taxa)		9	6	4	5	7	7
Community Evenness (Scaled SD)		0.66	0.69	0.78	0.7	0.55	0.7
EPT Taxa		1	0	0	0	0	0
Percent Dominant Taxa		0.59	0.53	0.51	0.6	0.67	0.57
Dominant FFG *		CG	CG	CG	CG	CG	CG
*Functional Feeding Groups: CF= Collector-filterer, CG=Collector-gatherer, SC=Scraper, SH=Shredder, P=Predator, V=Variable							

Results of Eel River Plankton Sampling Conducted June 2, 2020				
(Estimates of percent composition indicated as follows: A bundant = 60-100%, V ery Common = 30-60%, C ommon = 5-30%, O ccasional= 1-5%, R are <1%				
	<u>Russell Mill Pond</u>	<u>Hayden Pond</u>	<u>Howland Pond</u>	<u>Eel River Basin</u>
Phytoplankton Taxa				
Bacillariophyceae (diatoms)				
<i>Asterionella</i>	A	VC	A	VC
<i>Cymbella</i>				
<i>Diadomesis</i>				
<i>Fragilaria</i>				O
<i>Fragilariopsis</i>				
<i>Guinardia</i>				
<i>Gyrosigma</i>				
<i>Leprocylindrus</i>				O
<i>Melosira</i>			O	
<i>Navicula</i>				
<i>Nitzschia</i>				
<i>Pinnularia</i>				C
<i>Pieurosigma</i>				O
<i>Rhizosolenia</i>				
<i>Synedra</i>				
<i>Tabellaria</i>	O	O		
Chlorophyta (green algae)				
<i>Closterium</i>				
<i>Crucigenia</i>				
<i>Mougeotia</i>	O	O		
<i>Oocystis</i>				
<i>Oedogonium</i>				
<i>Pediastrum</i>				
<i>Scenedesmus</i>				
<i>Spirogyra</i>				O
<i>Staurostrum</i>			R	
Chrysophyta (yellow-green algae, excluding diatoms)				
<i>Chrysosphaerella</i>				
<i>Dinobryon</i>				
<i>Mallomonas</i>				
Cyanophyta (blue-green algae)				
<i>Oscillatoria</i>				
<i>Anabaena</i>				
<i>Gomphosphaeria</i>				
Other				
<i>Ceratium</i>				
<i>Tintinnids</i>			O	
<i>Rotifer</i>				
<i>Invert eggs</i>				

Results of Eel River Plankton Sampling Conducted October 2,2020				
(Estimates of percent composition indicated as follows: Abundant = 60-100%, Very Common = 30-60%, Common = 5-30%, Occasional= 1-5%, Rare <1%				
	<u>Russell Mill Pond</u>	<u>Hayden Pond</u>	<u>Howland Pond</u>	<u>Eel River Basin</u>
Phytoplankton Taxa				
Bacillariophyceae (diatoms)				
<i>Asterionella</i>	C	C	O	
<i>Cymbella</i>	O			O
<i>Diadomesis</i>				
<i>Fragilaria</i>	O		C	O
<i>Fragilariopsis</i>				
<i>Guinardia</i>				
<i>Gyrosigma</i>				
<i>Leprocylindrus</i>				O
<i>Melosira</i>				
<i>Navicula</i>		O		O
<i>Nitzschia</i>				
<i>Pinnularia</i>				
<i>Pieurosigma</i>				
<i>Rhizosolenia</i>				
<i>Synedra</i>	R		O	
<i>Tabellaria</i>	O			
Chlorophyta (green algae)				
<i>Closterium</i>				
<i>Crucigenia</i>				
<i>Mougeotia</i>	O		O	
<i>Oocystis</i>				
<i>Oedogonium</i>			C	
<i>Pediastrum</i>	R			
<i>Scenedesmus</i>				
<i>Spirogyra</i>				O
<i>Staurostrum</i>				
Chrysophyta (yellow-green algae, excluding diatoms)				
<i>Chrysosphaerella</i>				
<i>Dinobryon</i>		VC		
<i>Mallomonas</i>				
Cyanophyta (blue-green algae)				
<i>Oscillatoria</i>				
<i>Anabaena</i>			R	
<i>Gomphosphaeria</i>				
Other				
<i>Ceratium</i>				
<i>Tintinnids</i>				
<i>Rotifer</i>				

Eel River Field Measurements Recorded by UMASS on June 2, 2020								
Station	Secchi Depth	Total Depth	Sample Depth	Temp	DO	DO	pH	Alkalinity
	<i>meters</i>	<i>meters</i>	<i>meters</i>	°C	% Sat	mg/L	unit	mg/L CaCO ₃
Hayden Pond	0.9	0.9	0.5	22.6	141.2	12.12	7.76	20.2
Howland Pond	0.3	0.3	0.15	23.8	141.9	11.9	8.04	22.9
Eel River Basin	0.7	0.7	0.4	23.8	109.8	9.21	6.71	23.8
Russell Mill Pond	1.5	3.2	0.5	20.6	104.9	9.32	6.55	17.4
			1	19.6	122.5	9.3	6.21	18.3
			2	17.7	97	9.17	6.2	19.1
			3	15.1	37.7	3.79	6.21	16.8

Results of Eel River Periphyton Sampling Conducted June 2020

(Estimates of percent composition indicated as follows: Abundant = 60-100%,
Very Common = 30-60%, Common = 5-30%, Occasional = 1-5%, Rare <1%

	Head 2 (Bog 4 Preserve)	Head 4 (Bog 1 Preserve)	BM-1 (Hatchery)* Slides were missing	BM-2 (Sandwich Rd)	BM-3a (Forges Rd)	BM-4 (TNC)
Periphyton Taxa	Slides were missing					
Bacillariophyceae (diatoms)						
<i>Asterionella</i>		O		O	O	C
<i>Cymbella</i>						
<i>Eunotia</i>						
<i>Fragilaria</i>						
<i>Fragilariopsis</i>						
<i>Melosira</i>						
<i>Navicula</i>						O
<i>Nitzschia</i>						
<i>Pinnularia</i>						
<i>Rhizosolenia</i>						
<i>Synedra</i>					O	
<i>Tabellaria</i>		O			O	
Chlorophyta (green algae)						
<i>Chaetophora</i>						
<i>Closterium</i>						R
<i>Mougeotia</i>						
<i>Oedogonium</i>						O
<i>Spirogyra</i>						
<i>Staurastrum</i>						
Chrysophyta (yellow-green algae, excluding diatoms)						
<i>Dinobryon</i>						
Cyanophyta (blue-green algae)						
<i>Anabaena</i>						
<i>Oscillatoria</i>						
<i>Phormidium</i>						
Other						
<i>dinoflagellate</i>						

