Fish Mercury Long Term Monitoring
2005 Annual Data Report

Massachusetts Department of Environmental Protection
Office of Research and Standards
Boston, MA

December 2010

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

INTRODUCTION

This Report presents data collected as part of the Massachusetts Department of Environmental Protection's Fish Mercury Long Term Monitoring Research Program. An overview of the research program and the methods used for data collection, analysis and study design are presented in a separate report (MassDEP, 2010).

The lakes sampled in the program and attributes of the lakes, including their geographic location, are in the Methods Report. The sampling schedule and number of fish collected at each sampling event may also be found in the Methods Report.

Annual fish mercury data reports will be posted on Mass DEP's website. Annual data will also be periodically integrated into the fish mercury research database accessed through the data portal on the MassDEP website (http://public.dep.state.ma.us/fish/). This integrated database contains fish tissue mercury data and associated physico-chemical data for water and sediments of the lakes which are sampled. The Annual Data Reports do not include an interpretation of the fish mercury testing results. The purpose of the reports is to document the results of fish mercury testing. Interpretation of the data will be provided in a future report. The data collected in 2005 are presented below.

DATA

The lakes sampled in 2005 and statistical summaries of the edible fish tissue mercury concentrations are presented in Table 1.

Time series of mean size-adjusted mercury concentrations for each species are presented in Figure 1 to provide perspective on the current year's sampling results in relation to previous sampling performed in the same lakes.

The lake water quality characteristics at the time of sampling are shown in Tables 2 and 3. Lakes were usually vertically uniform in terms of their density and temperature profiles at the time of sampling; therefore single samples for nutrient analyses were taken to represent the water column characteristics (Table 3). Data from depth profiles for temperature, pH, conductivity and dissolved oxygen concentration were averaged over depth and means reported in Table 2.

Table 1. Raw mean mercury and size-adjusted mercury concentrations in fish, 2005

		Raw Values				
Lake	SP	Mean	SD	Min	Max	n
Haggetts Pond	LMB	0.41	0.64	0.10	2.2	13
	YP	0.32	0.26	0.12	1.2	30
Lake Lashaway	LMB	0.50	0.22	0.23	1.0	15
	YP	0.22	0.08	0.08	0.41	30
Lake Massapoag (Sharon)	LMB	0.65	0.30	0.13	1.0	15
	YP	0.20	0.05	0.11	0.30	31
Lake Nippenicket	LMB	1.1	0.43	0.48	2.0	15
	YP	0.39	0.07	0.27	0.55	30
North Watuppa Pond	LMB	1.0	0.23	0.64	1.4	15
	YP	0.45	0.18	0.20	0.81	30
Quabbin Reservoir	LMB	0.51	0.18	0.17	0.88	12
	YP	0.31	0.20	0.11	0.63	6
	LT	0.38	0.12	0.20	0.51	7
Rock Pond	LMB	1.0	0.53	0.59	2.6	15
	YP	0.37	0.18	0.12	0.80	30
Wickaboag Pond	LMB	0.39	0.33	0.10	1.3	15
	YP	0.14	0.08	0.05	0.36	30

KEY: SP=species; SD=standard deviation; Min=minimum; Max=maximum
LMB=largemouth bass, *Micropterus salmoides*; YP=yellow perch, *Perca flavescens*; LT=lake trout, *Salvelinus namaycush*
mercury concentrations in mg total mercury/kg wet weight.