Results of Eel River Periphyton Sampling Conducted October 2020

(Estimates of percent composition indicated as follows: Abundant = 60-100%,
Very Common = 30-60%, Common = 5-30%, Occasional = 1-5%, Rare <1%

	Head 2 (Bog 4 Preserve)	Head 4 (Bog 1 Preserve)	BM-1 (Hatchery)*	BM-2 (Sandwich Rd)	BM-3a (Forges Rd)	BM-4 (TNC)
Periphyton Taxa	Slides were missing					
Bacillariophyceae (diatoms)			O		O	
<i>Asterionella</i>						
<i>Cymbella</i>		O	C	O		O
<i>Eunotia</i>						
<i>Fragilaria</i>			C			O
<i>Fragilariopsis</i>						
<i>Melosira</i>						
<i>Navicula</i>			C	O		
<i>Nitzschia</i>						
<i>Pinnularia</i>		O				
<i>Rhizosolenia</i>						
<i>Synedra</i>		O				
<i>Tabellaria</i>		O	C		O	O
Chlorophyta (green algae)						
<i>Chaetophora</i>						
<i>Closterium</i>						
<i>Mougeotia</i>					O	
<i>Oedogonium</i>						
<i>Spirogyra</i>						
<i>Staurastrum</i>						
Chrysophyta (yellow-green algae, excluding diatoms)						
<i>Dinobryon</i>						
Cyanophyta (blue-green algae)						
<i>Anabaena</i>						
<i>Oscillatoria</i>						
<i>Phormidium</i>						
Other						
<i>dinoflagellate</i>						

Results of Macroinvertebrate Sampling of Eel River on October 2, 2020							
INSECT TAXA	FFG*	BM-1 (fish hatchery)	BM-2 (Old Sandwich Rd)	BM-3A (Forges Rd)	BM-4 (TNC; footbridge)	HEAD 2 (Bog 4/Preserve)	HEAD 4 (Bog 1,ds Long Pond Rd)
Coleoptera (beetles)							
<i>Stenelmis</i>	SC/CG	24			2	15	4
<i>Haliplus</i>	SH	1					
<i>Uvarus</i>	P						
<i>Dytiscidae</i>	P						
unidentified	P						
Diptera (flies and midges)							
<i>Chironomidae</i>	V		22	9	3		4
<i>Simuliidae</i>	CF	3			10		
<i>Tipulidae</i>	V						
Ephemeroptera (mayflies)							
<i>Baetis</i>	CG/SC						
<i>Stenonema</i>	SC/CG						
Hemiptera (true bugs)							
<i>Ranatra</i>	P						
<i>Belostoma</i>	P						
<i>Hesperocorixa</i>	P						
<i>Gerrid</i>	P						
Odonata (damselflies and dragonflies)							
<i>Boyeria</i>	P	4	3			1	
<i>Calopteryx</i>	P					4	
<i>Ischnura</i>	P					6	10
Trichoptera (caddisflies)							
<i>Chimarra</i>	CF						
<i>Hydropsyche</i>	CF	1					
<i>Oecetis</i>	SC						
NON-INSECT TAXA							
Amphipoda (scuds)							
<i>Gammarus</i>	CG	33	50	25	43	46	35
<i>Hyalella</i>	CG	10	2	8	14	2	4
Decapoda (crayfish)							
unidentified	SH						
Isopoda (aquatic sow bugs)							
<i>Caecidotea</i>	CG					3	
Mollusca (snails and clams)							
<i>Helisoma</i>		2					5
<i>Physa</i>	SC						
<i>Pisidiidae</i> (pea clams)	CF	10					
Oligochaetes (aquatic worms)							
unidentified	V						
Turbellaria (flatworms)							
<i>Dugesia</i>	CG			2			
Total Specimens		88	77	44	72	77	62
Community Richness (Total Taxa)		9	4	4	5	7	6
Community Evenness (Scaled SD)		0.75	0.62	0.79	0.7	0.64	0.75
EPT Taxa		1	0	0	0	0	0
Percent Dominant Taxa		0.38	0.65	0.18	0.6	0.6	0.56
Dominant FFG *		CG	CG	CG	CG	CG	CG
*Functional Feeding Groups: CF= Collector-filterer, CG=Collector-gatherer, SC=Scraper, SH=Shredder, P=Predator, V=Variable							

Results of Eel River Plankton Sampling Conducted May 26,2021				
(Estimates of percent composition indicated as follows: Abundant = 60-100%, Very Common = 30-60%, Common = 5-30%, Occasional= 1-5%, Rare <1%				
	<u>Russell Mill Pond</u>	<u>Hayden Pond</u>	<u>Howland Pond</u>	<u>Eel River Basin</u>
Phytoplankton Taxa				
Bacillariophyceae (diatoms)				
<i>Asterionella</i>	A	A	VC	C
<i>Cymbella</i>	O		O	
<i>Diadomesis</i>				
<i>Fragilaria</i>				
<i>Fragilariopsis</i>				
<i>Guinardia</i>				
<i>Gyrosigma</i>				
<i>Leprocylindrus</i>				C
<i>Melosira</i>	C			
<i>Navicula</i>				O
<i>Nitzschia</i>				
<i>Pinnularia</i>			O	C
<i>Pieurosigma</i>				VC
<i>Rhizosolenia</i>				
<i>Synedra</i>	O		O	
<i>Tabellaria</i>	O	C	C	
Chlorophyta (green algae)				
<i>Closterium</i>				
<i>Crucigenia</i>				
<i>Mougeotia</i>				
<i>Oocystis</i>				
<i>Oedogonium</i>				
<i>Pediastrum</i>				
<i>Scenedesmus</i>				
<i>Spirogyra</i>				VC
<i>Staurostrum</i>	O			
Chrysophyta (yellow-green algae, excluding diatoms)				
<i>Chrysosphaerella</i>				
<i>Dinobryon</i>		O	VC	
<i>Mallomonas</i>				
Cyanophyta (blue-green algae)				
<i>Oscillatoria</i>				
<i>Anabaena</i>				
<i>Gomphosphaeria</i>				
Other				
<i>Ceratium</i>				
<i>Tintinnids</i>			O	
<i>Rotifer</i>	O		C	
<i>Invert eggs</i>				

Results of Eel River Plankton Sampling Conducted September 24,2021				
(Estimates of percent composition indicated as follows: Abundant = 60-100%, Very Common = 30-60%, Common = 5-30%, Occasional= 1-5%, Rare <1%				
	Russell Mill Pond	Hayden Pond	Howland Pond	Eel River Basin
Phytoplankton Taxa				
Bacillariophyceae (diatoms)				
<i>Asterionella</i>	C	VC	O	
<i>Cymbella</i>	O			O
<i>Diadomesis</i>				
<i>Fragilaria</i>	O		O	O
<i>Fragilariopsis</i>				
<i>Guinardia</i>				
<i>Gyrosigma</i>				
<i>Leprocylindrus</i>				O
<i>Melosira</i>	C			
<i>Navicula</i>		O		O
<i>Nitzschia</i>				
<i>Pinnularia</i>				
<i>Pieurosigma</i>				
<i>Rhizosolenia</i>				
<i>Synedra</i>	R		O	
<i>Tabellaria</i>	O	O	O	
Chlorophyta (green algae)				
<i>Closterium</i>				
<i>Crucigenia</i>				
<i>Mougeotia</i>	O		O	
<i>Oocystis</i>				
<i>Oedogonium</i>			R	
<i>Pediastrum</i>	R			
<i>Scenedesmus</i>				O
<i>Spirogyra</i>				
<i>Staurostrum</i>				
Chrysophyta (yellow-green algae, excluding diatoms)				
<i>Chrysosphaerella</i>				
<i>Dinobryon</i>		VC		
<i>Mallomonas</i>				
Cyanophyta (blue-green algae)				
<i>Oscillatoria</i>				
<i>Anabaena</i>				
<i>Gomphosphaeria</i>				
Other				
<i>Ceratium</i>				
<i>Tintinnids</i>				
<i>Rotifer</i>				

Eel River Field Measurements Recorded by UMASS on May 26,2021								
Station	Secchi Depth	Total Depth	Sample Depth	Temp	DO	DO	pH	Alkalinity
	<i>meters</i>	<i>meters</i>	<i>meters</i>	°C	% Sat	mg/L	unit	mg/L CaCO ₃
Hayden Pond	0.6	0.6	0.3	23.6	140.7	12.19	5.41	9.9
Howland Pond	0.6	0.6	0.3	24.8	167	6.23	5.03	8.8
Eel River Basin	1.5	1.3	0.7	23.3	123.3	9.48	5.42	9.8
Russell Mill Pond	1.25	3.3	0.15	22.2	130.5	12.55	6.21	16.5
			1	21	142.4	12.22	6.23	16.4
			2	19.6	130.3	12.4	5.51	9.8
			3	16.6	99.3	9.15	5.54	11.5

Results of Eel River Periphyton Sampling Conducted July 2021

(Estimates of percent composition indicated as follows: Abundant = 60-100%,
Very Common = 30-60%, Common = 5-30%, Occasional = 1-5%, Rare <1%

	Head 2 (Bog 4 Preserve)	Head 4 (Bog 1 Preserve)	BM-1 (Hatchery)*	BM-2 (Sandwich Rd)	BM-3a (Forges Rd)	BM-4 (TNC)
Periphyton Taxa	Slides were missing					Slides were missing
Bacillariophyceae (diatoms)						
<i>Asterionella</i>			O			
<i>Cymbella</i>		O	O		O	
<i>Eunotia</i>						
<i>Fragilaria</i>		O				
<i>Fragilariopsis</i>						
<i>Melosira</i>			O			
<i>Navicula</i>						
<i>Nitzschia</i>						
<i>Pinnularia</i>						
<i>Rhizosolenia</i>						
<i>Synedra</i>			O			
<i>Tabellaria</i>		O		O	O	
Chlorophyta (green algae)						
<i>Chaetophora</i>						
<i>Closterium</i>						
<i>Mougeotia</i>						
<i>Oedogonium</i>						
<i>Spirogyra</i>						
<i>Staurastrum</i>						
Chrysophyta (yellow-green algae, excluding diatoms)						
<i>Dinobryon</i>						
Cyanophyta (blue-green algae)						
<i>Anabaena</i>						
<i>Oscillatoria</i>						
<i>Phormidium</i>						
Other						
<i>dinoflagellate</i>						

Results of Eel River Periphyton Sampling Conducted October 6, 2021

(Estimates of percent composition indicated as follows: Abundant = 60-100%,
Very Common = 30-60%, Common = 5-30%, Occasional = 1-5%, Rare <1%

	Head 2 (Bog 4 Preserve)	Head 4 (Bog 1 Preserve)	BM-1 (Hatchery)*	BM-2 (Sandwich Rd)	BM-3a (Forges Rd)	BM-4 (TNC)
Periphyton Taxa	Slides were missing		Slides were missing			SLIDE BARE
Bacillariophyceae (diatoms)						
<i>Asterionella</i>		O		O	O	
<i>Cymbella</i>						
<i>Diatoma</i>						
<i>Eunotia</i>						
<i>Fragilaria</i>		O				
<i>Fragilariopsis</i>						
<i>Gomphonema</i>						
<i>Melorsia</i>						
<i>Navicula</i>						
<i>Nitzschia</i>						
<i>Pinnularia</i>		O				
<i>Pluerosigma</i>						
<i>Rhizosolenia</i>						
<i>Synedra</i>		O		O		
<i>Tabellaria</i>		R			O	
Chlorophyta (green algae)						
<i>Chaetophora</i>						
<i>Cladophora</i>						
<i>Closterium</i>						
<i>Mougeotia</i>					O	
<i>Oedogonium</i>						
<i>Spirogyra</i>						
<i>Staurastrum</i>						
Chrysophyta (yellow-green algae, excluding diatoms)						
<i>Dinobryan</i>						
Cyanophyta (blue-green algae)						
<i>Anabaena</i>						
<i>Oscillatoria</i>						
<i>Phormidium</i>						
Other						
<i>dinoflagellate</i>						