Figure 1. Trends in Size-Adjusted Fish Tissue Mercury 1999-2005

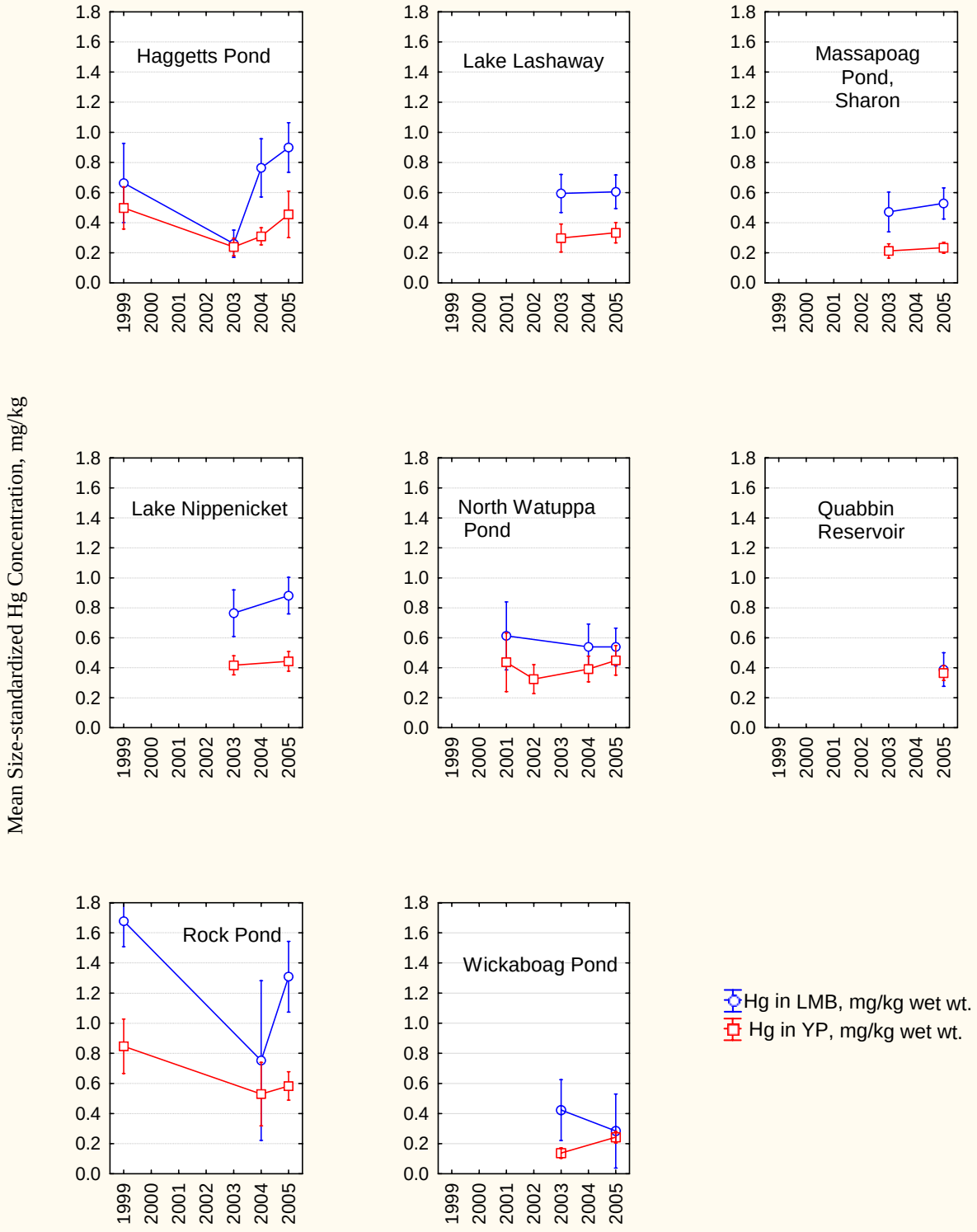

Table 3. 2005 Water Physical Characteristics At Fish Sampling

Lake	*Sampling date*	*T*	*DO*	*pH*	*SC*
Haggetts Pond	6/21/05	15.1	5.4	6.8	463.9
Lake Lashaway	5/31/05	15.0	8.5	6.8	68.8
Massapoag Pond, Sharon	5/03/05	12.7	7.8	6.6	125.1
Lake Nippenicket	5/09/05	10.5	10.3	6.6	265.9
Quabbin Reservoir	7/15/05	10.6	11.5	6.6	47.0
Rock Pond	4/26/05	9.9	4.9	7.2	193.8
North Watuppa Pond	5/17/05	14.5	9.4	7.1	86.5
Wickaboag Pond	5/31/05	18.0	9.7	7.1	80.5

T=mean temperature of the water column in degrees Celsius.
DO=mean dissolved oxygen in parts per million.
SC=mean conductivity in microsiemens per centimeter.

Table 2. 2005 Lake Water Chemistry

All units mg/L

Lake	*Alkalinity*	*TP-EAL*	*TP-DEP*	*NO_3-N*	*NO_2-N*	*NH_3*	*Ca*	*Na*	*K*	*Mg*	*Fe*	*Mn*	*DOC*	*TOC*	*Cl*	*SO_4*
Haggetts Pond	14.0	0.014	0.015	0.75	0.006.0	0.052	11	15	2.5	2.6	0.09	0.06	8.7	9.7	30	10.0
Lake Lashaway	6.0	0.010	0.014	0.087	<0.003	0.025	11	30	1.9	3.0	0.20	0.07	7.1	7.2	54	7.8
Massapoag Pond, Sharon	6.0	0.017	0.021	0.029	<0.003	0.028	7	21	1.3	1.7	0.21	0.11	5.8	5.8	41	5.6
Lake Nippenicket	2.0	0.034	0.035	<0.002	<0.003	0.027	3	2	0.5	0.6	0.25	0.03	6.4	6.4	4	3.6
Quabbin -Top	3.6	0.002	0.005	<0.002	<0.003	0.036	11	16	1.7	2.8	0.08	0.17	8.2	8.2	31	6.2
Bottom	3.3	0.003	0.005	<0.002	<0.003	0.042	9	22	2.0	2.4	0.10	0.03	6.4	6.8	42	9.4
Rock Pond	17.0	0.013	0.020	0.028	<0.003	0.069	14	25	1.4	1.6	0.15	0.02	5.1	5.5	44	6.7
North Watuppa Pond	2.0	0.003	0.010	100	<0.003	0.017	12	58	3.0	3.0	0.06	0.25	5.4	4.9	110	9.2
Wickaboag	6.0	0.014	0.023	0.002	<0.003	0.055	11	13	2.0	2.7	6.00	14.00	23.0	2.0	<0.07	55.0

KEY: Ca=calcium; Cl=chloride; DOC=dissolved organic carbon; Fe=iron; K=potassium; Mg=magnesium; Mn=manganese; Na=sodium; NH_3=Ammonia; NO_2-N=nitrite; NO_3-N=nitrate; SO_4=sulfate; TOC=total organic carbon. TP-EAL=suspended total phosphorus, sample not mixed before analysis. TP-DEP =total phosphorus, sample thoroughly mixed before analysis. In past years total phosphorus was analyzed as TP-EAL. 2005 samples were analyzed both ways for comparison. In future the samples will be analyzed by the DEP method.

REFERENCES

MassDEP. 2006. Massachusetts Fish Tissue Mercury Studies: Investigations of Seasonal and Other Sources of Variation. Final Report. Office of Research and Standards and Wall Experiment Station, Massachusetts Department of Environmental Protection. Boston, MA

MassDEP. 2010. Fish Mercury Long Term Monitoring Annual Data Report – Methods. Report from Massachusetts Department of Environmental Protection, Office of Research and Standards. Boston, MA.

APPENDIX

Raw Tissue Mercury Concentration Data

TABLE A-1. Individual fish tissue mercury concentrations, length, weight, gonad weight, reproductive stage, and sex from the lakes sampled in 2005

Key: SP=Species; L=Length in mm; WT=Weight in g wet; GW=Gonad Weight in g wet; S=Sex; STG=Reproductive Stage; HG=mercury concentration in mg/kg wet.

SAMPLE #	*LAKE*	*SP*	*L*	*WT*	*GW*	*S*	*STG*	*HG*
2005057-029	Haggetts	LMB	252	207.5	0.1	M	developing	0.12
2005057-030	Haggetts	LMB	476	1681	9.5	M	developing	2.2
2005101-002	Haggetts	LMB	435	1180.6	6.3	M	developing	1.4
2005101-003	Haggetts	LMB	266	274	1.4	M	developing	0.21
2005101-004	Haggetts	LMB	262	245.7	2.2	M	developing	0.16
2005101-005	Haggetts	LMB	247	204.9	1.5	F	developing	0.17
2005101-006	Haggetts	LMB	250	223.6	1.6	M	developing	0.2
2005101-007	Haggetts	LMB	254	190.2	0.1	M	developing	0.19
2005101-008	Haggetts	LMB	232	166.7	0.3	M	developing	0.16
2005101-009	Haggetts	LMB	232	189.4	0.3	M	developing	0.17
2005101-010	Haggetts	LMB	238	191.5	1.1	F	developing	0.16
2005101-011	Haggetts	LMB	198	99.6	0.5	F	immature	0.11
2005101-012	Haggetts	LMB	197	101.3	0.7	F	immature	0.1
2005050-001	Haggetts	YP	188	70.5	1.8	F	resting	0.19
2005057-001	Haggetts	YP	345	601	11.0	F	resting	0.75
2005057-002	Haggetts	YP	330	407.7	4.9	F	resting	1
2005057-003	Haggetts	YP	333	466.8	5.5	F	resting	1.2
2005057-004	Haggetts	YP	302	373.7	3.1	F	resting	0.37
2005057-005	Haggetts	YP	275	274.7	2.1	F	resting	0.29
2005057-006	Haggetts	YP	298	313.1	3.4	F	resting	0.37
2005057-007	Haggetts	YP	261	210.7	2.2	F	resting	0.46
2005057-008	Haggetts	YP	205	91.4	1.1	F	resting	0.42
2005057-009	Haggetts	YP	202	91	0.8	F	resting	0.18
2005057-010	Haggetts	YP	188	74.4	10.6	F	ripe	0.22
2005057-011	Haggetts	YP	182	66.9	0.4	F	resting	0.25
2005057-012	Haggetts	YP	180	59.3	0.5	F	resting	0.23
2005057-013	Haggetts	YP	180	59.8	0.8	F	resting	0.22
2005057-014	Haggetts	YP	162	41.8	0.4	F	resting	0.13
2005057-015	Haggetts	YP	173	57.7	0.5	F	resting	0.21
2005057-016	Haggetts	YP	166	43	0.5	F	resting	0.18
2005057-017	Haggetts	YP	161	35.7	0.6	F	resting	0.16
2005057-018	Haggetts	YP	171	45.8	0.7	F	resting	0.21
2005057-019	Haggetts	YP	155	37.1	0.7	F	resting	0.17
2005057-020	Haggetts	YP	161	36.7	0.1	M	spent	0.24
2005057-021	Haggetts	YP	167	48.4	0.3	F	resting	0.16
2005057-022	Haggetts	YP	163	41.1	0.7	F	resting	0.3
2005057-023	Haggetts	YP	165	40.3	0.8	F	resting	0.26
2005057-024	Haggetts	YP	166	41.6	0.5	F	resting	0.29
2005057-025	Haggetts	YP	160	40.5	0.9	F	resting	0.14
2005057-026	Haggetts	YP	157	34.2	0.5	F	resting	0.27
2005057-027	Haggetts	YP	157	36.1	0.9	F	resting	0.12
2005057-028	Haggetts	YP	160	32.3	0.1	M	spent	0.39
2005101-001	Haggetts	YP	185	73.4	0.4	F	resting	0.16
2005088-016	Lashaway	LMB	420	1206	6.7	M	developing	1