Results of Macroinvertebrate Sampling of Eel River on October 6, 2021							
INSECT TAXA	FFG*	BM-1 (fish hatchery)	BM-2 (Old Sandwich Rd)	BM-3A (Forges Rd)	BM-4 (TNC; footbridge)	HEAD 2 (Bog 4/Preserve)	HEAD 4 (Bog 1,ds Long Pond Rd)
Coleoptera (beetles)							
<i>Stenelmis</i>	SC/CG	14			2	7	4
<i>Haliplus</i>	SH						
<i>Uvarus</i>	P						
<i>Dytiscidae</i>	P						
unidentified	P						
Diptera (flies and midges)							
<i>Chironomidae</i>	V		10	9	3		2
<i>Simuliidae</i>	CF	5			10		
<i>Tipulidae</i>	V						
Ephemeroptera (mayflies)							
<i>Baetis</i>	CG/SC						
<i>Stenonema</i>	SC/CG						
Hemiptera (true bugs)							
<i>Ranatra</i>	P						
<i>Belostoma</i>	P						
<i>Hesperocorixa</i>	P						
<i>Gerrid</i>	P						
Odonata (damselflies and dragonflies)							
<i>Boyeria</i>	P	3	5			2	
<i>Calopteryx</i>	P			3			
<i>Ischnura</i>	P					6	10
Trichoptera (caddisflies)							
<i>Chimarra</i>	CF						
<i>Hydropsyche</i>	CF	1					
<i>Oecetis</i>	SC						
NON-INSECT TAXA							
Amphipoda (scuds)							
<i>Gammarus</i>	CG	60	45	35	43	32	18
<i>Hyalella</i>	CG	12	7	20	14	2	14
Decapoda (crayfish)							
unidentified	SH						
Isopoda (aquatic sow bugs)							
<i>Caecidotea</i>	CG					3	
Mollusca (snails and clams)							
<i>Helisoma</i>		2					16
<i>Physa</i>	SC						
<i>Pisidiidae</i> (pea clams)	CF	4					
Oligochaetes (aquatic worms)							
unidentified	V						
Turbellaria (flatworms)							
<i>Dugesia</i>	CG	1					
Total Specimens		102	67	67	72	52	64
Community Richness (Total Taxa)		9	4	4	5	6	6
Community Evenness (Scaled SD)		0.63	0.71	0.8	0.7	0.69	0.9
EPT Taxa		1	0	0	0	0	0
Percent Dominant Taxa		0.59	0.67	0.3	0.6	0.62	0.28
Dominant FFG *		CG	CG	CG	CG	CG	CG
*Functional Feeding Groups: CF= Collector-filterer, CG=Collector-gatherer, SC=Scraper, SH=Shredder, P=Predator, V=Variable							

Results of Eel River Macrophyte Survey Conducted May 2021

Species Name	Common Name	Occurance in Ponds			
		Russell Mill	Hayden	Howland	Eel River Basin
Submerged Plants					
<i>Cabomba caroliniana</i>	Fanwort (non-native)				
<i>Callitriche</i> sp.	Water-starwort	X		x	
<i>Ceratophyllum demersum</i>	Coontail	x		X	
<i>Elotia</i> sp.	Pondweed	x	x		
<i>Ludwigia palustris</i>	Water-purslane		x	x	
<i>Myriophyllum humile</i>	Water-milfoil	x	X	X	
<i>Lemna minor</i>	Common Duckweed				
<i>Hyrilla verticillata</i>	Water-weed		x		
<i>Trapa natans</i>	Water-chestnut	x			
<i>Utricularia macrorhiza</i>	Bladderwort	x			
<i>Rupia maritima</i>	Widgeon Grass				
<i>Najas flesilis</i>	Naiad				
Floating-Leaved Plants					
<i>Nuphar variegata</i>	Yellow Waterlily	x		x	
<i>Nymphaea odorata</i>	White Waterlily				
<i>Vallisneria americana</i>	Wild Celery				
<i>Nymphoides cordata</i>	Little Floating Heart	x			
<i>Nelumbo lutea</i>	American Lotus			x	
<i>Nuphar advena</i>	Spatterdock		x		
Emergent Plants					
<i>Alnus incana</i>	Speckled Alder				
<i>Clethra alnifolia</i>	Sweet Pepperbush				
<i>Cyperus</i> sp.	Sedge				
<i>Elaeagnus umbellata</i>	Autumn Olive				
<i>Fallopia japonica</i>	Japanese Knotweed				
<i>Glysera</i> sp.	Mannagrass				
<i>Impatiens capensis</i>	Jewelweed				
<i>Iris pseudacorus</i>	Yellow Iris	x			
<i>Juncus</i> sp.	Rush	x			
<i>Justicia americana</i>	Water Willow	x			
<i>Lonicera</i> sp.	Honeysuckle				
<i>Lysimachia terrestris</i>	Swamp Candle				
<i>Myosotis</i> sp.	Forget-Me-Not				
<i>Myricaceae gale</i>	Bayberry	x		x	
<i>Onoclea sensibilis</i>	Sensitive Fern				x
<i>Phragmites australis</i>	Common Reed	X			X
<i>Pontederia cordata</i>	Pickrel-Weed	x	x		x
<i>Rosa multiflora</i>	Multiflora Rose				
<i>Rumex crispus</i>	Curly Dock	x			
<i>Scirpus cyperinus</i>	Woolgrass				
<i>Schoenoplectus americanus</i>	Three Square				
<i>Solanum</i> sp.	Nightshade		x		
<i>Symplocarpus foetidus</i>	Skunk Cabbage				
<i>Sparganium</i> sp.	Bur-Reed				
<i>Toxicodendron radicans</i>	Poison Ivy				x
<i>Typha latifolia</i>	Common Cattail	X			X
<i>Rubus idaeus</i>	Raspberry				
<i>Vitis labrusca</i>	Fox Grape				
*dominant species indicated in bold, capital X					

Results of Eel River Plankton Sampling Conducted June 1, 2022				
(Estimates of percent composition indicated as follows: Abundant = 60-100%, Very Common = 30-60%, Common = 5-30%, Occasional= 1-5%, Rare <1%				
	Russell Mill Pond	Hayden Pond	Howland Pond	Eel River Basin
Phytoplankton Taxa				
Bacillariophyceae (diatoms)				
<i>Asterionella</i>	A	A	VC	VC
<i>Cymbella</i>	O		O	
<i>Diadomesis</i>				
<i>Fragilaria</i>				
<i>Fragilariopsis</i>				
<i>Guinardia</i>				
<i>Gyrosigma</i>				
<i>Leprocylindrus</i>				O
<i>Melosira</i>	C			
<i>Navicula</i>				
<i>Nitzschia</i>				
<i>Pinnularia</i>	O		O	C'O
<i>Pieurosigma</i>				
<i>Rhizosolenia</i>				
<i>Synedra</i>	O		O	
<i>Tabellaria</i>	C	C	C	
Chlorophyta (green algae)				
<i>Closterium</i>				
<i>Crucigenia</i>				
<i>Mougeotia</i>	R			
<i>Oocystis</i>				
<i>Oedogonium</i>				
<i>Pediastrum</i>				
<i>Scenedesmus</i>				
<i>Spirogyra</i>				C
<i>Staurostrum</i>				
Chrysophyta (yellow-green algae, excluding diatoms)				
<i>Chrysosphaerella</i>				
<i>Dinobryon</i>		R	C	
<i>Mallomonas</i>				
Cyanophyta (blue-green algae)				
<i>Oscillatoria</i>				
<i>Anabaena</i>				
<i>Gomphosphaeria</i>				
Other				
<i>Ceratium</i>				
<i>Tintinnids</i>				
<i>Rotifer</i>				
<i>Invert eggs</i>				

Results of Eel River Plankton Sampling Conducted September 12,2022				
(Estimates of percent composition indicated as follows: Abundant = 60-100%, Very Common = 30-60%, Common = 5-30%, Occasional= 1-5%, Rare <1%				
	<u>Russell Mill Pond</u>	<u>Hayden Pond</u>	<u>Howland Pond</u>	<u>Eel River Basin</u>
Phytoplankton Taxa				
Bacillariophyceae (diatoms)				
<i>Asterionella</i>	C	VC	O	
<i>Cymbella</i>	O			O
<i>Diadomesis</i>				
<i>Fragilaria</i>	O		C	O
<i>Fragilariopsis</i>				
<i>Guinardia</i>				
<i>Gyrosigma</i>				
<i>Leprocylindrus</i>				O
<i>Melosira</i>	C			
<i>Navicula</i>		O		
<i>Nitzschia</i>				
<i>Pinnularia</i>				
<i>Pieurosigma</i>				
<i>Rhizosolenia</i>				
<i>Synedra</i>			C	
<i>Tabellaria</i>	C	C	O	
Chlorophyta (green algae)				
<i>Closterium</i>				
<i>Crucigenia</i>				
<i>Mougeotia</i>	O		R	
<i>Oocystis</i>				
<i>Oedogonium</i>			R	
<i>Pediastrum</i>				
<i>Scenedesmus</i>				
<i>Spirogyra</i>				O
<i>Staurostrum</i>				
Chrysophyta (yellow-green algae, excluding diatoms)				
<i>Chrysosphaerella</i>				
<i>Dinobryon</i>		C		
<i>Mallomonas</i>				
Cyanophyta (blue-green algae)				
<i>Oscillatoria</i>				
<i>Anabaena</i>				
<i>Gomphosphaeria</i>				
Other				
<i>Ceratium</i>				
<i>Tintinnids</i>				
<i>Rotifer</i>				

Eel River Field Measurements Recorded by UMASS on June 1, 2022								
Station	Secchi Depth	Total Depth	Sample Depth	Temp	DO	DO	pH	Alkalinity
	<i>meters</i>	<i>meters</i>	<i>meters</i>	°C	% Sat	mg/L	unit	mg/L CaCO ₃
Hayden Pond	0.3	0.3	0.15	18.6	66.8	6.26	6.18	27.4
Howland Pond	0.66	0.66	0.3	26.1	11	6.23	7.54	22.3
Eel River Basin	1.1	1.1	0.6	21.7	113.3	10.12	8.82	24
Russell Mill Pond	1.9	3.35	0.15	20.7	105.3	9.53	6.53	24.7
			1	20.6	103.5	9.32	NS	NS
			2	17.5	107.6	10.21	NS	NS
			3	15.2	39.9	3.89	NS	NS

Results of Eel River Periphyton Sampling Conducted JuNE 2022

(Estimates of percent composition indicated as follows: Abundant = 60-100%,
Very Common = 30-60%, Common = 5-30%, Occasional = 1-5%, Rare <1%

	Head 2 (Bog 4 Preserve)	Head 4 (Bog 1 Preserve)	BM-1 (Hatchery)*	BM-2 (Sandwich Rd)	BM-3a (Forges Rd)	BM-4 (TNC)
Periphyton Taxa	Slides were missing					
Bacillariophyceae (diatoms)						
<i>Asterionella</i>			C			
<i>Cymbella</i>		0	0		0	0
<i>Eunotia</i>						
<i>Fragilaria</i>					0	
<i>Fragilariopsis</i>						
<i>Melosira</i>			0			
<i>Navicula</i>						0
<i>Nitzschia</i>						
<i>Pinnularia</i>						
<i>Rhizosolenia</i>						
<i>Synedra</i>			0			
<i>Tabellaria</i>		0		0	0	
Chlorophyta (green algae)						
<i>Chaetophora</i>						
<i>Closterium</i>						R
<i>Mougeotia</i>						
<i>Oedogonium</i>						R
<i>Spirogyra</i>						
<i>Staurastrum</i>						
Chrysophyta (yellow-green algae, excluding diatoms)						
<i>Dinobryon</i>						
Cyanophyta (blue-green algae)						
<i>Anabaena</i>						
<i>Oscillatoria</i>						
<i>Phormidium</i>						
Other						
<i>dinoflagellate</i>						