SAMPLE #	*LAKE*	*SP*	*L*	*WT*	*GW*	*S*	*STG*	*HG*
2005088-017	Lashaway	LMB	364	721.3	2.9	M	developing	0.81
2005088-018	Lashaway	LMB	375	725.8	3.6	M	developing	0.66
2005088-019	Lashaway	LMB	347	530.7	2.8	F	developing	0.54
2005088-020	Lashaway	LMB	327	459.3	3.0	M	developing	0.45
2005088-021	Lashaway	LMB	317	389.2	3.3	M	developing	0.37
2005088-022	Lashaway	LMB	288	356.9	2.2	M	developing	0.48
2005088-023	Lashaway	LMB	291	429.9	1.6	M	developing	0.41
2005088-024	Lashaway	LMB	298	416.3	1.3	M	developing	0.7
2005088-025	Lashaway	LMB	280	306.1	2.0	M	developing	0.23
2005088-026	Lashaway	LMB	278	293.6	3.4	M	developing	0.29
2005088-027	Lashaway	LMB	272	273.9	2.5	F	immature	0.3
2005088-028	Lashaway	LMB	297	316.2	1.0	M	developing	0.49
2005088-029	Lashaway	LMB	270	258.9	1.5	M	developing	0.35
2005088-030	Lashaway	LMB	261	216.5	2.0	F	immature	0.34
2005088-001	Lashaway	YP	241	155.9	1.0	F	resting	0.23
2005088-002	Lashaway	YP	229	136.9	0.8	F	resting	0.21
2005088-003	Lashaway	YP	230	134.8	0.9	F	resting	0.32
2005088-004	Lashaway	YP	205	96.2	0.8	F	resting	0.41
2005088-005	Lashaway	YP	185	69.8	0.5	F	resting	0.28
2005088-006	Lashaway	YP	179	67.8	0.6	F	resting	0.23
2005088-007	Lashaway	YP	182	65.6	0.2	F	resting	0.31
2005088-008	Lashaway	YP	175	59.8	0.4	F	resting	0.27
2005088-009	Lashaway	YP	172	48.9	0.1	M	ripe	0.23
2005088-010	Lashaway	YP	166	43.9	0.2	F	immature	0.25
2005088-011	Lashaway	YP	144	34.3	0.1	F	immature	0.12
2005088-012	Lashaway	YP	149	38.5	0.1	F	immature	0.12
2005088-013	Lashaway	YP	149	36.5	0.1	F	immature	0.22
2005088-014	Lashaway	YP	146	33	0.1	F	immature	0.15
2005088-015	Lashaway	YP	135	30.2	0.1	M	immature	0.15
2005131-001	Lashaway	YP	206	110.4	0.7	F	resting	0.22
2005131-002	Lashaway	YP	198	101.3	0.6	F	resting	0.33
2005131-003	Lashaway	YP	200	93.6	0.4	F	resting	0.27
2005131-004	Lashaway	YP	197	92.4	0.4	F	resting	0.19
2005131-005	Lashaway	YP	185	81.4	0.2	F	resting	0.4
2005131-006	Lashaway	YP	194	82.8	0.2	F	resting	0.16
2005131-007	Lashaway	YP	197	90.6	0.3	F	resting	0.21
2005131-008	Lashaway	YP	190	73.7	0.4	F	resting	0.32
2005131-009	Lashaway	YP	165	50.1	0.2	F	resting	0.17
2005131-010	Lashaway	YP	157	43	0.2	F	resting	0.13
2005131-011	Lashaway	YP	149	38.5	0.2	F	immature	0.082
2005131-012	Lashaway	YP	152	43.8	0.1	M	resting	0.2
2005131-013	Lashaway	YP	151	44.1	0.1	M	resting	0.19
2005131-014	Lashaway	YP	149	38.1	0.2	F	immature	0.12
2005131-015	Lashaway	YP	139	32.1	0.1	F	immature	0.11
2005056-031	Nippenicket	LMB	517	2231	111.7	F	developing	2
2005056-032	Nippenicket	LMB	502	2098	106.3	F	developing	1.6
2005056-033	Nippenicket	LMB	478	1763	11.2	M	developing	1.7
2005056-034	Nippenicket	LMB	470	1600	57.5	F	developing	1.4
2005056-035	Nippenicket	LMB	423	1063.8	85.8	F	ripe	1.1
2005056-036	Nippenicket	LMB	386	916.9	49.0	F	developing	1.1
2005056-037	Nippenicket	LMB	404	942.1	6.3	M	developing	1.2