Results of Macroinvertebrate Sampling of Eel River on September 12, 2022							
INSECT TAXA	FFG*	BM-1 (fish hatchery)	BM-2 (Old Sandwich Rd)	BM-3A (Forges Rd)	BM-4 (TNC; footbridge)	HEAD 2 (Bog 4/Preserve)	HEAD 4 (Bog 1,ds Long Pond Rd)
Coleoptera (beetles)							
<i>Stenelmis</i>	SC/CG	11			1	4	5
<i>Haliplus</i>	SH						
<i>Uvarus</i>	P						
Dytiscidae	P						
unidentified	P						
Diptera (flies and midges)							
Chironomidae	V	2	12	14	1		2
Simuliidae	CF	7			11		
Tipulidae	V						
Ephemeroptera (mayflies)							
<i>Baetis</i>	CG/SC						
<i>Stenonema</i>	SC/CG						
Hemiptera (true bugs)							
<i>Ranatra</i>	P						
<i>Belostoma</i>	P						
<i>Hesperocorixa</i>	P						
Gerrid	P						
Odonata (damselflies and dragonflies)							
<i>Boyeria</i>	P	6	1			4	
<i>Calopteryx</i>	P			5			
<i>Ischnura</i>	P					6	9
Trichoptera (caddisflies)							
<i>Chimarra</i>	CF						
<i>Hydropsyche</i>	CF	2					
<i>Oecetis</i>	SC		1				
NON-INSECT TAXA							
Amphipoda (scuds)							
<i>Gammarus</i>	CG	72	40	54	50	33	19
<i>Hyalella</i>	CG	20	3	10	12	1	13
Decapoda (crayfish)							
unidentified	SH						
Isopoda (aquatic sow bugs)							
<i>Caecidotea</i>	CG					2	
Mollusca (snails and clams)							
<i>Helisoma</i>							16
<i>Physa</i>	SC						
<i>Pisidiidae</i> (pea clams)	CF						
Oligochaetes (aquatic worms)							
unidentified	V						
Turbellaria (flatworms)							
<i>Dugesia</i>	CG						
Total Specimens		120	57	83	75	50	64
Community Richness (Total Taxa)		7	5	4	5	6	6
Community Evenness (Scaled SD)		0.66	0.54	0.72	0.6	0.64	0.9
EPT Taxa		1	1	0	0	0	0
Percent Dominant Taxa		0.6	0.7	0.65	0.67	0.66	0.3
Dominant FFG *		CG	CG	CG	CG	CG	CG
*Functional Feeding Groups: CF= Collector-filterer, CG=Collector-gatherer, SC=Scraper, SH=Shredder, P=Predator, V=Variable							

Results of Eel River Macrophyte Survey Conducted June 1, 2022

Species Name	Common Name	Occurance in Ponds			
		Russell Mill	Hayden	Howland	Eel River Basin
Submerged Plants					
<i>Cabomba caroliniana</i>	Fanwort (non-native)				
<i>Callitriche</i> sp.	Water-starwort	X		x	
<i>Ceratophyllum demersum</i>	Coontail	x			
<i>Elotia</i> sp.	Pondweed	x	x		x
<i>Ludwigia palustris</i>	Water-purslane		x	x	
<i>Myriophyllum humile</i>	Water-milfoil	x	X	X	
<i>Lemna minor</i>	Common Duckweed				x
<i>Hyrilla verticillata</i>	Water-weed				
<i>Trapa natans</i>	Water-chestnut				
<i>Utricularia macrorhiza</i>	Bladderwort	x			
<i>Rupia maritima</i>	Widgeon Grass				
<i>Najas flesilis</i>	Naiad	X			
Floating-Leaved Plants					
<i>Nuphar variegata</i>	Yellow Waterlily	x		X	
<i>Nymphaea odorata</i>	White Waterlily			X	
<i>Vallisneria americana</i>	Wild Celery	x			
<i>Nymphoides cordata</i>	Little Floating Heart	x			
<i>Nelumbo lutea</i>	American Lotus			x	
<i>Nuphar advena</i>	Spatterdock				
Emergent Plants					
<i>Alnus incana</i>	Speckled Alder				
<i>Clethra alnifolia</i>	Sweet Pepperbush				
<i>Cyperus</i> sp.	Sedge				
<i>Elaeagnus umbellata</i>	Autumn Olive				
<i>Fallopia japonica</i>	Japanese Knotweed				
<i>Glysera</i> sp.	Mannagrass				
<i>Impatiens capensis</i>	Jewelweed				
<i>Iris pseudacorus</i>	Yellow Iris	x			
<i>Juncus</i> sp.	Rush	x			
<i>Justicia americana</i>	Water Willow	X			
<i>Lonicera</i> sp.	Honeysuckle				
<i>Lysimachia terrestris</i>	Swamp Candle				
<i>Myosotis</i> sp.	Forget-Me-Not	x			
<i>Myricaceae gale</i>	Bayberry	x		x	
<i>Onoclea sensibilis</i>	Sensitive Fern				x
<i>Phragmites australis</i>	Common Reed	X	x		X
<i>Pontederia cordata</i>	Pickereel-Weed	x			x
<i>Rosa multiflora</i>	Multiflora Rose				
<i>Rumex crispus</i>	Curly Dock	x			
<i>Scirpus cyperinus</i>	Woolgrass				
<i>Schoenoplectus americanus</i>	Three Square				
<i>Solanum</i> sp.	Nightshade		x		
<i>Symplocarpus foetidus</i>	Skunk Cabbage	x			x
<i>Sparganium</i> sp.	Bur-Reed				
<i>Toxicodendron radicans</i>	Poison Ivy				
<i>Typha latifolia</i>	Common Cattail	X			X
<i>Rubus idaeus</i>	Raspberry				
<i>Vitis labrusca</i>	Fox Grape				
*dominant species indicated in bold, capital X					

Results of Eel River Plankton Sampling Conducted May 30, 2023				
(Estimates of percent composition indicated as follows: Abundant = 60-100%, Very Common = 30-60%, Common = 5-30%, Occasional= 1-5%, Rare <1%				
	Russell Mill Pond	Hayden Pond	Howland Pond	Eel River Basin
Phytoplankton Taxa				
Bacillariophyceae (diatoms)				
<i>Asterionella</i>	A	A	C	VC
<i>Cymbella</i>		O		
<i>Diadomesis</i>				
<i>Fragilaria</i>				O
<i>Fragilariopsis</i>				
<i>Guinardia</i>				
<i>Gyrosigma</i>				
<i>Leprocylindrus</i>				
<i>Melosira</i>				O
<i>Navicula</i>				
<i>Nitzschia</i>		O	O	
<i>Pinnularia</i>	O			
<i>Pieurosigma</i>	O			
<i>Rhizosolenia</i>				
<i>Synedra</i>		C	O	O
<i>Tabellaria</i>				
Chlorophyta (green algae)				
<i>Closterium</i>				R
<i>Crucigenia</i>				
<i>Mougeotia</i>			O	
<i>Oocystis</i>		O		
<i>Oedogonium</i>				
<i>Pediastrum</i>				
<i>Scenedesmus</i>				O
<i>Spirogyra</i>			C	
<i>Staurostrum</i>		R		
Chrysophyta (yellow-green algae, excluding diatoms)				
<i>Chrysosphaerella</i>				
<i>Dinobryon</i>				
<i>Mallomonas</i>				
Cyanophyta (blue-green algae)				
<i>Oscillatoria</i>				
<i>Anabaena</i>				
<i>Gomphosphaeria</i>				
Other				
<i>Ceratium</i>				
<i>Tintinnids</i>				
<i>Rotifer</i>				
<i>Invert eggs</i>				

Results of Eel River Plankton Sampling Conducted September 30,2023				
(Estimates of percent composition indicated as follows: Abundant = 60-100%, Very Common = 30-60%, Common = 5-30%, Occasional = 1-5%, Rare <1%				
	<u>Russell Mill Pond</u>	<u>Hayden Pond</u>	<u>Howland Pond</u>	<u>Eel River Basin</u>
<u>Phytoplankton Taxa</u>				
Bacillariophyceae (diatoms)				
<i>Asterionella</i>	VC		O	O
<i>Cymbella</i>		C		
<i>Diadomesis</i>				
<i>Fragilaria</i>	O			O
<i>Fragilariopsis</i>				
<i>Guinardia</i>				
<i>Gyrosigma</i>				
<i>Leprocylindrus</i>				
<i>Melosira</i>		C	O	
<i>Navicula</i>				
<i>Nitzschia</i>				
<i>Pinnularia</i>			O	O
<i>Pieurosigma</i>	R			
<i>Rhizosolenia</i>				
<i>Synedra</i>		O		O
<i>Tabellaria</i>	VC	O		
Chlorophyta (green algae)				
<i>Closterium</i>				
<i>Crucigenia</i>				
<i>Mougeotia</i>				
<i>Oocystis</i>				
<i>Oedogonium</i>				
<i>Pediastrum</i>				
<i>Scenedesmus</i>				
<i>Spirogyra</i>	O			
<i>Staurastrum</i>	R			
Chrysophyta (yellow-green algae, excluding diatoms)				
<i>Chrysosphaerella</i>				
<i>Dinobryon</i>				
<i>Mallomonas</i>				
Cyanophyta (blue-green algae)				
<i>Oscillatoria</i>				
<i>Anabaena</i>				
<i>Gomphosphaeria</i>				
Other				
<i>Ceratium</i>				
<i>Tintinnids</i>				
<i>Rotifer</i>				O

Eel River Field Measurements Recorded by UMASS on June 1,								
Station	Secchi Depth	Total Depth	Sample Depth	Temp	DO	DO	pH	Alkalinity
	<i>meters</i>	<i>meters</i>	<i>meters</i>	°C	% Sat	mg/L	unit	mg/L CaCO ₃
Hayden Pond	0.6	0.6	0.3	18.5	111	19.51	5.85	18.6
Howland Pond	0.6	0.6	0.3	20.1	160.3	14.96	7.89	21.3
Eel River Basin	1.5	1.5	0.8	19.7	104	9.51	6.43	25.8
Russell Mill Pond	1.7	3.1	0.5	19.1	105.3	10	6.16	17.9
			1	19.1	105	9.87	6.16	25.4
			2	18.2	97.1	9.3	5.97	17.1
			2.5	15.6	61.1	6.15	5.87	22.6

Results of Eel River Periphyton Sampling Conducted June 2023

(Estimates of percent composition indicated as follows: Abundant = 60-100%,
Very Common = 30-60%, Common = 5-30%, Occasional = 1-5%, Rare <1%

	Head 2 (Bog 4 Preserve)	Head 4 (Bog 1 Preserve)	BM-1 (Hatchery)*	BM-2 (Sandwich Rd)	BM-3a (Forges Rd)	BM-4 (TNC)
Periphyton Taxa						
Bacillariophyceae (diatoms)						
<i>Asterionella</i>	O		C			
<i>Cymbella</i>		C	O		O	O
<i>Eunotia</i>						
<i>Fragilaria</i>					R	
<i>Fragilariopsis</i>						
<i>Melorsia</i>			R			
<i>Navicula</i>						O
<i>Nitzschia</i>						
<i>Pinnularia</i>						
<i>Rhizosolenia</i>						
<i>Synedra</i>			O			
<i>Tabellaria</i>	O	O		O	C	
Chlorophyta (green algae)						
<i>Chaetophora</i>						
<i>Closterium</i>						
<i>Mougeotia</i>						
<i>Oedogonium</i>						
<i>Spirogyra</i>						
<i>Staurastrum</i>						
Chrysophyta (yellow-green algae, excluding diatoms)						
<i>Dinobryan</i>	O					
Cyanophyta (blue-green algae)						
<i>Anabaena</i>						
<i>Oscillatoria</i>						
<i>Phormidium</i>						
Other						
<i>dinoflagellate</i>						

Results of Eel River Periphyton Sampling Conducted September 2023

(Estimates of percent composition indicated as follows: Abundant = 60-100%,
Very Common = 30-60%, Common = 5-30%, Occasional = 1-5%, Rare <1%

	Head 2 (Bog 4 Preserve)	Head 4 (Bog 1 Preserve)	BM-1 (Hatchery)*	BM-2 (Sandwich Rd)	BM-3a (Forges Rd)	BM-4 (TNC)
Periphyton Taxa						
Bacillariophyceae (diatoms)			slides missing			slides bare
<i>Asterionella</i>	O					
<i>Cymbella</i>	O	C		O	O	
<i>Eunotia</i>						
<i>Fragilaria</i>						
<i>Fragilariopsis</i>	R	O				
<i>Melorsia</i>						
<i>Navicula</i>						
<i>Nitzschia</i>						
<i>Pinnularia</i>		R				
<i>Rhizosolenia</i>						
<i>Synedra</i>		O		O		
<i>Tabellaria</i>		R			O	
Chlorophyta (green algae)						
<i>Chaetophora</i>						
<i>Closterium</i>						
<i>Mougeotia</i>					O	
<i>Oedogonium</i>						
<i>Spirogyra</i>						
<i>Staurastrum</i>						
Chrysophyta (yellow-green algae, excluding diatoms)						
<i>Dinobryan</i>	O					
Cyanophyta (blue-green algae)						
<i>Anabaena</i>						
<i>Oscillatoria</i>						
<i>Phormidium</i>						
Other						
<i>dinoflagellate</i>						