SAMPLE #	*LAKE*	*SP*	*L*	*WT*	*GW*	*S*	*STG*	*HG*
2005056-038	Nippenicket	LMB	411	994.4	5.0	M	developing	1.4
2005056-039	Nippenicket	LMB	402	959.6	43.8	F	developing	1
2005056-040	Nippenicket	LMB	335	506.2	9.8	F	developing	0.92
2005056-041	Nippenicket	LMB	351	519.2	5.9	F	developing	0.89
2005056-042	Nippenicket	LMB	298	369.1	2.4	F	developing	0.65
2005056-043	Nippenicket	LMB	290	311.7	1.3	M	developing	0.72
2005056-044	Nippenicket	LMB	264	237.6	1.3	F	developing	0.64
2005056-045	Nippenicket	LMB	273	231.2	2.3	F	developing	0.48
2005056-001	Nippenicket	YP	260	237.5	1.6	F	resting	0.36
2005056-002	Nippenicket	YP	242	165.7	1.0	F	resting	0.55
2005056-003	Nippenicket	YP	235	181.6	1.0	F	resting	0.4
2005056-004	Nippenicket	YP	219	132.1	0.7	F	resting	0.52
2005056-005	Nippenicket	YP	223	146.1	1.2	F	resting	0.42
2005056-006	Nippenicket	YP	213	119.4	0.8	F	resting	0.4
2005056-007	Nippenicket	YP	214	119.8	0.8	F	resting	0.32
2005056-008	Nippenicket	YP	205	106.6	0.8	F	resting	0.37
2005056-009	Nippenicket	YP	192	91.8	0.5	F	resting	0.44
2005056-010	Nippenicket	YP	191	95.5	0.7	F	resting	0.29
2005056-011	Nippenicket	YP	195	96.5	1.0	F	resting	0.51
2005056-012	Nippenicket	YP	199	107.8	0.6	F	resting	0.35
2005056-013	Nippenicket	YP	197	92.6	0.6	F	resting	0.33
2005056-014	Nippenicket	YP	181	71.8	0.6	F	resting	0.41
2005056-015	Nippenicket	YP	187	76.1	0.6	F	resting	0.32
2005056-016	Nippenicket	YP	211	120.4	0.1	M	resting	0.45
2005056-017	Nippenicket	YP	198	104.3	0.8	F	resting	0.36
2005056-018	Nippenicket	YP	211	117.4	0.7	F	resting	0.51
2005056-019	Nippenicket	YP	192	87.5	0.5	F	resting	0.39
2005056-020	Nippenicket	YP	187	85.1	0.5	F	resting	0.44
2005056-021	Nippenicket	YP	186	78.1	0.1	M	resting	0.36
2005056-022	Nippenicket	YP	180	72.1	0.1	M	resting	0.4
2005056-023	Nippenicket	YP	181	68.9	0.4	F	resting	0.34
2005056-024	Nippenicket	YP	169	60.1	0.4	F	resting	0.29
2005056-025	Nippenicket	YP	169	57.5	0.1	M	resting	0.44
2005056-026	Nippenicket	YP	167	54.4	0.1	M	resting	0.39
2005056-027	Nippenicket	YP	165	52.2	0.1	M	resting	0.33
2005056-028	Nippenicket	YP	163	46.8	0.4	F	resting	0.27
2005056-029	Nippenicket	YP	152	42.6	0.1	M	immature	0.32
2005056-030	Nippenicket	YP	152	41.3	0.3	F	resting	0.4
2005051-022	Massapoag	LMB	458	1372	7.9	M	developing	0.9
2005051-023	Massapoag	LMB	445	1237	5.9	M	developing	0.98
2005051-024	Massapoag	LMB	453	1333	44.5	F	developing	0.99
2005051-025	Massapoag	LMB	410	718.5	1.9	M	developing	1
2005051-026	Massapoag	LMB	390	919.1	3.8	M	developing	0.62
2005051-027	Massapoag	LMB	325	459	19.7	F	developing	0.35
2005051-028	Massapoag	LMB	421	1238	6.0	M	developing	0.7
2005051-029	Massapoag	LMB	424	1204	5.6	M	developing	0.7
2005051-030	Massapoag	LMB	444	907.5	2.3	M	developing	0.86
2005051-031	Massapoag	LMB	432	1174	3.5	M	developing	0.84
2005051-032	Massapoag	LMB	412	973.4	4.2	M	developing	0.66
2005051-033	Massapoag	LMB	322	378.9	1.4	M	developing	0.58
2005051-034	Massapoag	LMB	253	200	0.4	M	developing	0.2

SAMPLE #	*LAKE*	*SP*	*L*	*WT*	*GW*	*S*	*STG*	*HG*
2005051-035	Massapoag	LMB	245	160.4	0.9	F	immature	0.23
2005051-036	Massapoag	LMB	200	95.4	0.1	M	immature	0.13
2005051-001	Massapoag	YP	293	298.2	2.6	F	resting	0.3
2005051-002	Massapoag	YP	244	169.7	0.8	F	resting	0.23
2005051-003	Massapoag	YP	235	162.8	0.5	M	spent	0.23
2005051-004	Massapoag	YP	233	130.6	0.7	F	resting	0.24
2005051-005	Massapoag	YP	228	132	0.5	F	resting	0.21
2005051-006	Massapoag	YP	194	75	0.6	F	resting	0.18
2005051-007	Massapoag	YP	193	70.3	0.4	F	resting	0.26
2005051-008	Massapoag	YP	190	76.4	0.5	F	resting	0.21
2005051-009	Massapoag	YP	191	70.6	0.4	F	spent	0.2
2005051-010	Massapoag	YP	185	60.1	0.4	F	resting	0.18
2005051-011	Massapoag	YP	170	55	0.4	F	resting	0.26
2005051-012	Massapoag	YP	180	63.8	0.6	F	resting	0.13
2005051-013	Massapoag	YP	162	9	0.4	F	resting	0.14
2005051-014	Massapoag	YP	154	38.1	0.1	F	resting	0.13
2005051-015	Massapoag	YP	165	37.9	0.3	F	resting	0.19
2005051-016	Massapoag	YP	161	41.3	0.3	F	resting	0.26
2005051-017	Massapoag	YP	154	39.7	0.2	F	immature	0.14
2005051-018	Massapoag	YP	153	34.4	0.2	F	resting	0.11
2005051-019	Massapoag	YP	149	35.9	0.3	F	resting	0.2
2005051-020	Massapoag	YP	149	39.3	0.2	F	immature	0.11
2005051-021	Massapoag	YP	147	31.6	0.4	F	resting	0.16
2005051-037	Massapoag	YP	145	32.5	0.3	F	immature	0.15
2005054-001	Massapoag	YP	189	71.1	0.3	F	resting	0.22
2005054-002	Massapoag	YP	192	75.5	0.5	F	resting	0.19
2005054-003	Massapoag	YP	210	115	0.5	F	resting	0.18
2005054-004	Massapoag	YP	203	99.1	0.6	F	resting	0.16
2005054-005	Massapoag	YP	263	199.2	1.7	F	resting	0.25
2005054-006	Massapoag	YP	226	134.5	0.8	F	resting	0.17
2005054-007	Massapoag	YP	297	313	2.8	F	resting	0.28
2005054-008	Massapoag	YP	238	188.9	1.1	F	resting	0.21
2005054-009	Massapoag	YP	268	266.2	2.8	F	resting	0.26
2005064-031	N. Watuppa	LMB	425	1182	9.5	M	developing	0.82
2005064-032	N. Watuppa	LMB	425	973	7.1	M	developing	1.2
2005064-033	N. Watuppa	LMB	390	800.6	28.4	F	developing	0.86
2005064-034	N. Watuppa	LMB	404	911.4	7.4	M	developing	0.97
2005064-035	N. Watuppa	LMB	442	1147	10.5	M	developing	1.1
2005064-036	N. Watuppa	LMB	465	1538	48.0	F	developing	1.4
2005064-037	N. Watuppa	LMB	433	1113	67.5	F	developing	0.94
2005064-038	N. Watuppa	LMB	370	741.7	60.5	F	developing	0.64
2005064-039	N. Watuppa	LMB	377	737	5.3	M	developing	0.77
2005064-040	N. Watuppa	LMB	465	1396	92.9	F	developing	1.4
2005064-041	N. Watuppa	LMB	420	1036.6	6.9	M	developing	1.3
2005064-042	N. Watuppa	LMB	410	1163	112.0	F	ripe	0.95
2005064-043	N. Watuppa	LMB	433	1317	38.8	F	developing	1.3
2005064-044	N. Watuppa	LMB	411	1040	5.5	M	developing	1
2005064-045	N. Watuppa	LMB	370	676.2	4.2	M	developing	0.79
2005064-001	N. Watuppa	YP	317	406.5	3.5	F	resting	0.5
2005064-002	N. Watuppa	YP	315	402	4.8	F	resting	0.81
2005064-003	N. Watuppa	YP	288	270.4	1.6	F	resting	0.69