Results of Macroinvertebrate Sampling of Eel River on September 2023							
INSECT TAXA	FFG*	BM-1 (fish hatchery)	BM-2 (Old Sandwich Rd)	BM-3A (Forges Rd)	BM-4 (TNC; footbridge)	HEAD 2 (Bog 4/Preserve)	HEAD 4 (Bog 1,ds Long Pond Rd)
Coleoptera (beetles)			Sample broken				
<i>Stenelmis</i>	SC/CG	5		2	5		
<i>Haliplus</i>	SH						
<i>Uvarus</i>	P						
<i>Dytiscidae</i>	P						
unidentified	P				5		
Diptera (flies and midges)							
<i>Chironomidae</i>	V	2		14	10		
<i>Simuliidae</i>	CF	5		1			
<i>Tipulidae</i>	V						
Ephemeroptera (mayflies)							
<i>Baetis</i>	CG/SC						
<i>Stenonema</i>	SC/CG						
Hemiptera (true bugs)							
<i>Ranatra</i>	P						
<i>Belostoma</i>	P						
<i>Hesperocorixa</i>	P						
<i>Gerrid</i>	P						
Odonata (damselflies and dragonflies)							
<i>Boyeria</i>	P			2	2	1	3
<i>Calopteryx</i>	P						1
<i>Ischnura</i>	P			6	3	2	
Trichoptera (caddisflies)							
<i>Chimarra</i>	CF						
<i>Hydropsyche</i>	CF						
<i>Oecetis</i>	SC						
NON-INSECT TAXA							
Amphipoda (scuds)							
<i>Gammarus</i>	CG	65		38	34	40	
<i>Hyalella</i>	CG			12	10	10	20
Decapoda (crayfish)							
unidentified	SH			4		2	1
Isopoda (aquatic sow bugs)							
<i>Caecidotea</i>	CG						
Mollusca (snails and clams)							
<i>Helisoma</i>							1
<i>Physa</i>	SC						
<i>Pisidiidae</i> (pea clams)	CF			1			
Oligochaetes (aquatic worms)							
unidentified	V						
Turbellaria (flatworms)							
<i>Dugesia</i>	CG						
Total Specimens		77		80	69	55	26
Community Richness (Total Taxa)		4		9	7	5	5
Community Evenness (Scaled SD)		0.43		0.72	0.79	0.53	0.51
EPT Taxa		0		0	0	0	0
Percent Dominant Taxa		0.84		0.48	0.49	0.73	0.77
Dominant FFG *		CG		CG	CG	CG	CG
*Functional Feeding Groups: CF= Collector-filterer, CG=Collector-gatherer, SC=Scraper, SH=Shredder, P=Predator, V=Variable							

Results of Eel River Macrophyte Survey Conducted May 30, 2023

Species Name	Common Name	Occurance in Ponds			
		Russell Mill	Hayden	Howland	Eel River Basin
Submerged Plants					
<i>Cabomba caroliniana</i>	Fanwort (non-native)				
<i>Callitriche</i> sp.	Water-starwort	X		x	
<i>Ceratophyllum demersum</i>	Coontail	x			
<i>Elotia</i> sp.	Pondweed	x	x		x
<i>Ludwigia palustris</i>	Water-purslane		x	x	
<i>Myriophyllum humile</i>	Water-milfoil	x	X	X	
<i>Lemna minor</i>	Common Duckweed				x
<i>Hyrilla verticillata</i>	Water-weed	x			
<i>Trapa natans</i>	Water-chestnut				
<i>Utricularia macrorhiza</i>	Bladderwort	x			
<i>Rupia maritima</i>	Widgeon Grass				
<i>Najas flesilis</i>	Naiad				
Floating-Leaved Plants					
<i>Nuphar variegata</i>	Yellow Waterlily	x		X	
<i>Nymphaea odorata</i>	White Waterlily			X	
<i>Vallisneria americana</i>	Wild Celery	x			
<i>Nymphoides cordata</i>	Little Floating Heart	x			
<i>Nelumbo lutea</i>	American Lotus			x	
<i>Nuphar advena</i>	Spatterdock				
Emergent Plants					
<i>Alnus incana</i>	Speckled Alder				
<i>Clethra alnifolia</i>	Sweet Pepperbush				
<i>Cyperus</i> sp.	Sedge				
<i>Elaeagnus umbellata</i>	Autumn Olive				
<i>Fallopia japonica</i>	Japanese Knotweed				
<i>Glysera</i> sp.	Mannagrass				
<i>Impatiens capensis</i>	Jewelweed				
<i>Iris pseudacorus</i>	Yellow Iris	x			
<i>Juncus</i> sp.	Rush	x			
<i>Justicia americana</i>	Water Willow	x			
<i>Lonicera</i> sp.	Honeysuckle				
<i>Lysimachia terrestris</i>	Swamp Candle				
<i>Myosotis</i> sp.	Forget-Me-Not	x			
<i>Myricaceae gale</i>	Bayberry	x		x	
<i>Onoclea sensibilis</i>	Sensitive Fern				
<i>Phragmites australis</i>	Common Reed	X			X
<i>Pontederia cordata</i>	Pickereel-Weed	x			x
<i>Rosa multiflora</i>	Multiflora Rose				
<i>Rumex crispus</i>	Curly Dock	x			
<i>Scirpus cyperinus</i>	Woolgrass				
<i>Schoenoplectus americanus</i>	Three Square				
<i>Solanum</i> sp.	Nightshade				
<i>Symplocarpus foetidus</i>	Skunk Cabbage	x			
<i>Sparganium</i> sp.	Bur-Reed	x			
<i>Toxicodendron radicans</i>	Poison Ivy				x
<i>Typha latifolia</i>	Common Cattail	X			X
<i>Rubus idaeus</i>	Raspberry				
<i>Vitis labrusca</i>	Fox Grape				
*dominant species indicated in bold, capital X					