SAMPLE #	*LAKE*	*SP*	*L*	*WT*	*GW*	*S*	*STG*	*HG*
2005064-004	N. Watuppa	YP	282	276.2	2.1	F	resting	0.47
2005064-005	N. Watuppa	YP	268	276.5	0.5	M	spent	0.52
2005064-006	N. Watuppa	YP	267	229.2	1.5	F	resting	0.64
2005064-007	N. Watuppa	YP	268	240.3	2.1	F	resting	0.52
2005064-008	N. Watuppa	YP	290	280.7	2.7	F	resting	0.76
2005064-009	N. Watuppa	YP	278	253.3	1.3	F	resting	0.39
2005064-010	N. Watuppa	YP	263	231.7	1.6	F	resting	0.39
2005064-011	N. Watuppa	YP	247	188.8	1.1	F	resting	0.33
2005064-012	N. Watuppa	YP	257	192.8	0.8	F	resting	0.53
2005064-013	N. Watuppa	YP	241	164	0.9	F	resting	0.51
2005064-014	N. Watuppa	YP	232	141.7	0.9	F	resting	0.47
2005064-015	N. Watuppa	YP	235	149.4	0.4	F	immature	0.34
2005064-016	N. Watuppa	YP	337	476.9	5.1	F	resting	0.8
2005064-017	N. Watuppa	YP	312	367.6	2.1	F	resting	0.53
2005064-018	N. Watuppa	YP	282	159.9	1.7	F	resting	0.76
2005064-019	N. Watuppa	YP	235	144.3	0.9	F	resting	0.44
2005064-020	N. Watuppa	YP	206	107.4	0.6	F	resting	0.3
2005064-021	N. Watuppa	YP	209	111.2	0.1	M	resting	0.39
2005064-022	N. Watuppa	YP	214	124.8	0.4	F	immature	0.23
2005064-023	N. Watuppa	YP	203	102.1	0.6	F	resting	0.38
2005064-024	N. Watuppa	YP	207	95	0.4	F	resting	0.28
2005064-025	N. Watuppa	YP	180	64.3	0.3	F	immature	0.26
2005064-026	N. Watuppa	YP	171	57	0.1	F	immature	0.2
2005064-027	N. Watuppa	YP	179	56	0.1	M	immature	0.25
2005064-028	N. Watuppa	YP	180	68.3	0.1	F	immature	0.26
2005064-029	N. Watuppa	YP	168	53.5	0.3	F	resting	0.28
2005064-030	N. Watuppa	YP	157	44.4	0.4	F	resting	0.27
2005042-001	Quabbin	LMB	360	709.4	2.0	M	developing	0.49
2005042-002	Quabbin	LMB	381	812.5	32.0	F	ripe	0.46
2005042-003	Quabbin	LMB	380	720	2.0	M	developing	0.61
2005042-004	Quabbin	LMB	410	1065	39.0	F	ripe	0.41
2005042-005	Quabbin	LMB	380	1001	40.0	F	ripe	0.48
2005042-006	Quabbin	LMB	390	1059	37.0	F	ripe	0.47
2005042-007	Quabbin	LMB	420	1106	6.0	M	developing	0.62
2005042-008	Quabbin	LMB	470	1765	113.0	F	ripe	0.72
2005042-009	Quabbin	LMB	420	1019	3.0	M	developing	0.88
2005042-010	Quabbin	LMB	390	903	34.0	F	ripe	0.41
2005042-011	Quabbin	LMB	360	695	24.0	F	ripe	0.47
2005042-012	Quabbin	LMB	260	277	2.0	F	ripe	0.17
2005042-013	Quabbin	LT	570	1719	8.0	M	developing	0.35
2005042-014	Quabbin	LT	570	1290	19.0	F	developing	0.48
2005042-015	Quabbin	LT	590	1770	45.0	F	developing	0.51
2005042-016	Quabbin	LT	590	1672	26.0	F	developing	0.45
2005042-017	Quabbin	LT	560	1518	12.0	F	developing	0.42
2005042-018	Quabbin	LT	480	1029	19.0	F	developing	0.25
2005042-019	Quabbin	LT	490	1042	4.0	F	developing	0.2
2005042-020	Quabbin	YP	300	291	17.0	M	ripe	0.48
2005042-021	Quabbin	YP	330	347	17.0	F	ripe & running	0.63
2005042-022	Quabbin	YP	230	134	3.0	M	ripe	0.25
2005042-023	Quabbin	YP	160	43.2	0.0	U	immature	0.18

SAMPLE #	*LAKE*	*SP*	*L*	*WT*	*GW*	*S*	*STG*	*HG*
2005042-024	Quabbin	YP	150	33.8	1.0	M	ripe	0.19
2005042-025	Quabbin	YP	140	28	4.0	F	ripe	0.11
2005047-031	Rock	LMB	461	1535	55.4	F	developing	1.7
2005047-032	Rock	LMB	468	1562	6.3	M	developing	2.6
2005047-033	Rock	LMB	425	1288	75.6	F	ripe	1.5
2005047-034	Rock	LMB	293	326.9	3.0	F	developing	0.81
2005047-035	Rock	LMB	248	187.5	2.5	F	developing	0.92
2005047-036	Rock	LMB	257	225.4	6.2	F	developing	0.68
2005047-037	Rock	LMB	250	196.8	0.6	M	developing	0.76
2005047-038	Rock	LMB	234	143.5	0.4	M	developing	0.71
2005047-039	Rock	LMB	238	157.9	0.2	M	developing	0.69
2005047-040	Rock	LMB	235	140.9	1.2	F	immature	0.99
2005047-041	Rock	LMB	245	166.8	1.1	F	developing	0.73
2005047-042	Rock	LMB	227	141.6	0.1	M	developing	0.84
2005047-043	Rock	LMB	225	126.4	0.1	M	developing	0.75
2005047-044	Rock	LMB	218	107.9	0.1	M	developing	0.9
2005047-045	Rock	LMB	196	93.5	0.1	M	developing	0.6
2005047-001	Rock	YP	225	145.9	1.7	F	resting	0.49
2005047-002	Rock	YP	255	178.6	2.1	F	spent	0.73
2005047-003	Rock	YP	230	151.7	1.8	F	resting	0.44
2005047-004	Rock	YP	240	153.4	1.8	F	resting	0.8
2005047-005	Rock	YP	224	145.2	1.8	F	resting	0.6
2005047-006	Rock	YP	237	175.6	1.9	F	resting	0.45
2005047-007	Rock	YP	204	99.8	0.6	M	ripe	0.38
2005047-008	Rock	YP	188	81.1	0.9	F	resting	0.28
2005047-009	Rock	YP	173	66.2	0.1	F	immature	0.24
2005047-010	Rock	YP	180	67.3	0.5	F	resting	0.25
2005047-011	Rock	YP	166	59	0.6	F	resting	0.3
2005047-012	Rock	YP	179	67.3	0.2	F	immature	0.15
2005047-013	Rock	YP	180	64.3	0.7	F	resting	0.28
2005047-014	Rock	YP	165	46.8	1.2	M	ripe & running	0.2
2005047-015	Rock	YP	168	51.7	0.1	F	immature	0.12
2005047-016	Rock	YP	257	183.6	2.2	F	resting	0.73
2005047-017	Rock	YP	255	198.4	2.1	F	resting	0.59
2005047-018	Rock	YP	210	124	1.6	F	resting	0.43
2005047-019	Rock	YP	222	129	1.1	F	spent	0.18
2005047-020	Rock	YP	214	129.8	1.5	F	resting	0.38
2005047-021	Rock	YP	225	140.8	1.4	F	spent	0.46
2005047-022	Rock	YP	207	111.7	1.2	F	resting	0.41
2005047-023	Rock	YP	191	81.9	0.3	M	spent	0.37
2005047-024	Rock	YP	187	72.3	0.7	F	spent	0.25
2005047-025	Rock	YP	183	66.2	0.8	F	resting	0.15
2005047-026	Rock	YP	181	75.3	0.3	F	immature	0.31
2005047-027	Rock	YP	178	64.2	0.4	M	partially spent	0.37
2005047-028	Rock	YP	176	61.4	0.1	M	spent	0.25
2005047-029	Rock	YP	181	73.4	0.5	F	resting	0.29
2005047-030	Rock	YP	170	58.6	0.7	M	partially spent	0.22
2005087-031	Wickaboag	LMB	429	1099	56.4	F	developing	0.38

SAMPLE #	*LAKE*	*SP*	*L*	*WT*	*GW*	*S*	*STG*	*HG*
2005087-032	Wickaboag	LMB	465	1293	54.6	F	developing	0.69
2005087-033	Wickaboag	LMB	425	995	6.6	M	developing	0.39
2005087-034	Wickaboag	LMB	479	1840	61.4	F	spent	1.3
2005087-035	Wickaboag	LMB	460	1596	11.9	M	developing	0.5
2005087-036	Wickaboag	LMB	289	810.7	32.8	F	developing	0.37
2005087-037	Wickaboag	LMB	320	454.1	3.1	M	developing	0.11
2005087-038	Wickaboag	LMB	404	981.4	9.5	M	developing	0.67
2005087-039	Wickaboag	LMB	365	758.4	36.4	F	developing	0.2
2005087-040	Wickaboag	LMB	400	879.2	36.2	F	developing	0.22
2005087-041	Wickaboag	LMB	333	492.6	3.9	M	developing	0.14
2005087-042	Wickaboag	LMB	330	541.2	4.6	M	developing	0.1
2005087-043	Wickaboag	LMB	323	489.8	2.5	M	developing	0.11
2005087-044	Wickaboag	LMB	293	345.7	1.8	M	developing	0.53
2005087-045	Wickaboag	LMB	274	335.6	1.9	M	developing	0.12
2005087-001	Wickaboag	YP	235	159.6	1.2	F	resting	0.22
2005087-002	Wickaboag	YP	207	83.6	0.8	F	resting	0.21
2005087-003	Wickaboag	YP	187	70.6	0.6	F	resting	0.19
2005087-004	Wickaboag	YP	180	65.2	0.1	M	spent	0.16
2005087-005	Wickaboag	YP	175	64.7	0.2	F	immature	0.1
2005087-006	Wickaboag	YP	161	49	0.3	F	resting	0.065
2005087-007	Wickaboag	YP	158	45.7	0.2	F	immature	0.083
2005087-008	Wickaboag	YP	160	48.4	0.3	F	resting	0.071
2005087-009	Wickaboag	YP	159	48.6	0.3	F	resting	0.056
2005087-010	Wickaboag	YP	155	40.5	0.2	F	resting	0.064
2005087-011	Wickaboag	YP	142	32.1	0.1	F	immature	0.06
2005087-012	Wickaboag	YP	147	33.8	0.2	F	resting	0.11
2005087-013	Wickaboag	YP	147	42.5	0.1	M	immature	0.048
2005087-014	Wickaboag	YP	146	37.4	0.1	F	immature	0.045
2005087-015	Wickaboag	YP	131	26.2	0.1	F	immature	0.067
2005087-016	Wickaboag	YP	270	229.2	1.7	F	resting	0.28
2005087-017	Wickaboag	YP	265	183.6	1.8	F	resting	0.36
2005087-018	Wickaboag	YP	232	145.5	1.0	F	resting	0.12
2005087-019	Wickaboag	YP	220	116.2	0.8	F	resting	0.18
2005087-020	Wickaboag	YP	219	103.2	0.6	F	resting	0.2
2005087-021	Wickaboag	YP	212	129.8	0.8	F	resting	0.2
2005087-022	Wickaboag	YP	214	113.7	0.8	F	resting	0.22
2005087-023	Wickaboag	YP	210	111.8	0.1	M	resting	0.17
2005087-024	Wickaboag	YP	209	98.6	0.4	F	resting	0.11
2005087-025	Wickaboag	YP	176	66.8	0.4	F	resting	0.16
2005087-026	Wickaboag	YP	177	70.8	0.1	M	resting	0.17
2005087-027	Wickaboag	YP	162	51.5	0.1	F	immature	0.057
2005087-028	Wickaboag	YP	160	47	0.3	F	resting	0.15
2005087-029	Wickaboag	YP	157	47.3	0.3	F	resting	0.085
2005087-030	Wickaboag	YP	166	45.9	0.4	F	resting	0.11